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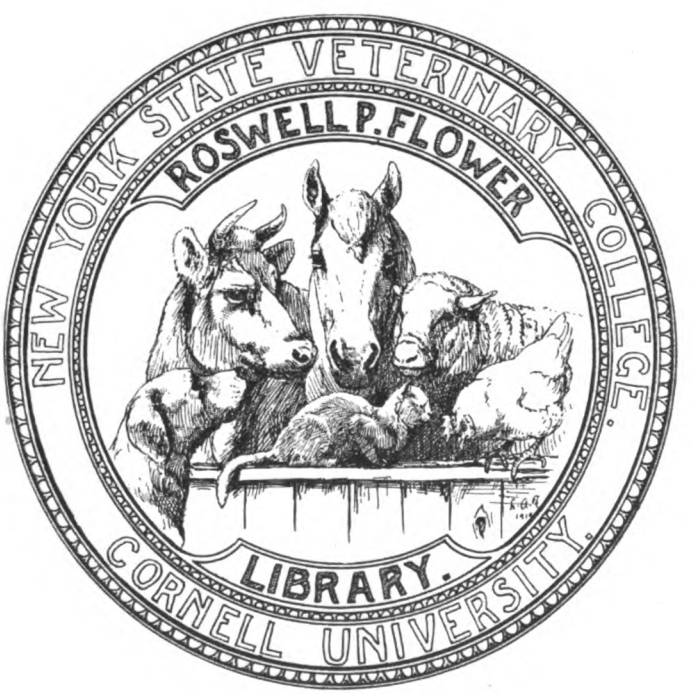

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Original Articles.

A STUDY OF THE SOCIALLY MALADJUSTED*

BY L. PIERCE CLARK, M.D.,

NEW YORK.

IT is unfortunate even in a partial abandonment of a specific classification of mental disorders that our discriminative judgment upon the exact nature of the defect under investigation should suffer. By abandoning a definite classification, the critical faculty is likely to fall away and the results become unsafe for sound clinical estimates. On the other hand, if we follow a too rigid system of nomenclature, the scope of scientific inquiry is often narrowed and our clinical studies of mental phenomena seem unnatural and one-sided.

This dilemma is signally illustrated in considering the life reaction of socially maladapted persons. Some investigators lump this whole group under the broad designation of psychopathic personalities and feel that they have really solved the condition scientifically. Others maintain that the group may be properly designated high grade feeble-minded, and that the individual is a normal dull person with antisocial tendencies or that he is a psychopathic constitutional inferior. But there are not a few psychiatrists as well as many intelligent laymen who still doubt whether so-called constitutional inferiority is a sufficiently sharply defined entity in mental science to warrant its separate consideration from the moron of the feeble-minded class on the one hand, and the atypical group of dementia præcox on the other.

However, practical issues in mental hygiene must be met on the basis of their occurrence, and a large group of adolescents present a distinct social problem in which the neuropsychiatrist is increasingly called upon for aid. Any classification of the socially maladaptive, with or without intellectual defect or with reactions similar to the præcox, fails of large utility in any practical issue. With a great show of reasonableness some have argued that these pathologic personalities vary insensibly from the normal individual with slight, benign defects of social maladaptation during adolescence to those with the most malignant, enduring intellectual and emotional instability, and that no classification for the group is possible or even desirable,—they seem satisfied simply to call such morbid personalities the socially unstable. Considering the foregoing, one is impressed that the time is not yet ripe for the use of any sharp distinctive term for the various phases of social maladaptations.

After general consideration of the nature of the constitutional psychopathic inferior and the general system for care and training of such persons, some widely variant illustrative cases will be given. In considering the restricted few of the constitutional psychopathic inferiors, if a psychologist has been first consulted we find the subject has frequently been classed as a normal dull person, possibly two or three years retarded in one or more mental tests, but not in all. The psychologic test of the practical judgment usually presents marked defects, often grading only as high as the twelfth or fourteenth year and sometimes falling several years below that age. In addition to failures in practical judgment, they show defective manipulation and generalization of specific tests and subjects. There is a lack of self confidence in the examination and a half-hearted attempt to correct the simple faults. The tested subjects lack grit to stick at the individual problem and often grade much lower owing to an inefficient arousing of determination and will to accomplish the required test. The mental development is almost always more asymmetric than the average person's of the same age and opportunities. In the opinion of the more formal psychiatrist the same person is often thought to be a potential præcox or a moral imbecile owing to his instability of emotional control.

These unstable persons form a large class of all sorts of social and business misfits. The main practical defect is evidenced in a weakness of will in all the human activities. Though the intellectual endowment may be good in a superficial estimate, it is easily shown in the majority of cases to be mediocre. Sufficient descriptive knowledge of this group has been made for us to summarize them: Often they are keen observers, are vivacious and know how to use their own limited intellectual powers to the best advantage. On the other hand, they lack energy for continuous work, soon grow weary and are unable to complete any course of education, their knowledge being superficial and fragmentary. While their talents often arouse great expectations, they remain unfulfilled on account of their inconstancy, unreliability, and lack of will power. Higher intellectual development is defective; conception is confused, and judgment is immature and one-sided, while their interests center around frivolous pleasures and they do not respond to the more serious side of life. There in often a tendency to build air castles and to day dream. Emotionally they show abrupt changes—at times elated and confident, and at others spirit-

*Read before the American Neurological Association, June 3, 1920.

less, sensitive, or pessimistic. There is usually an increased irritability, sensitiveness, and peevishness. Although they are generally harmless and good-natured, they are dominated by the most pronounced selfishness; they are inclined to submit to privation but demand comfort and luxuries, regarding restrictions as a personal insult. They lack perseverance and power of resistance and energy, which usually become evident as soon as they are deprived of home influences. At school they are considered pliable, unstable, and easily led. As soon as they have to stand on their own feet they are helpless. Since work is not agreeable, they often change, hoping to find a more ideal occupation. They excuse their unproductiveness in various ways, never attributing the cause to any fault of their own. They are usually unashamed of being dependent on others for support, and believe circumstances justify their conduct. Even though their earning capacity is small, they are careless with money, buying useless articles without thought. They readily yield to temptation, and when placed under guardianship become slack, indolent, and spend their time with loafing and useless fads. In bad company, they take the course of easiest resistance, drifting into all sorts of degenerate and criminal types. The instability first becomes evident so soon as these individuals encounter some difficulty in their lives. Many of these unstables are gradually forced into lives of vagabondage by their congenital instability and not by unusual circumstances. The same condition is shown to exist in the offspring of well-to-do parents, who, notwithstanding an apparently good endowment and education, continue to be unstable. One rarely fails to find in the family stock traces of degeneracy.

It is at once obvious that we are not dealing with a special type of moron, nor is the condition very closely allied to dementia præcox. However, our main concern here is to acquire a more intimate knowledge of the essential emotional defects and determine if possible a less clumsy method of dealing with such individuals. In everyday life the final termination of the career of these constitutional inferiors is to swell the ranks of vagabondage of high and low degree and the ne'er-do-wells shown in alcoholic and sexual excesses and specific antisocial tendencies to steal, lie and swindle. Not a few have short episodes of mental confusion, hallucinosis, or paranoidal ideas of persecution. The latter in our outside sanatoria or asylums, as soon as the extra stress of life is withdrawn, quickly recover from the mild mental episodes and are then easily differentiated from the more malignant deteriorating mental disorders such as the præcox group. In more definitely unstable subjects of the lower classes the method of disposal is easier, but perhaps in the long run is no more satisfactory than in the milder types which occur in the higher strata of life. For several years a large number of the latter have come under my observation requiring a practical judgment of what disposition should be made of them. It is not sufficient to recognize that the real defect is an inherent one and that a cure, so-called, cannot be expected. Neither do we get very far to make the general statement that each subject must be considered upon the special type of defect disclosed.

What are some of these defects and just what may we do for the individual? We may first dispose of the generalities fairly well known and discuss the good and bad points of each. It is known if the defects are not great, a proper regimen of training may help. In order that one may establish proper pedagogic reconstruction, certain facts must first be recognized not ordinarily taken into account. Society immediately takes an unfriendly and uncharitable attitude toward one stigmatized as a public confessant of wrong-doing. In consequence we do not adopt the frank and open plan of dealing with the situation, which causes these individuals to note the hypocrisy in such an attitude and adds fuel to their innate distrust of the general currency of moral honesty. Inferiors are apt at sophistication, and they hold their innate delinquencies are not less reprehensible than the insincere attitude which parents and physicians take toward them. If the weak and vacillating will has given way to an uprush of primitive desires to steal, lie, or indulge in excessive or forbidden sexual acts they hold that either they were justified under the circumstances or they are permissible to those who wish to be non-conformists to current social customs.

Inasmuch as the parents, and not the socially maladaptive individuals themselves, are seriously concerned by the attitude of society, the latter, hardened by flagrant delinquencies, often "sit tight" and nonchalantly taunt those sincerely interested in their welfare with the query, "What are you going to do about it? The dilemma is not one of my own choosing or concern." If such persons could be counted as legally insane, commitment and sanatorium care would then be possible. Social policing by camouflaged tutors and companions is difficult, and a game in which the trump cards are generally in the inferior's hands. Supposing the pursestrings are held by the parents or relatives, usually the training is apt to degenerate sooner or later into a system of coercion by bribery. The régime practically simmers down to a system of "We will give you so much for this or that task, and if you comply with obedience, this privilege or emolument will be granted." All this time the parents and relatives hold that society in general, and too inquiring friends in particular, must not be permitted to guess the true state of affairs. Even professional advice is often sought surreptitiously, and anything like a fair and open policy outside of a reform school or occupational sanatorium seems impossible. One may therefore say that all attempts to disguise the real issues to be set right by their very nature are doomed to failure. The régime, even though it provides proper tutoring and companionship of the trained attendant, if not backed by institutional discipline with mutual cooperative management, is next to never adequate or successful. Therefore absolute candor tempered with kindly but firm sympathy constitutes the necessary atmosphere for the care and training of constitutional inferiors.

We shall consider a series of cases which conform definitely to the classic type of psychopathic

constitutional inferiority. Cases I and II were brought under observation on account of precocious and irregular sexual delinquencies; case III for the same faults, but more definitely for stealing and a general record of criminal acts and tendencies.

CASE I is that of a girl now in late adolescence, born of fairly healthy stock. The mother is, however, quite neurotic. An older brother is a cripple from poliomyelitis and a younger sister is less but similarly afflicted. Our patient was born normal but had a severe attack of eczema for the first two years, to which affection the mother ascribes the child's delay in walking until two years of age. At seven a slight curvature of the spine developed or rather became more extreme, thought to have been congenital. Even as a small child she exhibited a good deal of slyness and dexterity in extricating herself from difficult situations. As a baby she was excitable, especially at play, but cried little when annoyed or injured. She was rather a stoic and relied upon her own ability to get out of things and confided in none of the family. She showed no affection toward anyone. Even as a small child she was selfish and cruel in social contact with other children, and made cruel or hurting remarks in quick retaliation to anyone who wounded her feelings. She was therefore not taken into the girl group and was more feared than otherwise. In kindergarten at five years she showed poor attention. In her advanced education literature, history, and studies that gave power for colorful recitation and dramatic effect appealed to her. She made rather vague attempts at lyrical verse, and did fairly well at coloring and drawing, but her taste in these led more or less to the peculiar, odd, or unusual. She soon showed a decided will to learn what she liked and paid no attention to the other subjects. She says, "My school life was mostly a bore. I not only did not study what I did not like but I could not even understand or retain the subject matter." Thought was always logical but practical judgment seemed never to have been developed. She possessed no apparent realization of the ordinary social adjustment to which her playmates took heed. Her attitude was not a stubborn or resistive one, but rather one of negligence and callous disregard for social custom. Her childish interest in art gradually developed into an intense concern of the gruesome and morbid. She seemed fascinated by ghost stories, sordid and lurid tales of murder, accidents, and catastrophes. When she had reached her tenth or twelfth year she had rather egoistic views and seemed in need of constant excitement. She cared much for dress but gave little real or continued care to her person nor did she treasure her possessions of dress and adornment. Efforts to open her mind to these little defects of character made no apparent impression. At first they were received with an attitude of indifference; later they were tolerated with signs of boredom but not deep annoyance. When things went wrong she blamed others or shrugged her shoulders and gave no heed. She was very courageous in standing any amount of pain or physical discomfort. At puberty she began to exhibit some superficial sociable traits but this was shortlived. She has never had any intimate friends nor made any attempts to more than keep would-be friends as acquaintances. She has never had any regard for money and spends it foolishly. Efforts expended to make her realize this defect are met first with cruel retorts, then sullenness, and finally end by her assuming an attitude of suspicious slyness. While her jealousy within the family is shortlived her enviousness has only known the bounds of selfish desire. She assumes an injured attitude in gaining her own ends. She has always felt above her environment and looked forward to the time when she could go her own way. As a young girl in a summer camp she was considered a disturbing factor because of her vicious attitude toward rules and conventions. Being considered rather as a bad example she was sent out of two such school camps. Her power for harm on the whole in the schools seems to have been circumscribed to the weak and superficial characters like her own, and consisted mostly of slight dilatory digressions of conduct. Later, in conjunction with a similar male character, she planned a whole series of confidence games, so ably planned that they were detected and frustrated. In late adolescence, balked in her ambition to study for the stage and become an "emotional" actress, she carried out a personal social dilapidation which ended in a marriage forced by the parents, she concurring under a false assumption on her part of an existent pregnancy. Discovering that he had been tricked, the groom refused to live with her. The possible scandal entailed made the parents of both willing to agree upon a divorce. Our patient suffered a short episode of temper and revolt in which she declared, à la Ibsenesque, "I am determined to have my own way. There is no power under Heaven that will deprive me of living my life as I see fit. If mother stands in my way I will kill her. I have never been understood by anyone, least of all by my mother. I never want to see her again and want nothing to do with her. I have always hated her."

At present we have a young woman of medium height, of comely though not prepossessing appearance. Her features are regular but a rather prominent nose has always given her much concern. She arranges her hair in a rather extreme style, and has used rouge for several years. Her apparel, largely of her own choosing, is neat, a little overdressed in color and fashion. She sat quietly and replied to questions with a slightly bored manner. She rarely smiled but was not without a certain sense of humor even when the incident recounted was to her own disparagement. Although she was reared in a small university town she made little or no use of its possible social advantages. With keen animation when taxed with the fact she said, "You see, my home town has always bored me. I sent flowers to myself and wrote friends improbable tales about my good social times because I had a foolish desire to make life seem more worth living. The people are hopelessly engrossed in small town affairs, and the university set are rigid and pedantic in the extreme. There are practically none who understand or experience any free social or human relations. As to the environment at home, mother never seemed to have time or inclination to talk freely with me. I was so ignorant when in the high school that the other 'wise' girls used to stuff me with impossible tales about all phases of life. Gradually I pieced things together and fashioned my own attitude and opinions about people, and what their aims in life really were." After an apparent struggle to hold back something she finally added, "I really never fitted into my home or the social life. Not until I got away to school and to a larger city did I really get to know what life was." Then followed a fairly clear account of her emotional life, told without apparent exaggeration or deep feeling. She even mentioned her "shocked" attitude when she learned that other girls fabricated, falsified their expenditures to gain a larger allowance, and even entered into questionable relations with men. "Yet," she adds, with little emotional reaction, "I can only partially explain my own conduct. A part of it seems reasonable and logical, and other parts, while technically wrong, I feel no twinges of conscience over. My attitude may seem queer, but I was born that way. Perhaps my life is wrecked, in a sense, but a freer life, preferably on the stage, is the one I should prefer. I never hope to become a great actress. I simply want to play in stock and make my own living and go my own way." When asked if she really understood the amount of work necessary even to play minor rôles, she seemed unconcerned and indifferent to the importance of dramatic study necessary to gain any good paying position in the theatrical field.

Her psychologic test was as follows: In the Stanford Revision of the Binet-Simon tests, she passed all the tests of the ninth year, which is therefore her basal year. In the tenth year she failed on the Healy-Fernald Puzzle. She made repeated attempts, and when urged to try again repeated her mistakes, making random moves and did not succeed in fitting the objects in their places. She was able to do it without error after one demonstration, and expressed chagrin at having failed in what she called such a simple thing. In the twelfth year level she failed on practical judgment test. Her performance was equivalent to that of

an eight year old child. At the fourteenth year level she was able to do three of the six tests, while she did four of the six tests of the twelfth year, which is equivalent to the performance of the average adult. She succeeded in those tests that involved the understanding and use of language. Her marked failures throughout the tests were on situations involving the use of practical judgment, manipulations, and generalization. Her performance was characterized by lack of self-confidence, and an attitude of failure. Because of this her score may be somewhat lower than she could make if these emotional elements did not operate. In the Trabue Language Scale C, she made a score of 17, equivalent to the fourth year high school work. In the Mixed Relations (language) test, she scored 117; the average in this test for Barnard freshmen is 119. Her attainment in the mechanics of arithmetic was about equal to the average nine year old child. She failed on simple examples involving the use of fractions. As a general summary, her development is asymmetrical. She did well in tests requiring the use and the comprehension of language, and her performance is equivalent to that of the average adult. The tests indicate that her highest development has been reached along lines involving the comprehension and the use of language. Her intelligence quotient of 89 indicates that her general grade of intelligence is equal to that of a dull normal person.

Remarks.—We have here the detailed account of an abnormal personality in which a certain degree of intellectual deficit is in evidence, but by far the greater fault is in the primary endowment of the emotional instincts and their weak and asymmetric development. Undoubtedly a more painstaking memory training with many artificial helps would have brought about better results in later life. The various camps and schools aided little, not because they were wrong, but because the constitutional inferior cannot unaided lay hold of such advantages. Just as the normal intellectual march has to be slowed for the mentally retarded pupil so here the social adaptive teaching has to be more concrete and detailed to be of great advantage. The slyness and aloofness of early childhood, the weak will evolves into a vicious striking out to protect the growing demand of a need to accept the emotional hints of the girl group training without giving way to antisocial reactions. An intensive desire for self-pleasure was imperfectly yielded to the group consciousness; this entailed poor comradeship. Balked by an inadequate and unsatisfying environment the girl kept her love and life interests centered on herself, in which a self abandon or a shut-in personality would seem to be the alternative. The former was chosen at the first instinctive appeal that was made. The step once taken, a superficial restraint by parental discipline falls away and our subject only elects to lead the easier way or that which, with a foreshortened emotional grasp, she believes will give her what she craves—change, excitement, and an opportunity to gratify sensual pleasures for the moment. The problem of the proper pedagogics here is not simple. The opportunity has been already so delayed and the mental struggle may be said to be almost over. The primary need, of course, is to change the entire environment and determine whether under a new system the crisis of adjustment may not be reopened. Under this plan it may still be possible to make a better social adjustment more acceptable to current standards. The strongest advantage is that nothing essentially vicious was undertaken until the love life was brought to the fore. Under a better environment and training, private tutoring and a normal living régime the love-attachment may find a safer lodgment. While a certain strength of character must be requisitioned to live down the indiscretions of the past, yet in private life they are not so infrequently exhibited as many of us are led to suppose. The good as currently regarded in everyday life has no talismanic potency not often equally matched by other attributes, though the minting is not purified gold.

After a conference with the parents, they decided the best method of handling the situation was to temporize, for the time being at least, by sending this girl unsupported by an experienced tutor to the home of distant relatives for several months' "rest and change of scene" and to undertake a definite system of training and education some time in the future, say in six months. Meanwhile the girl naively remarks, "Why, in four months I shall be twenty-one, and then I can do just as I please. I will then go on the stage *by one route or another.*" Neither the parents nor she apparently realized the obvious implication or import these statements bore.

CASE II is that of a girl in middle adolescence whose unconventional sexual acts caused the parents their first great alarm as to her mental condition and the need of mental examination. She was born of very neurotic stock. The maternal grandfather was practically insane although a man of great prominence and ability. The maternal uncle was a convicted homicidal paranoiac. A paternal aunt is a constitutional inferior. The father and mother are of the neurotic type. The patient is an only child. She was considered a jolly, robust, hearty sort of a girl of whom every one seemed fond and she herself was keen for social life and various sports. On the surface our patient was judged to be without physical or mental defect other than a certain wilfulness. It was noticed, in an indifferent sort of way, that for years she got on poorly in her school work and showed poor capacity to develop logical thought. On a precise inquiry after the social catastrophe the following personal history was produced:

She was precocious in physical development, walked at eight months but did not talk plainly until nearly two years of age. In part the delay in speech was due to changes in governesses who spoke different languages. She was a lively, energetic child, high strung and nervous from birth. She had tantrums and still exhibits such temper reactions in a mild form. At five years without apparent cause she had a mild attack of St. Vitus' dance. Her physical health, however, improved on removal of tonsils and adenoids. Irregular eruption of teeth called for a degree of orthodentistry. A visual error in refraction was corrected. She was always "finicky and notional" about foods and odors. At eleven years of age she was placed under the discipline of a large private school. It was then noticed that she was dull in most of her studies and that she made no great effort to master them. She merely rebelled at learning and was excused; she repeated grades and finally was allowed to drop out after four years of trial in the normal grades. She says, "I've had lots of tutoring in different subjects. but it doesn't do the least good. I can't put my mind on study. I never really learned anything well. If I could manage to get through for the day it was all I cared for. Every now and then I try for a few weeks, then get discouraged and give up. I did well in mathematics (she does not understand simple fractions, and should according to age be taking advanced algebra). I loved drawing (she has no real ability to draw even simple objects and confined her attention to color work and crude clay modelling). Literature

and English are my best subjects (she is not able to spell correctly and cannot write a simple composition). I did well in history." (She is interested only in the stories of the subject and failed in an examination.)

This girl had to be cajoled and bribed to do any definite task at home and gave her entire attention to having a good time. Things that required little mental effort she did by fits and starts. She never planned with foresight, was never punctual and had no sense of family or social responsibility. She liked the new and bizarre. She was fond of animals, but so soon as she tired of them she neglected them. One day she would bubble over with enthusiastic desires to engage in all sorts of activities and the next was spiritless and pessimistic. Her keenest desires were centered upon clothes yet she never had any initiative in their selection or took care of them. Physical pain and discomfort she bore stoically. "When I am crossed at home," she said, "I want to take my belongings and leave home and make my parents spend the rest of their lives in sorrow and repentance for treating me harshly. I've often thought of suicide to accomplish the same result." As an apparent defense to feeling timid with strange children she would be rude and push them out of her way. In an imaginative way she day-dreamed of a world without effort. "I imagined myself a very brave person who was to be decorated for something very remarkable, or for great feats in sports. Then I thought I would become an opera singer, but when I learned they had to do so much practise and were often fat and gross looking I dropped that ambition."

In a mental test by the Stanford-Revision of the Binet-Simon Test her basal age was shown to be twelve years, and a mental age of thirteen and a half years, giving her an intelligence quotient of 87, which brought her into the group designated by Terman as dull normal persons. This includes children who would not, according to any of the commonly accepted standards, be considered feebleminded but who are so far below the actual average of intelligence among races of European descent that they cannot make ordinary school progress, or master other intellectual problems to which average children are equal. They will usually be found able to reach the eighth grade, but ordinarily only after from one to three or four failures. They make up the group of children who are placed in special (not ungraded) classes in our public schools.

In the Trabue Completion Test this girl made a score of fourteen points, which is the performance for ninth grade children or children of fourteen years of age. In the word-building test she averaged up to a child of eight years and showed inability to make new combinations from familiar forms, lack of ingenuity and power of imagination. In the Induction Test (finding a rule), which is regarded as a genuine test of the intelligence by Terman and which brings out the ability to generalize from particulars, this girl was unable to find the rule and therefore completely failed in it. As might be expected, her best performance was in those tests requiring the use of language, such as the interpretation of fables, definitions of words, problems of fact, etc. Her knowledge of formal grammar, however, was limited, and in arithmetic she failed on fourth grade problems. She displayed a childish, naive attitude toward the tests and was anxious to do well, but if she thought a test was difficult she was inclined to give up easily. She lacked self-confidence and gave the general impression of being very immature mentally for her age.

It is interesting and important to note the attitude which the inferior assumes after a rather exhaustive analysis of the problem and the general situation has been explained. For instance, our subject was either sullen or assumed a gloomy introspection with slight eruptions of annoyance and petulance afterward. She soon sought an argument with the mother upon the kind of training a young girl should have. She disagreed with all the principles the mother laid down. She said, "I only wish to be original and live in my own way. There is no sense in your proposed plan. I must have only the sort of training that appeals to me; I must have no hard and fast tasks and should be allowed to do things so long as they do not bore me." When asked what her plan would be she said, "To go about with many people and have much going on—music, dancing, and to see the soldiers." Her regard for people whom she met was merely superficial and to laugh and pass some trite remark was quite sufficient.

It is important to recognize that the mental conflict—to assume an entirely different and normal line of social adjustment—occurs very early. At the time when the inferior has already publicly exhibited a social transgression the attitude has already become habitual or chronic. Hence training must be along the most fundamental lines and not solely upon the particular acts which have been glaringly in opposition to social custom. In a burst of friendly confidence with her tutor our subject said, "I remember several years ago it occurred to me that I might do differently. When I was told of my faults I first thought I would force myself to assume a different feeling and attitude. Then I finally felt, what's the use. There was a desire to relent and set things right and yet an equal desire to master my own affairs. Each time I let things go and was not frank it became easier to keep my own counsel. It got to be actually painful to suppress doing any pleasurable thing."

At a family conference it was decided to place this girl with a tutor companion to carry on and make good her previously neglected school work and to teach and mould her toward a better insight into her defects and thus bring about more stability of character. This effort was successful in part. The flighty periods and revolt from customs and rules were less frequent and disturbing. Her school work was much improved and her conduct was much more natural and consistent; but the depth of real insight never greatly increased. The girl learned and submitted to life discipline as a necessary part to be played, but deeper states of mental unrest gave evidence of discontent smouldering near the surface. Petulance, daydreaming, and periods of conscious blocking of the will also became more frequent. After several months of special policing and tutoring away from home the girl began playing the physician, the tutor, and the parents against each other and finally succeeded in inducing the latter to believe that the real trouble was physical, necessitating special hospital treatments and one or two operations. However, when these were finished, the issues were quite the same. Then a series of special convalescence consisting of rest and recreation was arranged. These at last having been disposed of, a new inventory by another neuropsychiatrist was requisitioned. In her sly, shrewd manner the girl is much interested in the new hopes and vistas that have opened up in the present Fabian policy which she seems to have stumbled upon by accident. Undoubtedly she is on her way to rationalizing ideas to explain her peculiar temperament and the kinds of special nursing she requires toward making a proper life-adjustment. The problem at present is too intricate to even foreshadow its final outcome. One might "guess," however, that if some real emotional appeal, either through love or religion, does not correct the main faults which are innate and bring about a life compromise, this girl is on the way to serious dilapidation in all fields of personal activity. When these occur undoubtedly the relatives will arrive at the conclusion that the causes were exogenous and beyond remedy at the beginning. At any rate, the final tragedy may serve as an excellent illustration of the inadequacy of a divided and shifting responsibility in handling such a problem.

While both Case I and II manifested antisocial tendencies, the first was simply weak in personality type, while the second had a more stubborn determination to follow out her main desires. We shall consider briefly a type of psychopathic inferior with marked criminal tendencies.

The psychopathic delinquent as a clinical entity was recognized as such earlier than the simple unstables. The intellectual faculties of such, recently carefully studied as a group by Glueck, Healy, and Fernald, was first described in 1835 by Pritchard as a form of *moral insanity* and later

by Lombroso's school as the *born criminal.* The main designation of this particular type of psychopathic personality is the apparent normal development of the intellectual faculties within the limits of practical life. The subjects appear normal in ordinary conversation, comprehend well, and acquire a certain amount of knowledge and experience which they exploit with a certain degree of cleverness. There is no memory defect and they are fairly logical in thought. Their views of life are narrow and distorted. In common with the simpler types heretofore given they are unable to perform exacting intellectual work. They lack the capacity of proper reflection and foresight. They also fail to carry accumulated experience as to right behavior and conduct beyond the immediate present. In earliest youth (six to eight years) there are conspicuous moral defects, there is a lack of sympathetic comradeship shown in cruelty toward playmates, and general unresponsiveness to parental or home kindnesses. Later they develop pronounced selfishness. They lack a sense of personal honor and proper affection toward relatives. Attempts at normal education are fruitless, as love and normal ambitions are lacking. Continued force alone is able to keep such individuals from manifestations of unbridled selfishness. Even then after a time this corrective restraint is met by an outwitting cunning and duplicity. Deceit, callousness, stubbornness, and a disposition to lie are added soonor or later. Personal gain only is able to keep such individuals out of difficulties for a time. Their egotism is manifested in braggadocio, vanity, idleness, foolish prodigality, and often weak sentimentality. Usually there is not only little resistance to temptation of various sorts, but there is emotional irritability and positive determination to follow an impulsive and vicious mode of living. As children these individuals shock conventional parents by selecting playmates of an inferior sort, and indulging in petty larcenies and peculations. They wander from one type of discipline to another until they manifest open and flagrant criminal tendencies. They then find themselves thoroughly out of touch with the social customs of their station and have no insight that the essential fault lies within themselves. They often think they are but passing through kinds of experiences that lead to martyrdom. They become sophisticated in conversation and cite instances where others "get away with the goods" in supposedly respectable walks of life. As a class they are usually cowardly and not inclined to open violence, and maintain an attitude of passive opposition and treachery. If their antisocial acts escape exposure or checking they pride themselves on their performance and show an increasing desire to perfect themselves in the art of evasion. Some in time develop specialties in criminal careers and become cunning and very skilful. In all their acts, as a rule, they show an amount of stupidity and heedlessness not ordinarily exhibited by the more professional criminals. They often possess more of the physical stigmata of degeneracy than normal persons. If anything protective or conserving is to be done with these psychopathic delinquents it must be at a very early age before the mental conflict between normal social custom and criminal acts is over. We may here cite briefly the type hastily sketched and note its manner of evolution.

CASE III is that of a girl now in late adolescence, who has always been difficult of parental management. There was a very bad heredity. Attempts to send her to school at six and eight failed as the teachers reported she would not mind or attend to her studies. She was then given private tutors whom she directed in the kind and manner of education she desired. She has remained poorly grounded in elementary education. She can or will not conform to writing and spelling correctly as it is "too much bother." She is exceedingly egotistical. She has always had sporadic but good power of mental application. Concerning practical affairs as a child she exhibited good common sense. As a young girl she was interested in the Bohemian side of life and chose to talk with boys about the rough and tumble side, prize fighting, etc. Gruesome tales were her chief delight. She voluntarily chose none of the play or work of her girl companions. She was a stoic in bearing physical suffering and often voluntarily sought and enjoyed games in which she might invite attack and physical injury (sadistic). She was easy to get acquainted with in a superficial way, but held aloof from becoming intimate. To the mother's criticism and advice she was hostile to the point of threatened violence. At ten years of age on account of her craftiness and lying she was called the "hardened little sinner" by her brothers. She considered the appellation one of honor rather than opprobrium. Although intensely impatient she never had a tantrum as a child. When jealous of her brothers and sisters she sought small ways of getting even by lying and stealing to their disadvantage. At puberty she began reading socialistic literature and espoused in a glib manner her extreme views with ideas of retaliatory revenge and torture which she would employ upon those who were in authority. All gifts of extra clothing and adornment were exchanged for money when possible. The latter she spent lavishly. She would only play games when there was a money chance. She was an adept at poker at the uncanny age of ten or eleven. Her taste in dress changed at puberty to oriental styles and colors with a lowered demand for neatness. At fourteen she was so well posted on the life of criminals and the underworld that she was nicknamed the "Police Gazette," and her sympathy was always with the criminals and their methods of beating the law. She made no attempts to "show off" as she quietly considered her innate superiority to be fully recognized. Soon after puberty she undertook writing upon psychologic subjects, a few of which were accepted for publication. At about this period (15 to 17) she appeared desperately bored with the commonplaceness of family life and began secret visits to the underworld. Apparently in these wanderings she was considered by her companions as "a peculiar kind of bug" but not without a certain genius for good comradeship. The more important events in social and political affairs of the world never concerned her. She finally fell prey to some designing persons (mostly men) who led her into all sorts of confidence schemes and thefts. Some of these, combined with sexual delinquencies, furnished intolerable episodes and caused the parents to ask for a mental examination. It revealed no special intellectual defect but marked moral obtuseness and an entirely disinterested attitude toward any better social readjustment. She said in a bored manner, "You see, I am tired to death of my family and all their class. I am a socialist and find those belonging to this group are the only really sincere people. I have long since determined to go my own way. I want to live entirely outside the class I was born in." When taxed with the thefts and social dilapidations she answered, "Oh, as to those, I was thoughtless and shall do nothing like that again. I fully intend to make my own living from now on supplemented by the small allowance from the family. Perhaps I shall write some special articles. I have lots of ideas." She seemed to have no insight as to her dilemma, and soon became suspicious and uncommuni-

cative. As her parents would not have her placed in a reformatory or have her declared a mental incompetent and delinquent, further study was impossible.

This fragmentary history is specifically given in order to illustrate the very early formation of a perverted character and faulty adjustment. Undoubtedly from six to nine years was the period of her keenest conflicts and an attempt to readjust at that time might have been undertaken with some hope of success. In this brief record one is able almost diagrammatically to forecast the next step in the evolution of such a character. Here the delinquent and antisocial aspects of the personality are overcast and shot through with a sadistic lust for cruelty and conquest. Perhaps one may say that an admixture of such an instinct really determined the specific delinquency in this girl and finally brought about her social downfall.

In many inferiors as adolescence is passed and the conduct disorders persist it has been found necessary to remove all sorts of inhibitions and prohibitions of the home environment. Many temptations of the latter have been obviated and the subject has often done surprisingly well when sent to a sanatoria school. Unfortunately such places are all too few in this country. In these sanatoria schools definite routine and principles of occupations have been put in use. It must be borne in mind, however, that the inferiors who have but a superficial insight into the nature of their disorder do poorly in this special school environment unless a certain amount of compulsion be employed. The proper tempering of this discipline is a fine adjustment of tact as yet poorly attained by the average pedagogue in charge. When one recognizes that everything depends upon the degree of insight the inferior gains into his own faults of character the kind of teaching assumes an entirely different aspect from that ordinarily, practised even in the loose association of a boys' outing school, although the latter combined with Boy Scout training more nearly approximates the method of teaching than any other. Personal talks in which the preaching attitude is eliminated is the better system to follow. The most obvious fault in the majority of inferiors is their unwillingness or inability to subscribe to and practise the usual social customs or be governed by the rules of everyday life. This being the case the subjects may be required to work together, not only to promote sociability, but a spirit of close comradeship is best promoted by such a life. Ambition is not a little stimulated by judicious practice or small rewards; but both are more frequently overdone than otherwise. Tact, friendliness, and perseverance are the main leads in the process of education. A continual influence which strongly emphasizes the mutual cooperation of the group in the same pleasures, instruction, and athletics will aid in getting the best results. The main advantage sought in such a plan is to establish a sort of free social environment to which the inferior mechanisms of the individual can adjust and get something out of.

The mistake often made with the constitutional inferior is the lack of personal enthusiasm and color in the work laid out. He should not be shielded from actual work, for considerable mental and physical restlessness is engendered if his occupation does not lead to a specific goal. As a rule all those interests that promote restlessness, day-dreaming and aimless activity are bad for the constitutional inferior. The study of music, painting, and literature are better as avocations than vocations. Almost invariably they present themselves as candidates for the stage, writers of fiction, painters, and inventors. If these desires are constant they may be treated as bona fide objectives for the time. An education in the best sense may be built around a thorough study of any one of these subjects if the constitutional inferior is properly grounded. A study of English and the classics leads to the stage; precise musical practice, the drawing of antiques, and the study of mechanics may be made to lead to their respective goals of a career in music, in painting, and invention. Concentration of attention, perseverance, and knowledge of the fundamentals are as basic to the accomplished artist as any other walks of life. Insight is not a little promoted by actual demonstrations as well as by abstract talks. Time is not really lost by any method of fair and careful test which may steadily teach the inferior his place in the world and the methods by which other more gifted persons have attained their ambitions. Unstable occupations such as salesmanship, abstract studies in philosophic and metaphysical speculations, etc., are not to be encouraged, as they fail of precise and circumscribed mental training. The sensitive and quarrelsome are often subject to revery and brooding. A concrete education along industrial lines is here of greatest value. The shiftless and spineless may be encouraged by systematic duties about the home and school, thus assuming a sense of duty and responsibility. Physical and semimilitary training, if not of too taxing a character, not only increases physical endurance but helps to fortify the will and build up habits. Comradeship with the strong always helps. Many a Steerforth of the right sort, as shown in Dickens' portrayal of this character in David Copperfield, is a real savior in the boy-world, and likewise the headmaster in the girls' school may add the materials necessary to knit together a stability in an otherwise loose clay of character.

It is quite obvious that the abnormal trends in development if not inherited begin to show themselves in the early nursery period of the home training or as soon as the child has passed into the care of the school with its broader associations and impartial discipline. Therefore, training treatment should be instituted at that time. It is obvious from the studies of such cases and from my own experience that the adaptation to social discipline comes about at an earlier period than in ordinary adolescents. It would at least seem so. It might therefore be said that the social deviation in these cases is really precocious and hence would call for extra early attention. If the evil portent of these abnormal behaviors are not on their surface detectable, or the parents are incapable of appreciating which trends in development are benign and which malignant, a campaign of general education in child-development should be given to the parents. Mental

clinics in connection with the schools should be established wherein each student might be considered as a probationary pupil. It would then be possible to detect these more malignant attitudes of conduct which later might become a serious impediment to the individual's social development. No doubt early detection and correction at the time the mental conflicts are first shown are the main leads toward proper prevention. The next step: if by precautionary and proper disciplinary measures these conduct disorders cannot be corrected, one must consider either the formation of special schools in the public school system to care for these socially unstable, or one must consider sanatoria schools which shall supply the process of teaching social adaptations while the more strictly intellectual training is being undertaken. As has been suggested, it might be possible to establish a series of ethical community groups which might be considered in the nature of schools in the larger sense where unstable individuals showing the most response to educational training could be sent until they approximated the unrestricted freedom of activities as in normal living. Those incapable of making the normal grade of social adaptation might be sent to communities with greater restrictions and less freedom, while those incapable of even this adjustment should be permanently restricted to the type of community life to which they can adjust. I believe that this latter idea is something of the purpose which the administration of the George Junior Republic have had in mind. It would not be amiss if teachers handling such classes should gain a more definite understanding of social and behavioristic psychology and have a general training in the ethics of conduct independent of a religious training in a strict sense. Undoubtedly the two factors that the more adult cases would require as a stabilizing influence are by way of religion and love. To just what extent religious institutions could be made of this larger service for this type of social misfit is still in the domain of conjecture and possible experiment. The enormous importance of a proper love-motive is undoubtedly the greatest factor to be studied and employed. Marriage, however, and the possible transmission of inferior tendencies are matters which need serious consideration. Inasmuch as anything short of complete segregation would not bar this contingency, it might be a good plan for us to consider whether marriage might not be permitted in certain instances under proper control and advisement.

It is a very nice question to decide how much this special character defect is inherited and how much really due to environment. To those possibly inclined to avoid the practical issues of more intensive training the attitude that it is an *inherited* defect probably would appeal most; to those who maintain that improper training really plays *the* important rôle it is possible to take a less pessimistic view so far as prophylaxis is concerned. Whichever viewpoint is taken, however, as good mental hygienists we cannot escape the issue of doing what we can with such modifiable factors with which we have to deal. A campaign to educate the lay public, educational authorities, and especially those interested in children's courts, needs to be seriously considered as a great help to solving our problem. Everyone having to deal with the courts, and especially those courts controlling person and estate, knows how difficult it is to explain to judge and jury the nature of these social defects. They customarily hold a very wide latitude of social prerogatives for most persons in everyday life. Unless the social delinquencies are very glaring they are unwilling to take precise action to materially help in our problem.

What attitude should society in general take toward the socially unstable as outlined in the case studies of this paper? Obviously it should first be individualistic. Case I needs to be supervised to such an extent that an unsuspecting public may be safeguarded from depredation of property interest (stealing, etc.); secondly, many such may lead immoral lives if the means of the parents fail and they are forced to make their way in the world. To a certain degree the same may be said of Case II. The latter is younger and may be induced by proper training to observe more or less strictly the conventional customs of society. But as to Case III, in whom definite and fixed mental attitude toward society seems to have been already taken, society there demands specific protection by segregation. Undoubtedly here the aggressive and malignant instincts were almost predetermined from the outset. A few traces of possibilities of reclamation were manifest at six to eight years of age, but these may have been too slight for conserving a character so inherently defective at birth.

From the parents' standpoint all these cases have been and must continue to be the source of keenest social anxiety. Nothing less than segregation or safe policing would bring any comfort to anxious parents. From the socially unstable's standpoint a flexible training system, moral and ethical, would meet the situation with comfort and possible happiness. Can all these three demands, of society, the parents, and the unstables themselves, be met outside an institution? It may be tried, and often is. Success in such extramural training is perhaps too little reported and hence the specialist has grown to take too gloomy a view of the chance of such a procedure. I am inclined to think so; just as the psychologist and psychiatric are apt to think their particular mental tests are acid-proof of the inability of the feebleminded and morons to live in the outside world. Often such an opinion is foiled by the fact that they do, and do so nearly as well as many so-called normals. The life reaction tests are so very much more safe and vital to a final prognosis than any laboratory guide. Nevertheless the small percentage of the sum total of morons and socially unstable who may more or less precariously live in the average community life does not affect the issue for the socially unstable as a class, who after a trial of extramural corrections are only too often found incapable of safe or satisfactory social adjustment. It is just at this point that the whole problem is uncovered. Mental hospitals, private sanatoria and schools

cannot or will not take these unstables as patients or pupils. Most often the lack of certification and their nonconsent to voluntary deprivation of liberty renders their proper training and discipline impossible. In the ordinary sense they are not ill as are præcox and manic depressants; they require an entirely different system of care. Their needs are more nearly allied to those of the feeble-minded, but here again the intellectual and habit training is quite different. Their greatest need is character-building, and that, too, along the lines laid down in the main body of this paper. Practically no such institutions exist that provide the proper community environment and ethical training combined with the amount of restriction suited to the individual need. It is one of the greatest demands of our time, and such an institution must, necessarily, possess many facilities costly to maintain. While trained psychiatrists should be at the head of such an institution, it must embrace teachers and trainers in all lines of human activities and interests. Its morals should be high and worthy of the fullest acceptance and cooperation of the public and the interested relatives. To be really effective it should be under a large endowment and supervised by the State or some properly constituted authority. Until such an institution is established the great problem of care, training, and protection of the socially unstable will not be adequately met.

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THE DIET AND HEALTH;*

AMOUNT AND KIND OF FOOD REQUIRED.

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IN a previous paper, attention has been directed to the value and importance of a more widespread diffusion of reliable information relating to the fundamental principles underlying nutrition—the most obvious reason being the enormous quantities of food and drink annually consumed by adults, about 2,500 pounds, or eighteen times the weight of a man weighing 140 pounds. It was pointed out also, that the nutritive value of the various food materials, with the exception of vitamines, could be determined with mathematical precision, notwithstanding the fact that digestion and assimilation are rather occult problems for the uninitiated.

Special attention was directed to certain essential factors to be considered in regulating the dietary, such as age, occupation, climate, and season of the year—also the value of milk in rounding out the diet at all ages. Failure of the Army Ration system to supply a "balanced ration" was commented upon, particularly in the failure to furnish an adequate supply of sweets, such as sugar and molasses. Thus, the garrison ration provided a pound and a quarter of meat daily and less than a quarter of a pound of sugar and syrup—to be exact, 3.52 ounces—but through "trades" with the quartermaster, the amount consumed was 4.11 ounces.

With a view to present the latest reliable data relative to the "accessory food" factors, known as vitamines, in a careful summary, McCollum's experimental investigations were analyzed in order to bring out the actual facts as to the deficiencies in the various grains (seeds), as well as the predominating influence upon nutrition exercised by foods derived from the leaf. For example, McCollum asserts that milk and certain other animal foods containing the fat-soluble vitamine, together with the vegetable foods containing the water-soluble vitamine, especially the leaf, should be classed as "protective foods."

While the records are intensely interesting and informative, there is a notable hiatus or lacuna in the series, indicated by the following quotation: "Another series of rats had a more liberal diet, at least in respect to variety, namely, corn, millet seed, oats, wheat, and hemp seed, equal parts of each, but gained in weight in the course of three and a half months less than one-eighth of an ounce. On the addition of mineral salts normal growth set in at once—and it should be added that 40 per cent. of the salts were calcium, or lime."

This result led the writer to remark, "And the most instructive feature, aside from the function of the fat-soluble and water-soluble accessory factors, now called vitamines, is the "stimulating" effect of the mineral salts upon growth and reproduction."

Since this article was finished, a new and altogether unexpected complication has appeared—like the aurora borealis—upon the medical horizon; it is nothing less than the proposal of an artificially prepared stable vitamine product, together with a demonstration of its value in nutrition. The communication (*American Journal of the Medical Sciences*, Feb., 1920, p. 264), by Drs. H. E. Dubin and M. J. Lewi, gives the plan of experiment, history of the patients treated, and an interesting discussion of the results, together with a summary. Elaborate tabulations are included, also graphic charts, to illustrate growth following administration of this "stable" vitamine product. Of the 13 cases reported, only 3 were over one year, the exceptions being 19, 14, and 18.3 months, and usually, one gram of the vitamine preparation was fed daily. No less than 42 references are appended, which would indicate unflagging industry, but no one with a fairly normal conception of the catalytic properties of calcium would be misled to believe that the new compound, or combination, would produce results in a degree superior to the single elementary substance. Still, it provides a very good substitute, notwithstanding its manifest superserviceability.

Here is the formula: "Analysis shows the chief components to be calcium, expressed as calcium oxide, 10 per cent.; phosphorus, 15 per cent.; nitrogen, 3.5 per cent.; fat, 2.5 per cent.; iron, 0.3 per cent.; silicates, 5.6 per cent.; moisture, 10 per cent. The remainder goes to make up the rest of the phytin molecule—the main constituent of the product—which is a double calcium and magnesium compound of inosite phosphoric acid."

The dosage of one gram daily for a child under one year supplies 1.5 grains of calcium, so there is no danger from calcium starvation, and other dietary factors being equal, there should be no retardation in growth. In fact, the writer has frequently

*Second Paper. See MEDICAL RECORD, June 5, 1920, p. 947.

witnessed most remarkable evidences of improvement in children from the administration of one-half grain of calcium three times a day, in the form of a normal trituration, equal parts of the crude drug and sugar of milk. My impression is that, when given in this form, we secure the catalytic effects in a marked degree, and incidentally its reconstructive value is worthy of mention.

The modern science of nutrition aims to establish basic principles in order that they may find practical application in the treatment of disease, since the most valuable classification of disease is that based upon food disturbances. The evidence so far presented is conclusive, but unfortunately the experiments were mostly confined to animals, dogs, guinea pigs, rats, poultry, and pigeons, and it will be claimed that these investigations do not apply to humans; but this objection is not well taken because of the overwhelming testimony of all progressive physicians that many of the well known and common diseases are traceable directly to some deficiency or fault in the dietary. Among the most prominent may be mentioned pellagra, scurvy, beriberi (polyneuritis), rheumatism, and rickets. There should also be included in this category, nervous disorders, heart and kidney diseases, and skin affections, because they all hark back to derangements of the digestion resulting from an inadequate supply of rebuilding or reconstructive material, together with the recently discovered accessory food factors known as vitamines. So-called "general debility," which includes a vast multitude of valetudinarians, is merely a euphonious term to cover chronic starvation.

The following abstract of a paper contributed to the London *Lancet* (Dec. 7, 1918) by Dr. M. Mellanby, entitled, "Influence of Diet on Teeth Formation," is worthy of special attention, since it duplicates a defect which is almost universal in this country—and it also throws a strong sidelight upon the function of calcium as a reconstructive.

The investigation was taken up with two objects in view:

(1) The factors involved in the development of sound teeth, and of the growth of the jaws in relation to the size of the teeth; and (2) The factors bearing on the immunity of erupted teeth to caries and other diseases.

The author discovered that failure in growth of the teeth is caused largely by a deficient diet, and that the factor in the diet which controls the calcification of the teeth is something in the nature of an accessory food factor (vitamine). A diet containing an abundance of those articles with which the fat-soluble vitamine is associated, such as cod-liver oil, butter, etc., allows the development in puppies of sound teeth. A diet otherwise adequate, but deficient in the substances with which the fat-soluble vitamine is associated, brings about the following defects:

(*a*) Delayed loss of deciduous teeth; (*b*) Delayed eruption of the permanent dentition—in some cases the delay in the eruption of the permanent teeth is more marked than the delay in the loss of the deciduous teeth; (*c*) Irregularity in position and overlapping, especially of the incisors; (*d*) Partial absence of, or very defective enamel; (*e*) Low calcium content. The deficiency in calcium salts may result in the teeth being so soft that they can be cut with a scalpel.

With this evidence in view, those argumentative partisans who claim that early tooth decay is due to sloppy food and lack of sanitary and hygienic measures will have to furnish up their armamentarium, or take a rear seat in the procession.

It should be mentioned here that this experiment rather upsets the theory so strongly urged by McCollum that the absence of fat-soluble vitamine from the dietary leads to inflammation of the eyes and blindness (xerophthalmia), and at the same time creates an incentive to learn something more definite regarding the real function of the calcium salts in promoting normal growth. Let us recall the properties of calcium—antacid, catalytic, and reconstructive. Is it not possible that it may be employed medicinally as a chemical food? And this supposition is warranted, being frequently verified in the practice of every physician in treating the disorders of infancy and adolescence. It has already been noted in several experiments in which the addition of mineral salts to the dietary lacking the fat-soluble vitamine showed immediate response and rapid growth followed.

The employment of calcium or lime salts in the treatment of disease is rather antiquated and regarded as empirical, but it is none the less efficient—and is destined to arrive in time. In the case of inventions as well as discoveries, there comes a time when the promoter or reformer is "up against it," but time works wondrous changes. Hindsight is so clear and comprehensive that solution of the occult problem appears as merely a natural sequence. The following quotation from an elaborate paper on "Fat Soluble Vitamines" (*Journal A.M.A.*, Jan. 24, 1920), by Drs. Hess and Unger, furnishes an apt illustration of this suggestion. In this instance, the failure was due to a slight oversight—non-recognition of the fact that calcium is an essential food material, and also the possibility that although present in the milk and other food it may not be available, owing to some chemical or physiological deviation from normal. In such cases modern science demands its medicinal employment. Here follows the extract:

"In order to provide an adequate amount of this important dietetic factor, we placed a number of infants, during the first months of their lives, on large amounts of milk, in some instances giving cream in addition. By this means, if fat-soluble vitamine is the controlling influence, the development of rickets should have been prevented. In some cases, with this dietary, which it will be remembered included also orange juice, a very mild degree of rickets was observed, but in others marked signs developed."

While animal experiment cannot be reproduced in man, nor reliable data secured even from many individual tests and complete records, owing to varying ages, dietary habits, season of the year, and occupation, it has been possible to secure definite information regarding *results attending prolonged reduction of the diet.* This study, which was taken up by Dr. Francis G. Benedict, of the Carnegie Nutrition Laboratory, Boston, Mass., shortly after the United States entered the late war, presents an array of facts which are both suggestive and illum-

inating—and besides, they are accurate and dependable. The complete report of this experimental work has been published in book form and embraces over 700 pages, so we can only present here the conditions imposed, together with a brief summary of the most vital conclusions—in respect to a reduced diet. It is stated, "The effects on the various functions were striking."

"For subjects we selected 12 young men from a considerable number of volunteers from the student body. . . . The average age of the men was 23 years. For a period of four months these men were kept upon a much restricted diet, with an energy content approximately one-half or two-thirds their caloric requirements prior to the test. During the first few weeks there was a distinct drop in the body weight. When the body weight had fallen on the average 12 per cent. the calories in the diet were increased so as to prevent further loss in weight. The measurement of the caloric consumption at this sustained weight level would indicate the true caloric required for maintenance. For control, 12 men from the same student body, living under exactly the same conditions, save for the dietetic restrictions, were likewise studied and their food intake occasionally measured for periods of four or five days." Here follow the conclusions:

"1. The reduction in weight was effected by reducing the caloric value of the food from 3,200 to 3,600 calories, a moderate amount of protein being allowed. One squad of men subsisted for three weeks on 1400 net calories without special disturbance.

"2. After the loss in weight of 12 per cent. had been reached, the net calories required to maintain this weight averaged about 1950, or but a little more than one-half of the original amount required —supplied.

"3. At the end of the reduction in weight the actual heat output during sleep was about one-fourth less than normal. There was no seasonal variation in metabolism (nutritive changes), as compared with the metabolism of the control squad.

"4. The heat output was essentially 18 per cent. lower than at the beginning of the study.

"5. Analyses of food, feces and urine showed a marked loss of nitrogen during the reduction period and for some time afterward, a loss which 'we believe distinctly lowers the stimulus to cellular activity.'

"6. The nitrogen output per day was about 10.5 grams, while that of the control squad showed a nitrogen output of 14 grams per day.

"7. The pulse-rate was astonishingly lowered. Many of the men showed morning pulse-rates as low as 33, and daily counts of 32, 31 and 30 were obtained; at least one subject gave six definite counts on one morning of 29.

"8. The blood pressure was distincly lowered. The skin temperature, as measured on the surface of the hands and forehead, was, in some subjects, considerably lower than normal, although in most cases normal temperature prevailed, and the rectal temperature was practically normal.

"The general picture that the men presented at the end of the test, or at their minimum weight, was one of noticeable emaciation, particularly in the face, but all the men continued the usual college activities with no obvious reduction in stamina. . . . The most notable discomfort experienced by the subjects was a feeling of cold. . . . The whole period of lowered food intake had no untoward effect upon the physical or mental activities of these men, and they were able to continue successfully their college duties."

Referring to Dr. Benedict's investigations and the results, and comparing them with similar observations by the German physiologists, Zuntz and Loewy, extending over a period of several years, an editorial writer (*Journal A. M. A.*, Feb. 22, 1919) makes the following pertinent remarks to show that "the laws of the conservation of energy are immutable":

"Although it is evidently possible to keep alive through reduction of weight to a figure at which smaller maintenance rations suffice, the experience of Zuntz and Loewy during periods of work carries a sinister warning. They found that the expenditure of energy in an active effort at marching was decidedly larger than had been observed in earlier days when they were more adequately nourished. The increased consumption of oxygen, both during the period of exercise and in the stage of recuperation immediately following, was sufficiently striking to indicate the unfavorable effect of under-nutrition on muscular performance. The consequence deserves to be prominently noted, because many of the studies on restricted feeding have been concerned with the problem of maintenance alone without due regard to the economy and ease of work under the conditions investigated. The factor of safety may withstand the depreciating effect of a few days, or even weeks; but months of enforced economy are likely to bring it nearer to the vanishing point, where even moderate effort begins to involve a severe sacrifice."

This ex-cathedra decision is countered by the evidence, or information, elicited from the Laboratory for Nutrition Research, Copenhagen, Denmark. Dr. M. Hindhede, referring to the war blockade, says (*Journal A. M. A.*, Feb. 7, 1920: "Reliance was placed on our potatoes and large barley crop, which was given to man and not to the pigs, as heretofore, with the result that the pigs died of starvation, but the people received sufficient nutrition. . . . Our principal foods were bran bread, barley porridge, potatoes, greens, milk, and some butter. . . . It is evident, therefore, that most of the population was living on a milk and vegetable diet."

As a result of the food restrictions during one year of "severe regulation," the death rate, as compared with the preceding ten years, was reduced over one-third—34 per cent. In view of the fact that the Government took the cereals and potatoes from the distillers so that they could not make brandy, and one-half of the cereals from the brewers so that the beer output was reduced one-half, the author asks this question: "Is it possible that this reduction in the output of alcoholic beverages is wholly responsible for the lower death rate?" This question, he says, cannot be answered, but he is willing to admit that it is a great contributing factor, although not the only one, because the death rate among women had decreased 17 per cent. during the four preceding years, and it is unlikely that

alcoholic abstention was a factor in producing this marked reduction.

In conclusion it may be said that even a casual examination of the foregoing observations supplies a convincing proof of the fundamental importance of the dietary, and at the same time develops the common or usual signs and symptoms incident to impairment in nutrition—all the talk about fresh air, sanitation, and environment to the contrary notwithstanding. Certain disorders have been traced directly to this cause, and it is but a question of time when others must fall into the same category—it is not likely that we shall much longer be able to cover chronic starvation by the euphonious term, "general debility."

Special attention is directed to the effect upon tooth formation, owing to the lack of fat-soluble vitamine as well as the lack of lime salts in the dietary, and the probabilities are strong that both are essential. This is well shown in the case of rickets, reported by Drs. Hess and Unger, where an ample supply of the fat-soluble vitamine failed to prevent the development of rickets, even with the addition of orange juice.

Prolonged reduction of the diet (in men), as demonstrated by the indefatigable labors of Benedict and his associates, *seems* to cap the climax in the "striking effects" resulting from under-nutrition, but we must correlate these results with the elaborate experimental investigations of Osborne and Mendel relative to the nutritive properties of certain amino-acids. Such studies will shed a flood of light upon the cause and the conditions leading to illness, and especially to the instances where the attacks are sudden and wholly unexpected—with a fatal termination. Thus, young animals subsisting upon certain pure proteins will make no perceptible gain in weight for weeks at a time; upon the addition of lysin, the amino-acid widely distributed in both animal and plant life, they take on growth at once, coming to a standstill again when lysin is discontinued.

The report of Hindhede, of Copenhagen, showing how the Danish people, during the war, saved their own lives and reduced the death rate over one-third, by eating the barley and potatoes themselves and letting the pigs die of starvation, is suggestive. The fact that the Government commandeered a large part of the cereals and potatoes, lessening the manufacture and sale of whiskey and beer, may have had something to do with the reduction in the mortuary statistics, but that is a question to be settled by the statisticians.

1024 WALNUT STREET.

HEADACHE FROM THE STANDPOINT OF THE OPHTHALMOLOGIST AND OTO-LARYNGOLOGIST.*

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IN bringing the above subject, which has been discussed so extensively, to the attention of this large and experienced audience, it is not so much the desire of the writer to present his own observations as to elicit a full discussion by the members of all branches of the profession who have to treat this most frequent, most trying, and often times most confusing of all symptoms.

While medical science, in its rapid and magical strides, has in the past decade found cures for many deadly maladies, we find with us yet a "symptom" of a disease which often causes the patient more actual discomfort, pain and suffering, and the physician greater anxiety while trying to relieve it, than a real disease. This is headache.

From the subject of my paper you would judge that I am to discuss this subject only from the standpoint of my specialty, and in order to do this intelligently, it will necessarily require an enumeration of all conditions known to the human mind which are capable of producing this symptom, and then, by a careful and painstaking process of elimination, in most instances you will find the seat of your patient's trouble.

In this process of elimination, you necessarily have to summon to your aid the counsel of your colleagues, namely the internist, the X-ray specialist, the laboratory expert, the neurologist, etc., for not infrequently the underlying cause of this symptom is found in organs remote from the head. He who would render the greatest service to the half indifferent sufferer with an occasional headache, or to the despondent victim who has made the rounds of the various specialists in a vain search for relief from a torturing, persistent headache, must seek to trace the symptom from the seat of pain through intricate labyrinths of possible causes to the ultimate real cause. In all the category of symptoms no other, perhaps, owes its origin to such a wide field of different, varied, diversified causes; therefore, he who would successfully locate the cause of headaches should take a broad, comprehensive view of the entire field, for in this day of specialization we are prone to look through a lens, thus magnifying the defect that lies in our own territory.

As an example we might have a case of choked disc and an involvement of the accessory sinuses. Should we be satisfied with our examination of the patient? No! Our examination should embrace the entire field which would necessarily include a Wassermann blood test. The writer recently had a case of double choked disc, also an involvement of accessory sinuses. Did the examination stop? A Wassermann was taken and it proved to be 4 plus. Under anti-syphilitic treatment the patient's condition showed marked improvement.

Classification.—A classification of headaches is difficult because the theories as to the cause of this symptom are so much at variance. It has been my pleasure during the past few weeks to review the literature on the subject of headaches. During the past ten years approximately 200 articles have been published on this subject. It is quite interesting to note that every writer has theories as to the cause of headache and advances numerous arguments to sustain his hypothesis. From a clinical standpoint headaches may be divided into 1, the persistent headache; 2, the periodically recurring headache; 3, the occasional headache. From an etiological standpoint headaches may be classified

*Read by title at the annual meeting of the Tri-State Medical Society, in Charlotte, N. C., February 18, 1920.

as follows: 1, toxemic; 2, neuropathic; 3, reflex; 4, circulatory. Under *toxemic* we place 1, retained products resulting from defective metabolism; 2, infectious microorganisms or their toxines; 3, various drugs; 4, Graves' disease. Under *neuropathic*, 1, neuresthenia; 2, hysteria; 3, epilepsy. Under *reflex*, 1, ocular; 2 basopharyngeal; 3, auditory; 4, dental (impacted teeth); 5, gastric; 6, pelvic. Under *circulatory*, 1, hyperemia; 2 anemia.

Method of procedure in examining the patient who comes with headache as the chief complaint.— First and always take a careful and complete history of the case. In searching for the cause of a headache the diagnostician should view from an eminence not only the many fields in a patient's own domain, but also his environments, and even looking beyond these into the realms of his ancestors. Having obtained a careful history, we proceed with our examination. The nose is carefully examined as to the appearance of the membranes, evidence of secretions of any character, points of contact or pressure, deviations of the septum, etc. Intranasal pressure as a causative factor in producing headaches is well known even to the most superficial observer. In case pathological changes are found within the nose the examination is continued until every remaining possible cause has been carefully considered and eliminated as far as possible. The nasopharynx, the oropharynx and the laryngopharynx are given the same careful examination. The sinuses are transilluminated, and if doubt exist in regard to the condition of any one sinus the *x*-ray specialist is consulted. The eyes are examined externally, intraocularly, as to refractive error and muscle balance.

The question now arises as to the differentiation between ocular and accessory sinus and intranasal headache. This is sometimes difficult as each one may have a part in producing the symptom. One patient will complain of inability to use his eyes for reading, say for the past two weeks, without severe headache; another states that he has an intense headache in the morning on awakening, cannot bear the light, the ache wears off by noon; a third has neuralgia over one eye. Are these headaches of ocular, sinus or what origin?

It is usual for the practitioner first to consider an ache in the head as dependent upon a disordered condition of some other part and then, failing of cure, to have the head examined by a specialist. Had the patient been examined from every angle at first how much suffering would have been spared.

In a short paper, such as this must be, it will of course be impossible to take up even briefly the various forms of eye strain. Volumes have been written upon the surprising and far-reaching effects upon the whole body, and especially upon the nervous system, of ocular reflex neuroses. This much is certain; no examination is complete without a careful estimate of the refraction and muscle balance.

Differential diagnosis cannot always be made by following any given table or set of symptoms, as every case is a law unto itself. The history of the case, the time of appearance of headache, the duration, and the findings on examination of nose and accessory sinuses, will usually reveal the offending organ.

Having examined carefully the eyes, ears, nose, and throat, we proceed further regardless of the presence or absence of pathology, by recording the blood pressure, having a complete analysis of the urine, and in every instance of an obscure headache a blood Wassermann. In case all of our tests have proven to be negative our patient is then sent to the internist. We collect the reports of the *x*-ray and laboratory expert and internist, and with our findings we study the facts carefully and then proceed to correct any existing disorder, starting with the most formidable one first.

While discussing the method of procedure in carrying out an examination, we feel that a word should be said in regard to the prescribing of glasses for the relief of headache without making a further effort to find the cause of the trouble. We do not think that an ophthalmologist is ever justified in prescribing glasses for relief of headache without first having obtained the otolaryngologist's report and a complete uranalysis, and in every instance in an adult a blood pressure reading, and, even better still, a blood Wassermann report. We base the above statement upon the firm belief that a man is no more proficient as an ophthalmologist or otolaryngologist than as in internist.

The importance of having a blood Wassermann made before prescribing glasses is clearly set forth by the following case which came under the observation of my former associate. A boy, age fourteen, was sent in by the school nurse on account of defective vision. At that time the left eye showed a slight conjunctival injection. The boy was refracted under a mydriatic and glasses were given. About three weeks later he came in with a marked inflammation of the left eye and a beginning keratitis. A Wassermann was then taken, which proved to be 4 plus. In spite of active antisyphilitic treatment the boy, after five months, still has his keratitis. It is easy to say what would have happened if we had done this or that at first, but it is evident to all that this boy would have been saved the expense of buying glasses and possibly would have been spared the unfortunate eye condition which he now has, had he been given antisyphilitic treatment three weeks sooner.

My work is confined strictly to otolaryngology, consequently I can judge the results obtained by the correction of errors of vision for the relief of headache only by the work of those practising ophthalmology, and it has been very unsatisfactory in many instances. In this connection it has been interesting to note the results of an examination of one hundred patients in an asylum for the blind which showed thirty-four who were sufferers from headache. These patients were blind from birth. It would be still more interesting, if it were possible to know how many of these sufferers would be wearing glasses, or rather, would have been given glasses to wear, had they been fortunate enough to have been born with good eyes.

We do not wish for any one to assume that errors of refraction do not produce headache, but our aim is to impress upon the eye man the importance of always making a thorough examination of all possible causes so as to support what he has done by correcting the visual error.

Before leaving the subject of examination of the patient we feel that something should be said of a disharmony of the glands of internal secretions as an etiological factor in the production of headache. The gland which has of late been known to cause headache is the pituitary. Thirty years ago the pituitary was considered a rudimentary organ, a vestige, a non-functioning cerebral appendix. In 1889 Marie associated an enlarged hypophysis with acromegaly. Howell, in 1898, extracted an active secretion from the posterior part of the gland. Harvey Cushing, in 1910, produced his epochal study on the pituitary, which gave us the modern conception of the physiology and clinical manifestation, and it was he who first coined the term dyspituitarism to cover those conditions due to a perverted hypophyseal secretion.

Pardee, of the New York Neurological Institute, in the *Archives of Internal Medicine*, February, 1919, has a very interesting and illuminating article on pituitary headaches and their cure. He reports seven cases of headaches of pituitary origin which were relieved by the administration of whole gland pituitary extract. His conclusions are as follows: "1. Pituitary disturbances constitute a fairly common cause of headache; 2. Pituitary headache is located between the temples, deep in behind the eyes and is accompanied by dyspituitary signs; 3. Abnormality of the sella turcia is demonstrable in almost every case of pituitary disease; 4. Administration of the whole gland cures these headaches and the accompanying symptoms in a large percentage of cases, provided there is not a progressive neoplastic growth."

So much has been written and so much has been said about headaches resulting from eye strain, ear, nose and throat disorders, gastrointestinal disorders, cardiovascular and cardiorenal disorders that mere narration of additional cases will be of no avail. We wish to report two cases of unusual interest:

CASE I.—Patient, W. B. H., male, age forty-one, came under observation January 13, 1920, with the following history: Patient has suffered with headaches at times since childhood. For past seven months head has ached almost constantly. Dull pain in the temporo-occipital region. General health good. Married. Three children living; wife had no miscarriages. Special examination: Slight deflection of septum to the left, mucous membranes normal in appearance. No evidence of pus. Sinuses O. K. Tonsils removed clearly two years ago. Ears O. K.. Eyes, V. O. U. 20/20; O. D., 20/20; O. S., 20/20. Has two pairs of glasses, sees better without the glasses. Blood pressure, S. 120, D. 80. Urine negative. Wassermann negative.

In view of our negative findings and the fact that the patient had been through the hands of a number of competent internists with negative findings and with the history of headache since childhood, with some of the symptoms of dyspituitarism, we felt that the headaches were of pituitary origin. So, acting upon that theory we sent the patient to the *x*-ray specialist for a roentgenogram of the sella turcica. The following is the report: "Stereoscopic *x*-ray of patient W. B. H. shows marked enlargement of anterior and posterior clinoid processes, the distance between the tips of the anterior and posterior processes being not more than one-eighth of an inch, the normal being not less than one-fourth of an inch. The effect of the evident approximations of the tips of the processes and enlargement is a constriction or pressure on the pituitary gland itself. There is as yet no erosion of the process."

The patient was placed on pituitary extract, Whole Gland, grains one and one-half three times a day. After the end of one week the patient felt some better. The dose was increased to three grains three times a day and in a few days following, the patient contracted influenza and has not been seen since. The slight improvement obtained after the first week's treatment makes us feel that we are on the right track.

CASE II.—Patient, W. M., male, age forty, was seen in consultation with Dr. G. M. Maxwell, January 17, 1920. Patient's family doctor gave the following history: Patient married, seven children living and well. Has had headache at times for past five or six years. During the past three months has been nervous and has had a left frontal headache almost constantly. On January 15 patient walked five miles to see his family physician. His physician told him he would have to be sent to a specialist in Roanoke. Before the patient could arrange to leave he suddenly became unconscious and his heart became irregular and very slow. In a few hours the patient's condition became more favorable and the following day he was brought by train to Roanoke. The examination revealed the following: Eye grounds, nose, throat and ears negative; sinuses O. K.; urinalysis negative; blood pressure normal. Mentally the patient was suffering from word aphasia. For instance, when shown a knife he could not name it but would say you cut with it. Blood Wassermann 1 plus; spinal fluid Wassermann 4 plus. The chief point of interest in this case: A man forty years of age, farmer who does manual labor every day, has seven healthy children, wife never had a miscarriage. It served the importance of making every possible examination in order to locate the cause of an obscure headache, regardless of the past history.

In conclusion, we feel the necessity of impressing upon the minds of the men in all branches of the profession the importance of considering the symptom headache as nature's call for help, which should be heeded while the disease is amenable to treatment. At times we are confronted with a headache which is the only symptom, or at least the only conspicuous symptom, of some grave disease, which, if this danger signal be ignored, may seal the patient's doom before the other symptoms attract attention. Headache may be only apparent manifestation of a brain tumor, meningitis, typhoid fever, small-pox, acute nephritis, etc. The physician should always be on his guard.

Even if headache did not sometimes give warning of the presence of a deady foe it would nevertheless demand most careful consideration because of the fact that it affects the comfort of more people, perhaps, than any other ailment, often incapacitating them for the highest enjoyment and the brightest achievement, often rendering existence itself almost intolerable.

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612 MACBAIN BUILDING.

Diabetes a Defense Reaction.—Leclerq states that during the fifties we suffer especially from maladies of nutrition which are in reality all defense reactions. Diabetes is due not to abuse of starches, but abuse of nitrogen. Diabetes is not a disease, but a defense reaction against food poisoning of exogenous or endogenous origin. In this affection the mechanism for disposal of these poisons breaks down. During the progress of the process the offending bodies are oxidized as far as sugar, and other diseases like arteriosclerosis, which result from nondestruction of toxic material, are prevented. If the malady is rationally managed the sugar should disappear from the blood.—*Le Progrès Médical.*

PARALYSIS AGITANS AND SYPHILIS.

By BERNARD OETTINGER, M.D.,

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In the course of routine physical examinations, I noted in four consecutive cases of paralysis agitans certain large deep scars involving the corium. The scars were multiple in each instance, regularly round or elliptical, with edges plainly marked about the entire periphery. Although a number were about the knees, others were in the skin overlying soft tissues, little exposed to trauma. Previous infection of confluent smallpox, tropical sores, skin ulceration following the use of the hypodermic needle were excluded. Likewise was ruled out the more superficial scarring at times seen in a patient who at some previous time has had an eczema with secondary skin infection, and also the small deep pockmarks that are relics of varicella. In the next succeeding case of Parkinson's disease (a physician) I found no depressed cicatrices but noted one scar near the right scapula and two in the small of the back, each slightly larger than a kidney bean and something of this shape and all showing evidence of connective tissue overgrowth. I said to the patient, "I note some scars not of the usual type but the like of which I have heretofore seen in persons who have had syphilis." He answerd "I have had syphilis and have taken treatment for it. A Wassermann test has been made of my blood. It is negative." Of the five cases four were men and one a woman. Salient data of the five cases were as follows:

Case I.—A man aged 55 yrs. One child and living; "touch of typhoid at 20" but kept on his feet. Two years ago felt numb on the left side for six months; "something felt coursing up the left arm and into the back." The left arm externally, above the elbow, and the right externally, below the elbow, is sore to touch. Tremor and stiffness developed gradually, the latter predominating.

Case II.—Man aged 65 yrs. A glycosuria which the patient knows has been present many years. History of soft chancre and phimosis 10 years previously. Both patellar reflexes absent even on reinforcement. Romberg present. Complains of pains in the head, in the left shoulder and arm and both legs. He says all pain and rapidly developing tremor occurred as a sequence of a train wreck which he was in a month previously. Some nonpitting edema about and above the ankles. Blood Wassermann negative.

Case III.—Man aged 53 yrs. An early case developing gradually in which stiffness is the predominating symptom. Was badly burned 20 years previously by a high voltage current. A very reticent patient. Sexual impotence. This fact stated by the wife and not denied by the patient. An otherwise negative history.

Case IV.—Man aged 50 yrs. Pronounced coarse tremor which developed after an operation in the ear. Little stiffness. Lues admitted. Blood Wassermann negative.

Case V.—Woman aged 60 yrs. Twice married; no pregnancies. Occasional pain in the pit of the stomach, frequent nausea. Has had sciatica. A year ago pain and swelling in both knee joints. One notes a coarse tremor which is almost a twitching mainly about the head and neck. For the same reason the patient is not able to chew her food well and infrequently chokes when swallowing. Enunciation is jerky.

The above concludes observations as to five private cases who presented cutaneous scars.

Subsequently I was given the opportunity to examine seven cases of paralysis agitans at the Los Angeles County Hospital. All of these patients presented advanced cases of the disease. As a result, difficulty of obtaining a case history was experienced on account of speech involvement up to complete inarticulation, while memory loss due to senile changes effected the same result. Again, the frequently encountered great muscular rigidity and pain interfered not a little with a good physical examination. Nevertheless, a report of these cases is utilized for the reason that although Parkinson's disease is not extremely rare, it is yet sufficiently uncommon to prevent individual practice offering records of many early cases unless observations are carried on over a considerable number of years.

Case VI.—Man aged 45 yrs. History of a soft chancre. On the right leg anteriorly, two large, round deeply pitted scars; on left leg anteriorly one, and posteriorly two scars of the same character. Blood Wassermann negative.

Case VII.—Man aged 67 yrs. Has on both legs a number of large circular, pigmented scars involving the corium. The hospital history taken some years previously states "probably had lues 42 years ago." I do not not know the basis for this statement. Speech is much involved. One delves into the clinical history only with the greatest difficulty but I make out that he denies any venereal infection.

Case VIII.—Man aged 45 yrs. Coarse tremor of all extremities but intelligence is good and speech plain. A number of very small circular superficial scars are noted on the limbs and flanks. Because some of the scars show an edge for only a part of a circle, these appear cresentic. Such cicatrices are often seen in persons presenting also the large deep scars of healed syphilides. While unable to regard them characteristic of lues, they are quite unlike the small pitted area of chickenpox or the irregularly outlined scar of trauma. This patient's skin was otherwise clear. However, he gives a history of a penal sore in 1911 followed by sore throat and a rash that extended over the whole body. Feeling physically unfit, he consulted a physician in Santa Rosa, Calif. After a blood test the patient was told his blood was "bad." A year later finds him in the Denver County Hospital. Here a spinal fluid test was made the result of which was "positive." He was then given an intraspinal injection. The chart shows that a blood test made in the Los Angeles County Hospital finds the blood negative, but because the patient has much pain in his limbs which is relieved by arsphenamin, he has so far received three intravenous injections of this drug.

Case IX.—Man aged 45 yrs., the disease far advanced, of twelve years' duration. Mask like facies; great muscular rigidity; practically inarticulate. Involuntary bowel movements. Examination of the skin surface shows a number of small scars similar to those referred to in the previous case but in addition on the inner side of the left thigh is a ham colored indolent ulcer already involving the corium. Its thin basal cutaneous surface is crinkled. The ulcer is no larger than a pea but apparently is a typical syphilide. Blood Wassermann negative.

Three women patients, all very advanced cases and inadequately examined because dressed and in wheel chairs, gave different results. Speech involvement and impaired mentality precluded satisfactory histories, nor did the clinical charts reveal anything of moment. One patient showed a few indeterminate looking scars and had lost three or four children in early infancy; one patient presented a double Babinski and involuntary action of bowel and bladder. Two of the women showed a negative Wassermann. As to the third patient, this test had not yet been made.

The facts recorded concerning the last three cases accentuate what has been said of the desirability of containing a history during such early period

of the disease as to yield an anamnesis. But as the record stands, in nine of twelve consecutive cases of Parkinson's disease evidence that ranges from reasonably presumptive to certain that a sometime luetic infection occurred, presents a sufficiently high percentage to be notable, and so, probably merits further observations along the line indicated. Interesting is the fact, that the blood Wassermann was negative in every case tested including those instances whose history disclosed certain syphilitic infection and the further fact that one of these had previously given a positive blood and spinal reaction. Again, barring one case presenting a complex symptomatology, namely; static ataxia, absence of patellar reflexes, and which was further complicated by a glycosuria, a traumatic neurosis, and a railway damage suit and, one instance wherein neuritic pains were eased by arsphenamin, one observes that none of these patients presented symptoms that could be interpreted as characteristically syphilitic in origin. No actual paralysis existed and barring one case no deep tendon reflexes were absent. Pupillary reactions were sometimes slight, a condition easily attributable to generalized arteriosclerosis; the sometime exaggerated patellar reflexes might be accounted for by the same condition. I in no way gained the impression that Parkinson's disease is a phase of syphilis. However, what seemed plausible is a belief that lues may be a determining factor in the disease by effecting loss in organic defense to a virus which finds its most potent expression in characteristic tissue change, namely: degeneration to a greater or less extent of the corpora striata. Syphilis and arteriosclerosis and in turn a generalized arteriosclerosis and Parkinson's disease have long been regarded as closely connected. I do not recall, however, that preeminent frequency of previous luetic infection and paralysis agitans has elsewhere been remarked upon.

I am entirely aware that a presumptive diagnosis of sometime infection of lues based upon cutaneous scars may be precarious. It is less so in temperate than in tropical countries or where crowded housing conditions prevail with consequent greater chance of skin ulceration from extrinsic causes. When due regard has been paid to exclude other conditions in which multiple deep rounded cutaneous scars may appear, their presence with smooth yet sharp contours has proven of value as clinical evidence of previous infection in many instances. Taken alone, I would give them more weight than a positive Wassermann without clinical symptoms. I submit the following histories as pertinent to their importance, particularly in cases presenting no characteristic paralyses or changes in tendon redexes.

CASE A.—Woman aged 28 yrs.; married 10 years. Some diseases of childhood all completely recovered from. Was always overworked. At 17 years a breakdown with fever upon any exertion; afternoon temperature 101° to 103° F., no cough or expectoration. Moved from Arkansas to Arizona on account of her mother's illness, diagnosed tuberculosis. After marriage pain over both ovaries. Pregnant four months after marriage. When seven months pregnant was in a runaway accident. Miscarriage threatened, to avoid which the patient remained in bed until the child was delivered at full term. This child is an attractive although not robust girl of nine years. Second pregnancy nine months later; miscarried at three months. Third p nancy six months later; miscarried at three months. Fourth pregnancy interrupted by miscarriage at three months. During her fifth pregnancy the patient was very ill. Much pain in stomach and abdomen. Remained in bed for five months when a child was born at more than full term. During this pregnancy, at four months one cystic ovary was removed. Hemorrhages continuing, the second ovary was removed after childbirth. Hemorrhages then ceased. This second child is also living and is moreover a screen star of first magnitude. When first seen, the patient complained of "sore stomach," indigestion, constant desire for water, morning nausea, and headache. Griping pains at times in the left side of the abdomen. Physical examination disclosed a woman in good flesh, some acne varioliformis of the face. Pupils are small but they react to light and accommodation. Occasional râles of medium intensity in the left upper and right middle lobes. Upon palpation the pit of the stomach is not tender but the upper left abdominal quadrant is very sensitive to pressure, also both right and left lower quadrants. Small scars (not of acne) on the left arm, characteristic luetic scars at and below both knees; one very large round scar on the right leg. Urine negative. Alternating doses of potassium iodide and mixed treatment (without iodine) put this patient in excellent condition in sixty days.

CASE B.—A married woman of 35 yrs. Two children of respectively 8 and 14 years of age. One miscarriage induced. Has always been well. Formerly an amateur champion in a certain line of athletics. Two years previously pain in the right knee. This improved but six months later pain in the right leg as well as the knee. Slight pain in the right shoulder. The leg has given way at times. Present complaint is pain above the outer condyle of the right tibia and adjacent region, the back of this leg and the thigh up to the sciatic notch. The patient limps to spare this extremity. Occasional headache. Constipation. No bladder symptoms. Physical examination discloses a well developed physique. Muscular power of limbs good but the right arm and leg are somewhat smaller than those on the opposite side. Pupils react to light and accommodation. Patellar and achilles reflexes present. No Babinski. Small scar at the edge of the right brow, several of characteristic type on the left arm (vaccination scar on the right arm); one large deep scar showing loss of much tissue substance at the right knee. Urine 1005, alkaline, albumin a trace, sugar negative. Prescribed laxatives and at alternate periods solution of potassium iodide and mixed treatment by mouth. The patient began to improve immediately; was under treatment nine weeks. She has remained well.

CASE C.—Married woman aged 55 yrs., a nurse. History of inflammatory rheumatism immediately after marriage. Was four months in bed. Pregnant three times; two still births at seven months. The third child lived four weeks. For the past five months pain in the shoulders, especially on the right side. Physical examination: Pupils react to light and accommodation. A systolic aortic murmur. No Babinski. One characteristic scar on right tibia, two upon the back near the scapulæ and one on the left flank. Systolic pressure 195, diastolic 95. Seven and one-half grains of potassium iodide three times a day reduced the systolic pressure to 135 mm., the diastolic pressure remaining 95 mm. The patient felt less well at this approximately normal pressure than she did with the systolic reduced to but 175 mm., so she was placed on mixed treatment (without iodine), upon which she did well. She has steadily followed her profession, even during a very strenuous period of the influenza epidemic.

As against these instances *in which the dominant symptom complained of was pain, the interpretation of which was influenced by presence of characteristic cutaneous scars,* the following case is of interest.

CASE D.—Woman, aged 33 years; married three times. One child by her first husband, which is living and well. Describes her second husband as "gay."

During this marriage gonorrhea, also a tumor in the urethra diagnosed soft chancre. The latter did not yield to treatment, but gradually disappeared. Shingles eight months previously. Has severe headaches and pain in both eyes. Feels constantly in danger of falling because she cannot properly use her right leg. She says "it drags," although this is not noticeable. Patient makes patent effort to enunciate plainly. Sometimes she uses the wrong substantive, immediately, however, recognizing the error. Wants to sleep a good deal; of good appearance, but somewhat overstout. Action of external ocular muscles intact. Both pupils widely dilated and present the Argyle-Robertson phenomenon. Both optic discs are paper white, clearly outlined; the normal cupping has disappeared. The retinal vessels are greatly dilated. When standing the patient sways backwards or forwards, often reaching for support. Patellar reflexes exaggerated; no Babinski. Tested against resistance, muscular strength of all extremities fair to good. Comparatively less strength in right arm than right leg. Sensation to touch and pain apparently normal. With exception of a vaccination scar, the skin is smooth and without a blemish. Temperature normal, pulse 82. Systolic pressure 90 mm.; diastolic 65 mm. Blood Wassermann negative. The history, together with the objective symptoms, permitted the diagnosis of cerebral syphilis. After one intravenous injection of 0.6 neoarsphenamin all symptoms disappeared except persisting but lessened pain in the eyes. I last saw the patient just previous to a second injection of the same remedy.

The point I wish to make is this. This patient passed from her initial lesion to an acute cerebral syphilis without noticeable or, at least, any persisting cutaneous sign; also the outstanding feature of her complaint for her and her environment was a monoplegic disability pointing to cerebral origin, a fact to which the Argyle-Robertson phenomenon testified as well. After a single intravenous injection, the pupils began to contract and the patient had regained full control of her right leg. With pupillary symptoms of recent origin, vigorous antisyphilitic may right them entirely or in a similar case, the Argyle-Robertson pupil might never be a part of the clinical picture. Such a patient seen at a later period may perhaps complain solely of pain and consequent disability as in cases a, b, and c. With associated lack of characteristic paralysis or involvement of the deep reflexes as in the cases cited, the unblemished skin would mean absence of an important diagnostic clue. The Wassermann reaction may at times assist in establishing the true etiology of chronic pain. But even so, late syphilis often shows a negative blood or spinal fluid reaction. Also, as regards cerebral lues, Head and Fearnsides[1] after an exhaustive research pointed out that a positive Wassermann is rare at any stage of meningovascular syphilis so localized.

REFERENCE.

1. Head and Fearnsides: Clinical Aspects of Syphilis of the Nervous System in the Light of the Wassermann Reaction and Treatment with Neosalvarsan.—*Brain*, September, 1914, pages 79-84.

417 MARINE BANK BUILDING.

Influenza and Sleeping Sickness.—Reich relates that a patient who had recently recovered from lethargic encephalitis was attacked by severe influenza after having been exposed to patients with the same malady. This case seems to exclude the possibility that these two affections have anything in common. However, Rumpf, who saw a number of cases of lethargic encephalitis last spring and summer, states that in nearly every case encephalitis occurred in the wake of influenza. The mortality was high.—*Schweizerische medizinische Wochenschrift.*

NERVOUS AND MENTAL MECHANISMS: THE NERVE IMPULSE.

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MANY facts in medicine have been accepted as axiomatic without question. An assumption is made and handed down from generation to generation until it is forgotten that it is a mere theory, and is accepted as a proven fact. Thus has arisen the idea of the nature of the nerve impulse. For many years, the older physiologists believed that the nerves were tubes through which flowed fine matter like air or gas known as animal spirits. "With Galvani's discovery of electricity," says Howell in his Physiology, "the nerve principle as it was called, became identified with electricity, and indeed the view, as it will be explained, prevails in modified form to-day." The exact nature of the nerve impulse even to this day has not been proven, and many of our ideas of the function of the nervous system have been based on an unproved assumption. A short time ago, in studying the anatomical and physiological basis for some of our psychological processes and endeavoring to correlate structure with mental processes, the writer was impressed with the inadequacy of many of our present day conceptions. As an example, the process of recalling past memories, presents insuperable difficulties of explanation, if we accept the present day idea of the neuron as a conductor. When an afferent impulse reaches the brain, a large number of memories of various kinds are aroused, which were stored through association fibers with former impressions, and brought into consciousness. This would mean innumerable connections by the neurons and would entail scores of combinations and a contiguity of so many neurons that the matter is inconceivable of being possible. At the present time we assume that the individual neurons are distinct from each other, are not continuous but contiguous. In other words, when we see or hear anything, in order to recognize what we perceive, it is necessary to assume that present afferent impressions must make connections with a large number of neurons which were concerned in the past with that particular impression. This would necessitate a selection of so many neurons and associations for one given sensory impulse that it seems improbable. In looking for a more logical explanation of these phenomena, on purely anatomical grounds, the idea occurred to me that, inasmuch as the nerve impulse within the brain is not unlike that in the peripheral nerves, perhaps an investigation of the known facts regarding the nature of the nerve impulse might throw some light on the matter. Accordingly a study of the minute anatomy and physiology of the nerve and nerve impulse was made.

The whole physiological mechanism of the nervous system is based on the assumption that the nerve impulse is of a character analogous to the electric current and that every impulse is conveyed by a species of conduction, implying that there must be an actual touching of the various neurons and

that conduction can only occur when the several neurons are in contact.

It has been assumed that inasmuch as the nerve fibril is enclosed in the neurolemma and myelin sheath, the purpose of these was to insulate, as in the case of an electric conductor, and prevent the dissipation of the impulse in aberrant directions. A study of the anatomy of the nerve fibre reveals that the intimate nerve fibril or axone is contained in a neurilemma composed of horny substance analogous to the nails, called neurokeratin, and that this sheath extends along the nerve fibril up to the juncture with the nerve cell where it ceases. This sheath of Schwann as it is called, is filled with a fat-like substance or myelin and is interrupted at the nodes of Ranvier about 90 microns apart in an average nerve. The neurilemma is nucleated and has partitions going into the myelin cavity, composed very likely of the same neurokeratin, called the incisures of Schmidt. The myelin sheath regularly ends at the nerve cell into which the impulses go, and furthermore many of the nerves of the brain and spinal cord have no myelin sheaths at all; nor do the fibres of the sympathetic system have any. If we are to assume, as has been done, that the nerve impulse is of a conductive character, analogous to electricity, we encounter, at once an almost insuperable difficulty in that the impulse would be dissipated when the insulation disappeared, as in the case of an electric apparatus like an induction coil. If the insulation of the wires disappears, short circuits occur and the instrument becomes incapable of functioning.

The nature of the nerve impulse seemed to me to need further study and our conception of its being conductive in character, seemed to be an assumption which the known facts of physiology did not warrant. A further well-known phenomenon of nervous pathology also discredits the conception that the nerve impulse is conductive, in that pressure over the nerve will prevent the passage of the impulse for the time being. In a wire or other conductor, pressure however great will not prevent the conduction of the current provided the continuity is not broken or the insulation disturbed. All the known facts of pathology—lesions of the brain and nerves confirm this. Hemorrhage or tumors of the brain or spinal cord will give symptoms as long as the pressure continues, and removal will restore function where no actual tissue has been destroyed. All our surgical therapeutics of brain and spinal cord, as well as nerves, is based on this fact which is inconsistent with the nerve impulse being conductive. Furthermore, in the ear, vibratory sound waves are converted in the organ of Corti into nerve impulses conveyed later to the cerebal cortex. Likewise in the retina, light waves appear to be translated into nerve impulses which are conveyed to the brain through the optic nerves. The rod and cone layer of the retina lends itself readily to this conception in that some of the fibres being in tension would have the protoplasm at one end and appear as cones, and others, relaxed, where the material was equally distributed along the length of the fibre would appear as rods. From these analogies, it occurred to me that the nerve impulse is probably *vibratory*, analogous to sound vibrations, rather than *conductive* like electricity, and an analysis of many of the known facts of the physiology of the nervous system seems to favor this and afford a better explanation of many of the nervous and mental processes than does the conductive theory.

The velocity of the nerve impulse, as ascertained by Helmholtz and accepted by physiologists generally is that it travels about 34 metres or 106 feet per second. Electricity travels many thousands of miles per second; light, about 186,000 miles per second; sound waves travel 1,090 feet in air and 4,708 in water per second; in glass, 14,850; in iron, 16,820. The velocity of sound vibrations has been determined to be directly proportioned to the square root of the elasticity of the medium divided by the density as expressed by the formula,

$$V = \sqrt{\frac{E}{D}}$$

in which V represents the velocity, D the density, and E the modulus of elasticity or power of regaining its shaps after compression. The modulus of elasticity of protoplasm of all kinds is very low compared with water or air, and the density higher so that one would expect the velocity of the nerve impuse, if it were vibratory like sound, to be a great deal less than the sound wave in water or air. I have been unable to obtain exact figures for the modulus of elsticity of nerve tissue, but its density is much above that of air and greater than water.

A number of other facts that have been ascertained regarding the nerve impulse also appear to confirm the vibratory theory more than the conductive hypothesis. At all events none that I have encountered so far appears to be inconsistent with this view.

When a nerve is stimulated and immediately after, another impulse is sent along the nerve, the second interferes with the first, giving rise to what is termed the refractory period. This is exactly what takes place in a vibrating musical string. A short time after the refractory period, there appears, according to Keith Lucas, a supernormal excitability, in that the same stimulus gives a greater impulse. This again is exactly what one would expect in a vibrating nerve, when the bed in which the nerve fibril lies in the neurilemma is somewhat loosened up from the former impulse after the effects of interference have disappeared.

Sound waves in air can be refracted and reflected by a lens just as light. The familiar experiment of making a lens of air or gas with a rubber balloon, as described in all elementary books on physics, and placing a watch at one focus permits the hearing of the sound loudest at the other focus, is no doubt familiar to many. In other words, vibratory impulses, like sound or light, are capable of being refracted in passing from one medium to another of different density. Remembering this, if we regard the nerve impulse as vibratory, in passing into a cell it will be refracted as by a lens or prism. Most of the motor cells appear to have rather a triangular outline and the sensory cells are mostly oval. This might be very suggestive and it is not improbable that the cell body may have some function in refracting the impulse from the dendrites into the axis cylinder, to be passed along to the

end organ in the muscle or gland, or in the case of afferent fibres to the cortex. The sensory end organs in the skin, the Pacinian bodies, are concentric layers of membrane which appear to be consistent with the idea of starting up vibratory stimuli.

A number of other nervous and mental mechanisms can also be better explained by a vibratory than a conductive theory. We know that when one string vibrates in the vicinity of other strings, the latter even though not in contact will vibrate in unison if properly attuned. Thus if an E string on the violin is struck, and several harps or a piano be near, the corresponding strings on the latter will vibrate in unison, *i.e.* the E strings will vibrate in all. This would lend a ready explanation for the storing and reviving of impressions in the brain. If one neuron of the brain was vibrating, a number of others properly attuned would vibrate in unison and many impressions could be stored up in memory or revived from the vibrations of one neuron. This appears to me to explain the method of storing up impressions much better than those heretofore proposed. Furthermore, vibrations of a definite character would always be stored up by the neurons of the proper length and tension in the same part of the cortex and would not be inconsistent with our ideas of cerebral localization. Again the structure of the cortex with its six layers of neurons would readily favor such a view. The dendrites might be likened to the antennæ of the wireless apparatus which pick up the vibrations of a definite length and direct them through the nerve cell to the axone. The cells of Purkinje in the cerebellum, whose function we assume to be largely coordinating, are again suggestive and rather favor the vibratory viewpoint.

Again, the fact that the brain is enclosed in a rigid bony box without any openings to the external air directly suggests a sounding box; at all events it is well adapted to protect from outside vibrations.

When a nerve is cut across and the ends sewed together, restoration of function in a motor nerve does not occur according to Sherren until from three weeks to sixteen months after the operation. This again favors the vibratory idea. If the impulse were conductive, restoration of function should occur immediately after repair, as would happen in an electrical conductor. The current again passes as soon as continuity is established.

This whole discussion is offered in a tentative way. It needs much further experimentation in the laboratory before it can be accepted. However, it appears to explain many of the phenomena of nervous action in a better way than present theories. Perhaps further study may point the way to therapeutic application. It certainly would explain many of the psychoneurotic symptoms if one conceives the tuning of the neurons to be disturbed by toxic or other causes. At all events before proper treatment can be instituted in any organ it is absolutely essential that the physiological functions be accurately known and studied.

Conclusions.—The evidence favoring the vibratory theory of the nerve impulse rather than the conductive, analogous to the electric current, may be summarized as follows:

1. Pressure on the nerve will prevent passage of impulse. Should have no effect on a conductor.
2. If the nerve is cut across impulse will not pass for weeks after union has been made and the nerve is sewed together. If conductive, impulse should immediately pass after continuity is restored.
3. The velocity of nerve impulse, 106 feet per second, is more like that of sound. It also appears to follow the physical law of sound velocity.
4. The refractory period of the nerve is better explained; also supernormal excitability.

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RIPE OLIVES.

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Olives are designated as being either green, or ripe and black. The terms "ripe olive" and "black olive" are synonymous, as an old English writer says, "The more black oliues ben without, the more rype they be within."

In an enumeration of a vast number of things to eat, mostly of the hors d'œuvres variety, Rabelais mentions "olives colymbades," that is to say, olives swimming in their oil.[1] And there are very few dishes more suave or more pleasant than olives so prepared, and eaten with French bread and without butter, as butter in this situation constitutes a superfluity of fat. As a hors d'œuvre also this is excellent, and those who become accustomed to this dish feel its absence. The black olive is the one employed in this situation.

To begin with, the large black olive so praised by Horace,[2] is, to my mind, far and away better than the salty, bitter, green ones, the only variety I knew when I lived in the Eastern States, where they were employed largely on account of their commercial value as a thirst producer.

If, by steeping, the excess of salt is removed from a few fine, large, black olives, and they are then placed in a shallow fruit jar, and enough good olive oil is poured over them to immerse them, and so justify the name Rabelais gives them,[3] and a section of garlic, a so-called "clove of garlic," is dropped in with them, and they are allowed to stand a short time until the flavor disperses, they may be taken out and eaten with a smacking of the lips that it is a joy to hear, and as they must be picked up with the fingers, these are licked also, which is no mean enjoyment.

After a time the taste of the garlic in the oil becomes too pronounced; then the jar should be emptied, but with due care not to waste the oil, which if good, costs more than its weight in silver. This oil may be used in making lettuce salad, in which its garlic flavor regains its delightfulness because reduced to delicate, tasteful proportion.

But, olive oil! It is not always that one can obtain it. Not long since, I traveled from San Francisco to the Atlantic littoral, and by a most devious route, and I did not loiter in the worst hotels or restaurants either, but, according to my tongue and palate, I did not encounter one drop of olive oil during the entire journey. That which I got was not the oil of gladness, oleum exultationis, mentioned so effusively by St. Paul.[4] The hotel keepers

in his day were not so sophisticated, and cotton seed oil was not discovered until long after.

Olives, so prepared, are excellent, not alone as a comestible, but also medicinally, as they afford an excellent way of giving oil, agreeable to the stomach and readily digestible.

Emerson has remarked that the taste for sea-life, like that for tomatoes and olives, is acquired.[4] An initiation may be requisite for the enjoyment of the green olive, but scarcely for the ripe variety when expertly prepared and served in olive oil. No more apprenticeship is requisite for these than for a babe for milk.

Of course, Emerson may have written the above before his visit to the Pacific Coast, and even while in San Francisco, the dish may have escaped him because of too close association with Unitarians, who, coming for the most part from New England, were naturally unaware of this succulent dish.

Recently people have become nervous about black olives, because of several instances of botulism traced to eating bad ones. The incidents attracted a great deal of attention, partly because of the name—in these prohibition days any name sounding like bottle does so. Almost any deteriorated food, however, may cause distress, or even fatal poisoning, and the cases of botulism seem to have been very few indeed. Not long ago, while seated at dinner beside a timorous person, I noticed she did not eat her black olives. She mentioned her fear; I asked how many people, say in New York, were poisoned. I think she said three. As there are about five million people in New York, this represented three five-millionths of a chance. I told her she was no sport, and finished her olives as well as my own.

REFERENCES.

1. Pantagruel. Book IV, Chapter LIX.
2. Nam vilibus ovis nigrisque est oleis hodie locus II. Satires II. In this situation Horace makes it plain that the common egg and the black olive are more salubrious and enjoyable than more costly and more pretentious foods.
3. Olives colymbades, elaia kolumbas, from kolumbao, to dive, and signifies in this situation immersion in oil. Rabelais, translated by W. F. Smith, Vol. II, p. 238, note 12.
4. Hebrews I—9.
5. "English Traits," published in 1856.

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Medicolegal Notes.

Labeling of Proprietary Compounds Containing Poisons.—The Minnesota Supreme Court holds that, in the absence of some statutory obligation, a vendor of another's proprietary compound owes no duty to the purchaser or the public to ascertain whether it contains ingredients that may be harmful or dangerous if the compound be used for purposes other than those for which it was designed. But a manufacturer of an article or compound imminently dangerous in kind owes to the public a positive and active duty to limit the danger, by labeling or otherwise, conveying knowledge of the danger; and a like duty rests upon a vendor who knows of the dangerous qualities of the article sold by him, and knows that its label or name does not adequately convey knowledge to the purchaser or public of such danger. Applying these principles in an action for wrongful death alleged to have been caused by roach poison, the complaint was held defective in not alleging that the compound sold was imminently dangerous, and in alleging in the alternative that the defendant knew, or in the exercise of due care ought to have known, of the dangerous qualities, and in failing to allege positively the misleading or defective character of the label.—McCrossin v. Noyes (Minn.) 173 N. W. 566.

Warning Minor Patient's Parents of Infectious Disease.—Appeal was made from an order of the trial court overruling a demurrer to a complaint against a physician on the ground that no cause of action was stated. The trial court certified that the question raised was important and doubtful. In substance, the complaint alleged that the defendant was a practising physician, employed by the plaintiff and his wife to treat their minor daughter. Other allegations were as follows: The defendant knew that the disease from which the child was suffering was scarlet fever and that it was infectious. The plaintiff's wife, acting in his and her own behalf, consulted the defendant as to the nature of the disease and the danger of infection. The defendant wrongfully and negligently advised her that they might safely visit their child, who was then at a hospital under his care. He negligently permitted them to visit the child at the hospital, and later on wrongfully and negligently advised the plaintiff's wife that she could be safely removed from the hospital to her home, and that there was no danger that the disease would be communicated, although it was then at the "peeling off" stage, when the greatest danger of infection exists. In reliance upon the defendant's advice, the child was removed to her home. Neither the plaintiff nor his wife knew of the infectious nature of the disease. Both relied on the defendant's advice in visiting their child and in taking her home. By reason of their contact with her, both contracted scarlet fever, and the plaintiff suffered pain and was kept from his work for many weeks, to his damage in the sum of $1,000.

The Minnesota Supreme Court, regarding the case as a novel one, held that the trial court properly overruled the demurrer, applying the principle that, generally speaking, one is responsible for the direct consequences of his negligent acts whenever he is placed in such a position with regard to another that it is obvious that if he does not use due care in his own conduct he will cause injury to that person; although it conceded that it might be true, as suggested by the defendant's counsel, that it is a matter of common knowledge that scarlet fever is an infectious disease and that the plaintiff might not have been greatly influenced by the defendant's alleged assurance that he might visit his child or take her to his home without running any risk of infection.—Skillings v. Allen, Minnesota Supreme Court, 173, N. W. 663.

Cold a Disease within Question as to Previous Medical Attendances.—The law that misrepresentations do not void a policy unless material to the risk or actually contribute to the contingency has no reference and does not apply to fraternal benefit societies. An insurance policy of a fraternal order, making it the duty of the examining doctor to require an answer to every question, and to explain the meaning of terms used, does not give the doctor the right not to require an answer to the questions as to previous medical attendance because he may not have thought the thing for which he previously prescribed and treated the applicant was a disease within the meaning of the term as used. The word "disease" as used in such an insurance contract and application question is held to comprehend a cold and fever, being a morbid condition of body, and having as synonyms "disorder," "distemper," and "malady."—Sovereign Camp v. Treanor, Texas Civil Appeals, 217 S. W. 204.

Evidence of Causal Connection Between Negligence and Injury.—In a malpractice case, the negligence of defendant physicians and the causal connection between such negligence and the injury may be established by circumstantial evidence and inferences legitimately drawn from physical facts. In such a case, evidence that, the day after the plaintiff had a kidney removed, the defendant physician had one of his teeth pulled, breaking his jaw, and that they did not reset the jaw or otherwise treat his mouth to stop a soreness and discharge which lasted until he secured another physician was held to make the defendants' negligence and the question whether such negligence caused the plaintiff's injury a question for the jury.—Eichholz v. Poe, Missouri Supreme Court, 217 S. W. 282.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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THE PATHOGENESIS OF PEDUNCULAR AND BULBO-PROTUBERANTIAL SYNDROMES IN TYPHOID FEVER.

THE nature of these paralyses is still obscure, but it seems quite clear that they are not due to a typhoid meningitis at the base. There may, perhaps, be a simple toxic encephalomyelitic reaction at work, but as Moizard and Greult have have pointed out, the process is almost hopelessly difficult to discover. The symptoms refer to both the cortex and the cord, so that there are headache, vomiting, stiff neck, Kernig's sign, and disturbances of the respiratory and cardiac rhythm. Ocular disturbances are rare in meningism, but the principal argument will be drawn from the cerebrospinal fluid, which, however, may be negative. In one case recently reported by Collet, there was no hypertension, polynucleosis, lymphocytosis, or albumin, and the fluid was clear. However, Widal has referred to cases with meningeal syndromes in which the cerebrospinal fluid was clear and devoid of cell elements. If meningitis be eliminated, to what cause can these paralyses be attributed? Few autopsies have been made in these cases and anatomical examination has revealed nothing. Consequently, we can explain the origin of the peduncular syndrome only along the same lines as the theories proposed for typhoid paraplegia. For some, these are the result of a peripheral neuritis caused by typhoid toxins and this opinion is based upon the coexistence of paralysis of a peripheral nerve, as has been met with in some cases. Others maintain that the central nervous system is involved; there are bulbar lesions which could explain the association of some other cranial paralyses, such as those of the velum pendulum palati for example.

Mere reference need be made to the opinion of observers who incriminate either muscular or articular lesions of the larynx or who regard these paralyses as hysterical in nature. It would appear to be a matter of some difficulty to differentiate the two orders of phenomena, which even clinically are often obscure as to what may belong to a central lesion and what belongs to a neuritic lesion; and with a number of competent observers it seems at present preferable to associate the two orders of lesions, the nerve and the nerve cell, in reality forming a portion of the same whole, influencing each other and capable of being mistaken one for the other. It is, therefore, to a cellulo-neuritis that the bulbo-protuberantial paralytic disturbances should be attributed, the consequence of total changes of both portions of the neuron; but it is to be hoped that future research may establish this opinion, which can as yet be regarded only as a mere hypothesis. In a case observed by Lépins, of Lyons, there was a hemorrhagic softening with congestion around the focus of softening and an invasion of the cord in lines following the track of the dilated vessels. Involvement of the radicular cells of the gray matter appeared to be more important than that of the cells of the white matter. There was likewise a very marked infiltration of the meninges.

Vincent's experimental results appear to confirm these findings. After inoculation of a rabbit with typhoid bacilli and another bacterium, medullary symptoms were produced resembling those of Landry's disease. The animal died at the end of forty-eight hours and at autopsy a change in the cells of the cord was found, with tumefaction of the axis-cylinders, proliferation of the neurogliar and endothelial cells and capillaries. Some of the dilated capillaries had ruptured. A number of other observers have studied these experimental lesions of typhoid fever and it seems logical to admit from their combined findings that the action of the bacillus or its toxins on the nerve cell or cord results in a disintegration and disappearance of the chromatic substance of the cells, an eccentricity of the nucleus, and changes in the nucleus and nucleolus. This chromatolysis may be confined to the periphery of the cell.

EARLY DIAGNOSIS.

THE old order is changing in the practice of medicine, and as yet the new order has not fully come in; it is only now knocking at the door. Prevention of disease is the medicine of the future, but not altogether in the sense that the term preventive medicine is usually understood. A great deal of the medicine of the future will be preventive as understood by Sir James Mackenzie, that is learning to interpret the meaning of the earliest symptoms of disease, and so to treat them that they do not go any further. Sir Bruce Bruce-Porter, writing in *The Practitioner* of June, 1920, would like to divide medicine, as it appears to him, into (1.) Preventive, (2.) Diagnostic, and (3.) Curative. He points out that the field of preventive medicine is mainly that of the public health officer, who himself in turn must depend upon the next branch, namely, that of the diagnostician, for early notification of disease of a preventable and infectious nature. The curative branch is, in his estimation, the least important of the three. Many medical ailments at present get well in spite of the physician, and all who practice have lived long enough in medicine to see many vaunted specifics proved of no value. The

most important thing is correct and early diagnosis, and it is recognized that many serious illnesses would be avoided by earlier recognition of the symptoms. Porter draws attention to what is undoubtedly often true that the ordinary patient expects too much from a medical man, he expects to walk into the physician's consulting room and come out in a few minutes with some hieroglyphics on paper guaranteed to cure. Again, the average patient does not consult a doctor until something has gone wrong with his works, and then consults someone who has been recommended to him by a chance friend or acquaintance. The doctor has never seen him before, during his normal state, so cannot possibly say how far he has departed from it. There is no doubt whatever that early diagnosis is the surest preventive of disease, that is, so far as the medical man in his direct capacity of healer is concerned; quick and correct diagnosis marks the great physician. If then early diagnosis is the sign manual of the capable physician, every nerve should be strained to make of the medical man a rapid and reliable diagnostician, and every means should be used to induce those who are not feeling well to consult the doctor before flying for relief to patent medicines.

As regards the training of the medical profession, it appears that Sir James Mackenzie is proceeding along the proper lines. He is establishing centers at which medical men will be trained to detect the earliest symptoms of disease and to prevent them from going further. But unless the public will cooperate with the medical profession and consult a medical man early, much of this time spent in training, while it will not have been wasted, will not have been put to its best use. Therefore, the public must be educated to consult a doctor for their minor ills, as well as their major ones, since it is the former which treatment often can control before they have become transformed into the latter.

Anomalies of the Spine.

THE anomalies arising in the vertebrae and spine are of two sorts: numerical anomalies and morphological anomalies. The former are sufficiently extensive to produce a deformity of the spine in very rare cases only. Usually confined to a single vertebra, they are of interest to neither the anatomist nor the clinician. The second, however, almost invariably produce deviations of the spine and are of clinical interest, and their study, which had been greatly neglected, has now been made easy by the development of radiography. These morphological anomalies may be seated anywhere along the vertebral column, but they seem to have a particular liking for the cervicodorsal and still more especially for the lumbosacral regions. The principal defects met with clinically are: a wedge-shaped deformity of a vertebra, due either to simple atrophy or to a complete defect of development of one-half of a vertebra; the division of a vertebral body into two portions which are generally unequal; the suture of one side of a vertebra to the corresponding side of a neighboring vertebra, and lastly, the development of the cervical rib. These vertebral malformations should be generally known, because clinically they ordinarily bring about deformities of the spinal column—generally scolioses—and, when the anomaly involves the lumbosacral vertebrae, the result is a deformity of the pelvis which will interfere with labor. A precise diagnosis of these various conditions can be made only by radiography, and in questions of deformity of the vertebral column, radiography is quite as essential as in all bone pathology. From the viewpoint of treatment, the verification of these anomalies has given rise to a great change in the therapeutics of spinal deviations. In some cases a surgical interference is quite justifiable, not only in the case of cervical ribs, but also in instances of vicious synostosis.

To Him That Hath.

THE young doctor who sits in his office all day, feet on desk, waiting for patients, is passing. Let him go; and may the place thereof know him no more. In these days of preventive medicine, of statistical study, of research, more and more "jobs" with pay are available for the energetic young M. D. with adequate training. And if he is sensible enough to realize the advantages of dispensary work, opportunities for seeing cases and doing original work are abundant. In other words he cannot only seem busy, but must be the thing he seems. Every medical graduate should be given a card, reading, "If you would get patients, get busy." It is a matter of pride with the layman to be able to say of his doctor, "He is awfully busy; always on the go; more to do than he can handle; better call him in." Lay standards are such that big business gets bigger. It is as true of medicine as it is of oil or steel. To him that hath shall be given. Of the young man in the incipient stages of practice, it may safely be said that he "hath nothing" but an M. D. and a license. What these are worth depends upon the individual—except in the case of him who has a pull with some older man who "hath." Advertising, that time-honored "starter" on which our lay friends depend for launching a new venture, is rightly withheld from the young professional man who has skill, not wares, to sell. For honesty and industry, those two cardinal virtues in medicine, have no disposition to advertise, to claim authority, to display.

To become known through hard work is the only safe road to publicity open to the young medical man. Let him take any job that comes along, provided it will increase his value to the profession. Let him spend himself and be spent on it. And unless we mistake the signs of the times, patients and opportunities galore will be added unto him.

Salicylates in Acute Rheumatic Fever

AT one time the salicylates were regarded almost as specifics for rheumatism. Then while they did not fall exactly into disrepute, they were deposed from their former high therapeutic pedestal. At the present time salicylate therapy is looked upon as useful in the treatment of rheumatism but secondary on the whole to diet, except for acute rheumatic fever, in which form of the disease its effects

are often striking. Dr. Paul D. White, writing in the *American Journal of the Medical Sciences* for May, 1920, is enthusiastic concerning the results of salicylate treatment of acute rheumatism. He had seventy-three soldiers under his charge at U. S. Base Hospital No. 6, and states that the most striking lesson learned from the series of cases of acute rheumatic fever at the hospital was the remarkable response to forced salicylate treatment. Almost invariably there was an abrupt ending of joint pain, swelling, fever, and malaise. White remarks that at one time there were two wards full of cases of rheumatic fever. Salicylates were given in large doses to patients in one ward. It was their only medicinal treatment, and they did wonderfully well. The other patients in the other ward were given no salicylates internally at first, but received local treatment and phenacetin and veronal by the mouth. Their pain and discomfort were dulled to a slight degree, but after two or three days of suffering the salicylates were given to them in large doses, followed by great and rapid relief.

News of the Week.

Rat-Extermination and Rat-Proofing Campaigns Urged.—Surgeon-General Hugh S. Cumming of the Public Health Service, in view of the discovery of bubonic plague in several American and Mexican Gulf ports, urges communities throughout the country, especially along the coast, to inaugurate campaigns for the extermination of rats and other rodents. According to Dr. Cummings, foci of infection exist at present at New Orleans, Pensacola and Galveston, and in Tampico and Vera Cruz, Mexico, the disease having assumed the proportions of an epidemic at Vera Cruz.

Drug Clinics Pronounced a Failure.—The Bureau of Internal Revenue, which is charged with the administration of the Harrison Antinarcotic act, will not lend further indorsement to public clinics for the treatment and cure of drug addicts, Prohibition Commissioner John F. Kramer, giving as his reason for this action that "The net results obtained through the operation of such public clinics appear to have demonstrated conclusively that the cure of drug addiction through such means is a failure, and that hereafter no similar institution should have the indorsement of this bureau."

Another Narcotic Drug Cache Discovered.—Narcotics valued at $250,000 were discovered recently by the Italian police squad in the homes of three Italians in Brooklyn. One of the men is said to have told the police that at least 500 persons were involved in a wholesale traffic in smuggled drugs along the Brooklyn water front.

Typhus in Poland.—According to a statement recently made by the director of the largest Jewish hospital at Kiev to Colonel Henry Shaw, of the American Army, who is investigating deaths among refugees for the League of Red Cross Societies, 25,000 Jews died of typhus fever within six weeks just prior to the Polish occupation.

Straus Milk Laboratory Accepted by City.—The offer recently made by Nathan Straus to turn over to the city of New York his milk pasteurization laboratory to be used for the benefit of the children of the city on condition that the city provide funds for carrying on and extending the work, has been accepted by the Board of Estimate.

Reports of Plague in Mexico Denied.—The report of two suspected cases of bubonic plague at Cerritos, State of San Luis Potosi, Mexico, has been pronounced incorrect by the president of the board of health of that locality.

Schools for Hospital Attendants.—Bird S. Coler, Commissioner of Public Welfare, was instrumental in the establishment, some time ago, of four schools for the training of hospital attendants. These schools are at the City Neurological Hospital, Blackwell's Island; the New York Children's Hospital, Randall's Island; Sea View Hospital, Staten Island, and Greenpoint Hospital, Brooklyn. The pupils are being instructed in the principles of hospital treatment and how to care for simple and ordinary sick and chronic cases. They are said to be the first schools of the kind to be established.

New Clinics Established.—The Visiting Nurse Service of the Henry Street Settlement, New York City, has announced the establishment of four new clinics in connection with its nursing and medical facilities. Plans for the establishment of a diagnostic clinic are under way.

Doctor Convicted of Manslaughter.—A practising physician of this city has been found guilty of manslaughter in the first degree for the death of a woman patient following an operation alleged to have been unnecessary. The conviction carries with it a penalty of from ten to twenty years' imprisonment.

Jacobi Gift to Academy of Medicine.—Dr. Abraham Jacobi, who died in July of last year, and whose estate has just been appraised, gave $5,000 cash and books worth $4,567 to the New York Academy of Medicine.

Dr. James H. Hyslop, well-known phychologist, and editor of the *Journal of the American Society for Psychical Research,* died on June 17, 1920, of cerebral thrombosis. His brain has recently been given to Dr. Edward A. Spitzka of New York City for scientific study. The brain had not been weighed on removal, but when received by Dr. Spitzka after five days' immersion in 5 per cent formaldehyde solution, its weight was 1290 grams, or 45.5 ounces avoirdupois.

Schick Tests in Colored Children.—The Bulletin of the New York City Department of Health notes that, in performing the Schick test on the pupils of the public schools and in the Baby Health Stations of the Greater City, some difficulty was anticipated in the interpretation of the results of the test in colored children. The question was submitted to the Bureau of Laboratories which, in cooperation with the Division of Institutional Inspection, had had experience with the test in institutions for colored children and the following statement was supplied: "The Schick test was carried out in two institutions caring for colored children. The number tested and re-tested was about 1,000. To interpret the Schick test in the colored child is not much more difficult than in the white child. The redness of the positive reaction, in the first few days, stands out against the rest of the pigmented skin and can, with a little study, be readily seen.

Where there is difficulty, moistening the skin with alcohol and looking at the reaction from a little distance will help a great deal in reading it. In the later stages, the pigmentation and scaling is quite distinct, and stands off from the remainder of the skin by its darker hue. The pseudoreaction can be readily noted and fades quite rapidly, leaving the small irregular blotches of pigmentation."

Dr. Richard Derby of New York City, who served in the medical corps, with the rank of Lieut.-Colonel, was recently awarded the Distinguished Service Medal by the War Department, for "exceptionally meritorious and conspicuous service as Sanitary Inspector of the Second Division and in charge of front line hospital work during operations of the division in the Marne area, and later as Division Surgeon during the Meuse-Argonne offensive."

Dr. Milton C. Winternitz has been elected dean Yale School of Medicine to succeed Dr. George Blumer, who recently resigned. Dr. Winternitz, who was graduated from Johns Hopkins University in 1903, became a member of the Yale faculty in 1917. During the war he was in charge of research in pathology and bacteriology at the Yale Bureau of Mines, later as Major in the Medical Corps, chemical Warfare Service, doing research work in the laboratories at Yale, at Lakehurst, N. J., and at Washington.

Commander William Seaman Bainbridge, U.S.N., R.F., addressed the Montgomery and Chester Counties Medical Society on June 15. The meeting took place in the Washington Inn, Valley Forge, and as an appropriate topic, Commander Bainbridge spoke on "Some of the Surgical and Medical Lessons of the War."

Dr. Christian F. J. Laase of this city, who was indicted some time since for alleged violation of the Harrison antinarcotic law, was tried on Tuesday of this week in the U. S. District Court and was triumphantly acquitted. And so ends this attempt to dictate to educated and honorable physicians in the matter of treatment. We congratulate Dr. Laase.

Rockefeller Foundation Aids Medical Education in England.—The University College and Hospital School, London, have been selected for the execution of the plans of the Rockefeller Foundation for furthering medical education in its efforts "to promote the well-being of mankind throughout the world."

Charitable Bequests.—By the will of the late Lena K. Schlichter of Philadelphia the sum of $250,000 is bequeathed immediately to the Frankford Hospital of Philadelphia, and also a part of the residuary estate.

By the will of the late Elizabeth J. Gwett, of Philadelphia, the sum of $229,200 is bequeathed to the Pennsylvania Hospital as a memorial to her husband, the late Annesley R. Gwett.

By the will of the late Wm. K. Smith, of Philadelphia, the sum of $500 is bequeathed the Children's Homeopathic Hospital of Philadelphia.

Contributions to American Hospital at Neuilly.—George Edward Kessler of St. Louis has given 250,000 francs and Louis D. Beaumont of the Aero Club of America 100,000 francs to the American Hospital at Neuilly, France. The institution to date has received 2,750,000 francs toward the 7,000,000 franc fund being collected for the purpose of enlarging it.

Medical Society Elections.—THE NORTH DAKOTA MEDICAL ASSOCIATION, at its recent annual session at Minot, elected the following officers for the coming year: *President,* Dr. P. W. French, Grand Forks; *First Vice-President,* Dr. A. P. Quain, Bismarck; *Second Vice-President,* Dr. W. C. Fawcett, Starkweather; *Secretary,* Dr. H. J. Row, Lisbon; *Treasurer,* Dr. J. P. Aylen, Fargo. The 1921 meeting will be held at Fargo.

THE NEW HAMPSHIRE HOMEOPATHIC MEDICAL SOCIETY, at its sixty-seventh annual meeting recently held at Laconia, elected the following officers to serve during the ensuing year: *President,* Dr. Maurice E. Wiley, Laconia; *Vice-President,* Dr. Edwin D. Stevens, Francistown; *Secretary,* Dr. Martha I. Boger, Portsmouth; *Treasurer,* Dr. Heman Christophe, Manchester.

THE MICHIGAN STATE MEDICAL SOCIETY, at its fifty-fifth annual meeting, held in Detroit in May, elected the following officers to serve during the coming year: *President,* Dr. Angus McLean, Detroit; *First Vice-President,* Dr. S. A. Crane, Kalamazoo; *Second Vice-President,* Dr. Udo J. Wile, Ann Arbor; *Third Vice-President,* Charles M. Williams, Alpena; *Secretary-Treasurer,* Dr. Frederick Cook Warnshuis, Grand Rapids.

THE NEW ENGLAND FEDERATION OF MEDICAL EXAMINING BOARD, at its meeting June 2, elected the following officers: *President,* Dr. Charles Duncan, Concord, N. H.; *Vice-President,* Dr. M. F. Fallon, Worcester, Mass.; *Secretary,* Dr. S. H. Calderwood, Boston, Mass.

The OHIO ECLECTIC ASSOCIATION, at its recent annual session, elected the following officers for the ensuing year: *President,* Dr. W. E. Lehr, Arlington; *First Vice-President,* Dr. C. V. Holzmary, Farmersville; *Second Vice-President,* Dr. Byron Nellans, Cincinnati; *Secretary,* Dr. J. F. Wuist, Dayton; *Treasurer,* Dr. J. J. Sutter, Lima.

The MEDICAL SOCIETY OF CALIFORNIA at its recent annual meeting held at Santa Barbara elected the following officers for the coming year: *President,* Dr. John A. Graves, San Francisco; *Vice-Presidents,* Dr. William Duffield, Los Angeles, and Dr. Joseph Cotton.

Obituary Notes.—Dr. LOUIS F. SMILEY of Philadelphia died at Chambersburg, Pa., on June 12, at the age of 69 years. He was graduated from Hahnemann Hospital and Medical College in the class of 1875.

Dr. WILLIAM W. ARMSTRONG of New York City died June 12, at the age of fifty-four. He was graduated from Bellevue Hospital Medical College in 1897.

Dr. GEORGE BOARDMAN CORNELL, for forty-six years a practising physician in Brooklyn, N. Y., died June 17 in, his eighty-eighth year. He was graduated from New York University Medical College in 1864, and from New York Homeopathic Medical College and Flower Hospital in 1871. He was a member of the Kings County Medical Society.

Dr. CHARLES TURNER FISKE of Portland, Me., died June 11, after a long illness, at the age of 72.

Dr. JAMES C. BARKER of New Milford, Conn., where he had practised for forty years, died June

16, at the age of 68. He was graduated from Yale University School of Medicine in 1879.

Dr. TREBY W. LYON of New Haven, Conn., died June 14, at the age of 39. He was graduated from Yale University School of Medicine in 1903, specializing proctology. He was a member of the American Medical Association.

Dr. BENJAMIN T. WILSON, formerly of New Bedford, Mass., died recently on his estate on the island of Onjonan, one of the Comoro group, on the east coast of Africa. Dr. Wilson, who was eighty-two years of age at the time of his death, left New Bedford in 1865 on a whaler on a voyage for his health. Landing on the island of Onjonan during an illness of the ruler of the island, who had lost his eyesight, Dr. Wilson, so the story goes, treated the king and restored his eyesight. In appreciation of these services the doctor was given a royal grant of a thousand acres of land, upon which he established himself with an army of retainers. His last visit to the United States was made in 1892.

Dr. CLAUDE H. ADDLEMAN of Whitewater, Ind., who was graduated from the Indiana University School of Medicine on June 1, and who had been serving as interne at the City Hospital, Indianapolis, since February, died June 16 as the result of blood poisoning. He was 26 years of age.

Dr. MARIE G. LANGDON of Englewood Cliffs, N. J., died June 21, at the age of 51. She was graduated from Baltimore University School of Medicine in 1904 and the Woman's Medical College of Pennsylvania in 1905.

Dr. THELESPHORE CHAGNON of Brooklyn, N. Y., died June 22, of apoplexy. He was graduated from the Long Island College Hospital in 1894.

Correspondence.

THERAPEUTIC INFORMATION WANTED.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Although feebly, in a whisper as it were, the editorial below (from the *Boston Transcript*) speaks for itself, begging answer:

> Investigation in Chicago shows that 500,000 prescriptions calling for whiskey have been written in that city since national prohibition went into effect in January last. . . . Captain Hubert Howard, who is Federal prohibition director for Illinois, has been studying the records, and expresses the opinion that of the half-million prescriptions, 300,000 are evasions of the spirit or the letter of the law. One doctor is said to have admitted that when a regular patient came to him and asked for a prescription for whiskey, it was possible to discover symptoms that justified a pint. . . . This is not, however, a matter that should be lightly treated. The charge that Chicago physicians in less than six months have written 300,000 fraudulent prescriptions is a serious one. While the practice, even if it exists to the extent alleged, is doubtless confined to a minority of the city's medical practitioners, it nevertheless tends to cast discredit on the profession as a whole. It is something calculated to breed contempt for law."

Now, certainly, for the honor of the profession, some therapeutist-with-alcohol, some unofficial Procurator Pauperum (Bibulorum), at length will explain to the expectant physicians the manifold medical necessity for alcohol. Even if only a possible one-half of one per cent. of the half-million prescriptions referred to above were written by conscientious physicians still mindful of their Hippocratic oath, there must be some one of them, or some doctor of like mind nearer by, who will see the pressing need of this wide explanation and give us it—lest the public begin forthwith to think of the physician's office as the modern illegal successor of the kitchen-barroom and of the saloon.

Never a prohibitionist on principle, the present writer is anxious now to see tried out this great prohibitory, hygienic experiment, this colossal biological research; for he is trustful always in the soundly self-protective common sense of the mass of men. But he is still more anxious that the leading public opinion of our land should have much less reason to think "discredit on the profession as a whole." And especially so since alcohol's medical apology is so readily (?) set before the world. Yet if so readily, why is it not promptly done? Or is the claim insincere?

This distinctly is not a matter of "personal liberty" to drink what one would when one desires it, but rather is it just now a question of applied materia medica of deep and pressing social import. Or is it, once more, merely appetite versus therapeutics?

All this coil meanwhile is part of life, our "Magnificent Adventure." During this Pilgrim-anniversary year especially we may be reminded often of J. E. Flecker's already well-known stanza, a sort of hymn for the physician who takes his work and his privileges at something more than those of a trade:

"We are the Pilgrims, master; we shall go
  Always a little further: it may be
Beyond that last blue mountain barred with snow,
  Across that angry or that glimmering sea,
White on a throne or guarded in a cave,
  There lives a prophet who can understand
Why men were born: but surely we are brave
Who make the Golden Journey to Samarkand."

GEORGE VAN NESS DEARBORN.

CAMBRIDGE, MASS.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, June 4, 1920.

Anthrax in Shaving Brushes.—A paper read at the International Health Conference held recently in Brussels dealt with shaving brushes as a means of spreading anthrax. Surgeon-Commander Bassett-Smith of the British Naval Medical Service read the paper, and he discussed the matter as it concerned the British Navy, but as since the beginning of the war anthrax has broken out in several directions, the question is one of general interest. Surgeon-Commander Bassett-Smith gives as the reason for the comparative prevalence of this infection that some small manufacturers who began to trade after 1914 sold brushes made from Chinese and Russian hair, which is not infrequently infected with anthrax, not being aware of the danger. This carelessness, presumably due to ignorance, has occasioned many fatalities and illustrates the need for an international control, that is, for international police supervision of the kind suggested at the Brussels Conference. Laxness, so far as certain health measures are con-

cerned, constitutes a public menace, and as regards the particular instance in point, it should be made impossible to export to other lands products of the nature of infected material from which shaving brushes are to be made. In the meantime it is as well to draw attention to the fact that anthrax is an especially deadly disease and that every precaution should be taken to avoid infection. For example, all new brushes should be boiled for a period of thirty minutes or so and soaked in antiseptic before use. A more sure means of prevention is that fiber brushes should be used, as it is the hair and hair only which is dangerous.

In connection with Bassett-Smith's paper and an editorial thereon in the London *Times* of May 26 last, the secretary of the British Brush Manufacturers' Association points out what he terms undoubted facts, namely, that no anthrax spores have ever been found in shaving brushes made from pure badger hair or in those made from bristle, *i. e.*, the hair of the pig, and brushes stamped either "pure badger" or "pure bristle" may be used without the least risk of infection. According to this writer, the trouble in respect of anthrax has arisen in connection with brushes containing Siberian, Chinese, or Japanese horse hair, pony hair, or goat hair, and has almost invariably, if not always, been traced to brushes imported from Japan. Moreover, the secretary states that with regard to the dissemination of anthrax infection in Great Britain the onus rests on the government. Hair for shaving brushes brought from Siberia, China, or Japan and used by British manufacturers has to be sterilized before use in accordance with British Home Office regulations, but up to the present time the government has not insisted that brushes containing such hair when manufactured abroad should be accompanied with any guarantee that the hair has been sterilized. However, the British Government has prohibited the entry of Japanese shaving brushes.

A Constructive Policy of National Health.—The Consultative Council on Medical and Allied Services, a part of the organization of the Ministry of Health, was requested by Dr. Addison, the Minister of Health, on its formation, to consider the question of forming a systematized medical service established on a local basis, but applicable, area for area, to the whole country. The Council has just issued an interim report more as an indication of the trend of its deliberations and conclusions than as a final exploration of an obviously immense and intricate problem. The reason for the report being given out now is "in view of the urgency which attaches to the orderly building up of a constructive health policy and the close relationship which exists between medical services and problems connected with the poor law and local government." As may well be imagined, the report is intensely interesting and instructive, almost as much so, perhaps, to American as to English readers. The Ministry of Health is the first experiment, on a large scale, of the application of modern preventive measures, and if the experiment proves successful, similar schemes will be adopted in America and in all civilized countries. The Council begins by stating that changes are necessary because the organization of medicine has become insufficient and because it fails to bring the advantages of medical knowledge to the people. Moreover, it is pointed out that preventive and curative medicine cannot be separated on any sound principle. They must be combined and brought within the sphere of the general practitioner, whose duties should "embrace the work of communal as well as of individual medicine." Medical treatment is becoming more complex, and it stands to reason that in proportion as the complexity of treatment becomes greater, so it grows more difficult for the individual practitioner to cover the entire range of treatment, comprising, as it does, access to such resources as those of bacteriology, biochemistry, radiology and electro-therapeutics. Also the number of patients who can afford to pay for such treatment diminishes in an almost corresponding ratio. Another point is that the public is beginning to recognize the fact that the house is by no means the best place to be in when seriously ill. It is urged that medical services must in the future be rendered "available" for all classes, though available is not to be taken as meaning "free." They will normally be divided into groups: (1) Those which are domiciliary as distinct from those which are institutional; (2) those which are individual as distinct from those which are communal. But all preventive and curative agencies essential to the health of the people should be brought together in close coördination under a single health authority for each area. The principle, then, of the scheme proposed in the interim report is the establishment in the local area of primary and secondary health centers whereby would be placed at the disposal of every person, of whatever grade of society, the advantages of the most effective medical treatment. The primary centers, situated in villages and small towns, would supply a certain amount of hospital accommodation and would be staffed entirely by the general practitioners of the district, and attendance on the patient at his own home or at the medical man's surgery, or what the report terms "domiciliary service," would still remain the basis of general practice. The improvement in treatment would consist in the fact that the technical resources of the primary center would be at the disposal of the doctor. If a patient needed to be treated under hospital conditions, treatment could be continued at the primary center, under the care of his own medical man, and if it was found to be necessary to remove a case to a secondary center in order to receive the benefit of the advice and treatment of specialists, the general practitioner would be afforded every opportunity of keeping in touch with the patient and of having him under his care again when discharged. It should be said that the secondary centers will consist of hospitals fully equipped and staffed by specialists, who if required may be called into consultation in the primary areas. In addition to these centers, the last link of the chain would be the teaching hospital. Indeed, the aim of the scheme is to link up these three factors so that they may work in unison and smoothly, as well as to relate them

to the preventive side of medicine. Furthermore, nursing, dental, maternity and other services will be brought into association. It is hoped by these means that all classes of medical men will enter into new relationship one to the other to the great advantage of individual and general health. The scope of medical service of the general practitioner will be greatly enlarged and the hope is expressed in the report that such duties as those of tuberculosis officer, venereal disease officer, school doctor, infant welfare doctor and even health officer may be entrusted to general practitioners, who will practice both preventive and curative medicine and who will serve in intermediary capacity between the people and specialist organizations in all cases.

Of course, while some parts of the scheme are visionary, other parts are practical, while all are possible, given time. The secondary centers cannot be established as yet on account of cost. The primary centers, which after all is the essential feature of the plan, are feasible at once. They can be opened at small cost, and what in existing circumstances is very important, by adding to the working power of the general practitioner will tend to relieve the strain on hospitals. As a matter of fact, it has been proved already that the essence of the plan is workable. It has been actually adopted and, to a very considerable extent, worked out by the public authorities and the medical profession in the county of Gloucestershire. This was due to the initiative and energy displayed by the medical officer of health of Gloucestershire, Dr. J. Middleton Martin, upon whose detailed scheme the proposals of the report were based. As said before, however, the interim Report of the Consultative Council of the British Ministry of Health is intended rather to point the way than as an exposition of the Council's conclusions. It is a document of surpassing interest not only to medical men, but to all those who concern themselves in public health matters and in the medicine of the future.

Etiology of Pellagra.—A paper was read on the etiology of pellagra, on May 14 last at a meeting of the Society of Tropical Medicine and Hygiene by Dr. G. G. Wood. Dr. Wood discussed the malady from the standpoint of a deficiency disease. The speaker fully indorsed the important conclusions of Joseph Goldberger as the result of observations based on (1) the dietetic origin of the disease; (2) its dependence on some undetermined error in diet, with a disproportionately high vegetable and a disproportionately low protein component derived from animal or leguminous sources; (3) the absence of pellagra among those consuming a mixed, well balanced and suitably varied diet. The infective origin of pellagra had at one time met with Wood's support until it was disproved by the experiments of Goldberger and his assistants. But in spite of the evidence against infection being very strong, the possibility of an infectious element playing, perhaps, a secondary but not less essential part could not be excluded. As for the distribution of pellagra in North Carolina it was pointed out that the disease was chiefly confined to the foothills of the high mountains bounding the western frontier, and that, as a rule, its incidence was much less along the Atlantic seaboard, while in the mountains themselves its occurrence was very rare. The dwellers in the mountains were described as being of the most degraded type of Anglo-Saxon known, and often living in most unsanitary and overcrowded huts, on a diet far from ideal. Yet the mountaineer did not suffer from the disease. His food consisted chiefly of corn ground whole at the local water mill and consumed before rancid decomposition of the germ could occur. On the other hand, the inhabitants of the foothills, workers in the local cotton mills, availed themselves of whatever was provided by the local merchant in the form of commercial corn-meal and patent wheat flour and adopted whatever means would curtail and facilitate the cooking process. In consequence, their food was composed of wheat-flour without bran, corn-meal milled without bran or germ, and a variety of chemical baking powders. It was among the consumers of this diet that pellagra prevailed. It was in consequence of Goldberger's influence and work that Wood was induced to regard pellagra from the analogy of beriberi as a deficiency disease. Wood, in fact, has been quite converted to Goldberger's theory as to the etiology of pellagra; that is, a food deficiency disease. In discussing the papers Dr. H. Manson-Bahr claimed that too great stress had been laid on the food deficiency theory as the main cause of the disease, and held that the theory of infectious origin had been effectually disproved. He maintained that food deficiency did not explain the occurrence of the sixty-five cases of pellagra among 70,000 German prisoners in Palestine and Egypt who had suffered no previous food shortage, many of them in good physical condition, not afflicted with dysentery or malaria. He asked why, if pellagra was due to a food deficiency, there had been no cases in Austria, where tuberculosis and rickets were so rife as the result of food shortage. He suggested as a possible explanation of the occurrence of pellagra in Egypt, especially among well-fed German prisoners, the action of a toxin peculiar to the endemic areas in Egypt effecting the endocrine glands and particularly the suprarenals, which, together with the sympathetic system, bore the brunt of the disease.

Lieut.-Colonel P. S. Lelean, R. A. M. C., supported food deficiency as the main cause. He commented on the conditions prevailing among Turkish prisoners from Gallipoli and Syria, and the absence of any source of infection in the towns of Syria, where the disease was unknown to Syrian civilian doctors. Among a batch of 4,000 prisoners who had experienced considerable food shortage there had been 279 cases of pellagra, which subsequently, under the influence of improved conditions in the prison camp, had dropped to twenty-seven. The striking contrast presented by the adjacent prison camps at Maadi, the one with 6,000 Turks and many cases of pellagra, the other with 2,000 German prisoners in good physical condition, could be accounted for only by a difference of diet. The occurrence at a subsequent date of sixty-five cases out of a total of 70,000 German prisoners, he contended could be explained on the score of a food deficiency by the

effect of heavy work when on a light diet calculated as sufficient to meet the ordinary demands of life, also by the failure of extra supplies which had at first been met through charitable agencies on behalf of prisoners, but had subsequently not been forthcoming in the later period of the war. The deviation of the biological protein of the light diet in response to the increased demands of heavy work, even if digestion and assimilation were correctly balanced, would, he considered, create a deficiency sufficient to account for the occurrence of pellagra.

Progress of Medical Science.

Boston Medical and Surgical Journal.

June 17, 1920, clxxxii, 25.

1. The Significance of Hematuria. A Study of One Hundred Personal Cases. Arthur L. Chute.
2. Chronic Fatigue: Diet, Exercise, and Other Factors in Treatment. John Bryant.
3. A Case of Infection of the Knee-Joint Treated by Early and Continuous Active Motion. F. B. Lund.

2. Chronic Fatigue: Diet, Exercise, and Other Factors in Treatment.—John Bryant holds that the world is full of persons, mostly chronic invalids, who react excessively to sensory stimuli of both mental and physical origin. One obvious ultimate result of this continued overreaction to sensory stimuli is chronic fatigue. The patient will not recover until the chronic fatigue is relieved. In order to releve the chronic fatigue its cause must be attacked. In diet and exercise one has available two valuable but apparently too little appreciated active therapeutic procedures for an attack upon the problem of overreaction to sensory stimuli. He presents some details of the use of these two procedures.

New York Medical Journal.

June 19, 1920, cxi, 25.

1. Retention Crypts in the Infratonsillar Nodules as Harbors of Pathogenic Bacteria. Thomas R. French.
2. A Method of Anesthesia for Adenoid and Tonsil Work. James T. Gwathmey.
3. The Relation of Hypertension and Hypotension of the Membrana Tympani to Deafness and Tinnitus. Harold M. Hays.
4. Four Patients with Cysts of the Larynx Operated Upon Under Suspension Laryngoscopy. Wolff Freudenthal.
5. Treatment of Chronic Purulent Otitis Media. James G. Callison.
6. Mastoidectomy Followed by Insanity. Otto Glogau.
7. Technic of the Simple Mastoid Operation. C. M. Sautter.
8. An Unusual Case of Injury to the Larynx. Fielding O. Lewis.
9. Cancer of the Larynx Removed by the Indirect Method. Milton J. Ballin.
10. The Voice and the Lingual Tonsil. Paul V. Winslow.
11. Some Endoscopic Mishaps. H. Arrowsmith.
12. Removal of Foreign Body in the Bronchus. William B. Chamberlin.
13. Removal of Foreign Body from the Bronchus. C. J. Imperatori.
14. Conservative Nasal Sinus Surgery. M. S. Ittelson.

6. Mastoidectomy Followed by Insanity.—Otto Glogau cites the case of a male patient, 29 years of age, whose history shows that he had always been well and had had no ear trouble until three months before examination by the writer. Paracentesis and later mastoidectomy were performed. The mastoid cavity proved to be totally destroyed and filled with pus and granulation tissue. The destruction reached up to the dura, which was exposed and found apparently normal. Pointing backward and downward there was an extensive perisinous abscess which reached from the sigmoid sinus toward the region of the bulb, where pus was constantly oozing alongside the sheath of the blood vessel. Conditions did not indicate sinus thrombosis. The cavity was not closed, but lightly packed, and regular dressing applied, which was changed every second day. On the fifth day the patient appeared somewhat stuporous toward evening, his pupils were widely dilated. During the night he became violent and jumped out of bed. Even after repeated hypodermic injections he had to be tied down to the bed. He then slept until morning, when he awoke with manifestations of great violence. The following summary of the findings is given: Dreamy states characterized by visual hallucinations; mastoiditis with involvement of the brain substance; clear intervals. A spinal fluid examination for cells was thought desirable. There was a strong suspicion of temporosphenoidal abscess. Further observation was thought necessary for the spread of signs and symptoms for the formation of laudable pus on the side of the involvement and an exploratory operation when this appeared. Spinal puncture showed the fluid to be under moderate pressure with a negative Wassermann. The cytology was normal and no bacteria were present. The fluid was clear and one plus for globulin. Gradually the patient became more and more sensible at night, and would talk less, falling asleep when exhausted. During the day he would even read the newspapers intelligently. He soon had perfect quiet. He was discharged from the hospital on the twenty-sixth day after the mastoid operation. Little was left that was pathological as far as the central nervous system was concerned. The deviation from the normal found in the right eye may have existed prior to the mastoid involvement. There was at this time no evidence of mental disease. The entire picture presented by the patient at the first examination is regarded as composed of two components: (1) A local edema of the temporosphenoidal lobe; (2) general toxic manifestations in the course of septic disease. With the recession of the focal edema most of the focal signs vanished. With the recession of the infection the infectious toxic signs vanished. From the study of this case the writer concludes that attacks of insanity following mastoidectomy, especially with exposure of sinus or dura, are of toxic origin. The contents of the hallucinations and delusions point also to a psychic cause, or rather susceptibility, which was founded on certain suppressed wishes and fears that occupied the patient's unconscious state previous to the operation. The otologist should therefore also have some understanding of the psychoanalytic side of the problem. Previous to any operation, especially on structures near the brain, an investigation of the patient's psychic status should be made. In case such postoperative attacks of insanity occur, mind rather than matter will then be regarded at fault. Disregard for the psychic aspect of the problem may give rise to the assumption of a temporosphenoidal abscess being the cause of these attacks of insanity, and may lead to an unnecessary exploration of the brain.

The Journal of the American Medical Association.

June 19, 1920, lxvii, 25.

1. Conservation of the Menstrual Function. W. J. Mayo.
2. Spondylitis and Abdominal Pain, with a Discussion of Nerve-Root Symptoms Simulating Visceral Disease. Douglas Vanderhoof.
3. Subcutaneous Phlebectasis of the Lower Thoracic and Upper Abdominal Regions. William Gerry Morgan.
4. Measles: Brain Complications. A. L. Skoog.
5. Congenital Facial Paralysis: Two Additional Cases. Frank R. Fry.
6. Tidal Irrigation of Wounds by Means of Liquid-Tight Closure. W. H. Taylor and N. B. Taylor; Foreword by W. E. Gallie.
7. Chronic Leukorrhea: Its Pathology and Treatment. Arthur H. Curtis.
8. Results of the Exposure of Animal Ovaries to the Rays of Radium. John M. Maury.

1. Conservation of the Menstrual Function.—William J. Mayo. (See MEDICAL RECORD, May 22, p. 888.)

2. Spondylitis and Abdominal Pain, with a Discussion of Nerve-Root Symptoms Simulating Visceral Disease.—Douglas Vanderhoof. (See MEDICAL RECORD, May 8, p. 809.)

3. Subcutaneous Phlebectasis of the Lower Thoracic and Upper Abdominal Regions.—William Gerry Morgan. (See MEDICAL RECORD, May 8, p. 806.)

4. Measles: Brain Complications.—A. L. Skoog reports two cases of brain complications following measles. From his own cases and from a study of the cases reported by others he makes three groups of cases: The first group would include a certain minor number of cases in which the relationship of the measles would be merely incidental. The second group would include the secondary infections due to various organisms. The third group is a less certain one, owing to

the fact that the exact etiology of measles is as yet undetermined. The prognosis for these brain disorders depends on the brain tissue changes. The management and treatment depend on the lesions and the attendant deformities or deficiencies. Prophylaxis is of the first importance. Skoog has seen in his consulting practice and in the clinics of other neurologic consultants certain mild neurologic or mental cases that were difficult to catalogue. This includes some with the neurasthenic syndrome. They may have originated from troubles in the brain or meninges in the course of or following measles and other exanthems. Some of these neurologic disorders can be traced back to early childhood without knowing the exact etiology. He believes that at least a portion of these can be attributed to permanent pathologic residues caused by the toxin or virus of measles or from one of the complicating secondary infections.

7. Chronic Leukorrhea: Its Pathology and Treatment.—Arthur H. Curtis. (See MEDICAL RECORD, May 22, p. 887.)

8. Results of the Exposure of Animal Ovaries to the Rays of Radium.—John H. Maury. (See MEDICAL RECORD, May 22, p. 890.)

The Lancet.

May 29, 1920, cxcviii, 20.

1. Goulstonian Lectures on the Principles of Medical Science as Applied to Military Aviation. Delivered before the Royal College of Physicians of London. Lecture I. J. L. Birley.
2. Encephalitis Lethargica (Epidemic Encephalitis). Edwin Bramwell. With a Note on Post-mortem Findings in a Series of Cases of Encephalitis, by James Miller.
3. The Advantages Afforded by Extension in the Treatment of Diseased Joints. Sir W. Arbuthnot Lane.
4. A Note on the Clinical Diagnosis of Diphtheria and other Exudations of the Throat. Harry Drinkwater.
5. Three Cases of Modified Small-pox. Walter Allinham.
6. Full-time Tubal Pregnancy. Cesarean Salpingectomy: Recovery. R. Eccles Smith.
7. Medical Progress in China Since the Republic. Wu Lien Teh.

6. Full-time Tubal Pregnancy. Cesarean Salpingectomy: Recovery.—R. Eccles Smith reports a case in which complete rupture of the tube did not take place. He admits that incomplete rupture of one or more of the coats may have occurred in the earlier months, followed by sufficient reinforcement by adhesions and localized protective peritonitis to thwart complete rupture, allowing a viable child to go to full term until delivered by surgical interference. He could find no similar case recorded in the literature. The patient was thirty-two years of age, a 3-para, the other children having been born naturally and without difficulty.

7. Medical Progress in China Since the Republic.—Wu Lien Teh says that in spite of the disturbed state of the country since the establishment of the Republic in 1911, the progress of medical and sanitary science has been very marked and steady, as shown by the readiness with which both the Central Government and the provincial authorities have established and supported hospitals and institutions of a sanitary nature, and by the increased interest shown by the general public in Western medicine, home cleanliness, and matters bearing a hygienic value. He discusses the subjects of the plague prevention service, interesting medical landmarks, the cooperation of Chinese and foreigners, and the pressing needs in the medical line. Among other interesting items mentioned is the appointment of a terminology committee, consisting of representatives of the Ministry of Educaton, National Medical Association, Medical and Pharmaceutical Society, Medical Missionary Association, and Kiangsu Educational Association, to determine the terms to be used throughout China. So far the complicated terms of anatomy have been finished and accepted by the government as official. The terms in bacteriology, chemistry, and physics have also been finished and are awaiting recognition.

British Medical Journal.

May 29, 1920, 1, 3100.

1. Lecture on the Toxæmias of Pregnancy. Aleck W. Bourne.
2. A Collective Investigation of Ten Thousand Recruits with Doubtful Heart Conditions. Fourth Report Compiled by S. Russell Wells.
3. The Immediate Closure of Empyemata. Frank Hathaway.

2. A Collective Investigation of Ten Thousand Recruits with Doubtful Heart Conditions.—S. Russell Wells summarizes this fourth report as follows: Taking aortic regurgitation and mitral stenosis as the two typical valvular lesions which can be diagnosed with comparative certainty during life, the results of the present statistical inquiry lead to the following conclusions: (1) The most important etiological factor in the production of organic lesions of the heart valves in men between the ages of 18 and 41 is rheumatic fever. (2) Strain can independently produce aortic regurgitation. (3) While strain may be a cause of mitral stenosis, it is a much less important factor than in the production of aortic regurgitation. (4) There is a third agent giving rise to symptoms simulating influenza, which is an efficient cause of mitral stenosis, and can possibly affect the aortic valves as well, but is not nearly so likely to do so. Wells has been unable to find any statistical evidence that syphilis, scarlet fever, diphtheria, pneumonia, or gonorrhea, are causes of valvular lesions, nor can he find statistical evidence that a history of growing pains points to affections productive of valvular lesions. The same may be said, with slight reservations, of a history of rheumatism where there is no clear account of pain, swelling of the joints, fever, or confinement to bed. The evidence in favor of chorea as an efficient cause of mitral stenosis is strong, and he has found some, though not very striking, evidence in confirmation of the view that chorea and rheumatic fever are both manifestations of the activity of a common cause.

Indianapolis Medical Journal.

April, 1920, xxiii, 4.

1. Anthropology of Modern Civilized Man. Arthur MacDonald.
2. Fracture of the Femur. E. N. Mumford.
3. Unusual Case of Empyema Treated by the Closed Method. Arvine E. Mozingo.
4. A Report of Two Consecutive Cases of Hemorrhage of the New-Born in One Family. A. R. Barnes.
5. Case Report of Multiple Infections. John H. Eberwein.
6. Unit of Vision for Industrial Blindness. Joel Whitaker.

Indianapolis Medical Journal.

May, 1920, xxiii, 5.

1. Tremor Following Explosions. Tom A. Williams.
2. Relation of Deep Stricture of Large Caliber to Disease of the Lower Urinary Tract. M. J. Latimer.
3. The Terrible Uta. G. C. Graves.
4. Eye Injuries in Reference to Industrial Organizations and Insurance. Walter N. Sharp.
5. Nasal and Accessory Sinus Headaches. D. O. Kearby.
6. The American Red Cross During the War—Finances, Accomplishments and Incentives. Samuel E. Earp.

2. Relation of Deep Stricture of Large Caliber to Disease of the Lower Urinary Tract.—M. J. Latimer holds that many pathological conditions of the urethra and its adnexa are perpetuated by relatively slight coarctations of the canal. These coarctations act not only locally by producing irritation and preventing drainage, thereby perpetuating the infection, but they also produce reflex irritation of the deeper parts and also extension of the infection. Urethral strictures of large caliber can be diagnosed only by the expert use of the exploring bulb, the sound being worthless. Attempts at stretching in the majority of cases of this kind simply make a bad matter worse, urethrotomy being the only logical recourse. The degree of constriction of the canal is by no means a criterion of the necessity for operation. The important point to decide is not the degree of contraction but the extent to which the contraction modifies or perpetuates any present. To attempt to cure urethral, bladder, and prostatic disease in the presence of a stricture of large caliber which bears a definite relation to the symptoms, without removing the obstruction, is about as sensible as treating a case of conjunctivitis without removing the cinder which has induced it.

La Presse Médicale.

April 17, 1920, xxviii, 23.

Esthetic Grafting of the Scalp.—Passot describes his method, which has been greatly magnified in importance by the daily press, as follows: It is intended as a

cosmetic cure of baldness, and is comprised under cosmetic surgery in general. Passot has now 127 cases to report of cosmetic surgery of wrinkles, and has extended his work in other directions as the removal of disfiguring scars, but as for an esthetic cure of baldness that is at present largely in the air. The subject is not new, for German surgeons have practised it, at least in a small and tentative way. Thus small tufts have been grafted into the bald scalp, although without much success. The author would perform autoplastic grafting from a hairy to a bald area of the scalp. The temples and occiput are largely immune to baldness, and zones or bands can be switched from its bed in the hairy region to the normal junction of the frontal hair with the forehead. By proper care, the hair follicles being undisturbed, long hair may grow on the grafted area, and this may be brushed backward to cover the bald area. It is not suggested that more than two successive implantations be made for the remaining natural hair could hardly be made to spare further transplants. In certain cases a second flap may be placed behind the first. The optimum of interval is three weeks. The operation may be varied in several ways. The author has had six perfect results, and probably not a few failures, or at least he warns of various technical errors which invalidate the result. He used local anesthesia with great success, and states that hemorrhage was but trifling. After the first month there was enough hair on the grafted surface to conceal the incision, and after two or three months the hair was so long that it could readily be combed back to cover the remaining bald spot.

La Riforma Medica.

March 6, 1920, xxxvi, 10.

Lethargic Encephalitis and the Poliencephalitis of Influenza.—Zagari states that Camerarius of Tübingen was the first to describe under the name of sleeping sickness an affection in which somnolence and ptosis were present. This was in 1712, and the description differs from those of all other claimants for priority in the sure presence of ptosis and in the choice of the name. Catarrhal fever—the old name for influeza—with somnolence, was seen in epidemic incidence in Germany in 1745, in Lyons in 1800, in Milan in 1802, etc. There can therefore be little doubt as to the antiquity of both types of this affection, the primary and the secondary, or grippal form, whether these be the same or quite different in nature. We have next to ascertain whether the socalled "nona" of the nineties presented the ocular palsies. The most striking symptom of the cases of 1890 was the continuous sleep. The author is silent on the earlier cases, but in 1900 Bozzolo noted the implication of the cranial nerves, which, however, he ascribed wrongly to basilar meningitis. Apparently up to 1917 the nature of the ocular pareses and their constancy was far from recognized. When the disease appeared in mass incidence in Vienna in 1917 Economo noted at the outset the presence of eye symptoms. From that time the clinicians of the world were on the lookout for them. In regard to nosology the author makes three types based on pathological finds, to wit: the superior mesencephalic, characterized clinically by somnolence and motor paralyses of the upper cranial nerve, especially of the eye muscles; the inferior mesencephalic, in which the last six pairs of cranial nerves are involved, and an anomalous type which comprises all of the cases with polymorphous and atypical symptoms, and in which the entire neuraxis may be involved.

Hygiea.

April 15, 1920, lxxxii, 7.

Results of Operative Treatment of Hypernephroma.—Michaelsson refers to the dubious nature of these growths—whether of suprarenal or renal origin, the degree of malignancy, etc. The greatest collection of cases, by Paschen, shows that of 268 operative cases found in literature over 17 per cent had "permanently" recovered. The same author quotes 54 unpublished cases, apparently largely personal, which showed double this percentage of recovery. These statistics are not representative because the observation period of many was insufficient. By carefully editing this author's material from the viewpoint of a longer observation period there is no proof of extensive survival, and only a few cases show a long survival. It is known that late recurrence and late metastasis are both common in hypernephroma. Further, many patients being of advanced age may readily die of some intercurrent disease. Histological finds are of little service in fixing the degree of malignancy. The author cites a series of results of cases operated on at the Seraphiner Hospital of Stockholm during the period 1896-1915. At the request of Professor Rovsing, each case was carefully controlled for at least four years. In March, 1919, were living seven of the patients operated on from four to fifteen years before. Four patients died from the operation, which leaves twenty-six cases for statistics. Nine died of recurrence or metastases, and of this number three had survived longer than three years, while no less than ten had succumbed to intercurrent disease and of this number five had succumbed within eighteen months, thus vitiating the material for statistics. We can only say that of twenty-one operative cases seven recovered and nine died of recurrence, while five died of other diseases with a chance that the tumor would not have recurred within three years, at least.

Le Bulletin Médical.

April 10, 1920, xxxiv, 20.

Increasing Frequency of Chancroid.—Payenneville found that during 1919 in the general hospital at Rouen 235 primary venereal ulcers of all kinds had come under observation. Of this number sixty-one were examples of primary syphilis, 125 were chancroids and forty-nine were of the mixed type. This ratio of two to one in favor of the soft sore should be contrasted with the figures often encountered, in which the syphilitic initial sore outnumbers the chancroid by as much as four or five to one. In the army for the same period the ratio of the two was nearly equal, with only a slight advantage in favor of the chancroid. Even equality of incidence usually bespeaks a high frequency for chancroid, and hence two to one in favor of the latter means a specially high incidence. It has long been known that in times of great commingling of men, as during army mobilizations, expositions, etc., a notable frequency in the incidence of chancroid is noticeable; and conversely when the population is stationary and in equilibrium this frequency declines. With increased frequency in general the increase in the incidence of mixed chancre should be noticeable. The author is inclined to accuse defective laboratory technique as a factor in the establishment of false statistics. For example, many clinical chancroids may be found to contain the treponema. These are technically mixed chancres, although in the past they have counted as simple sores. Again, a chancroid may, if examined later, be found to be a mixed lesion. The author would therefore always take a Wassermann reaction in chancroid. He has shown by attention to details of technique that mixed chancre, far from being a curiosity, is relatively common. Laboratory follow-up activities are necessary for arriving at the actual frequency of chancroids.

The Fleiss Periodicity Theory.—Fleiss, discoverer of the nasal genital area and promulgator of the twenty-three and twenty-eight day theory of periodicity of certain events, has added data to his original material published in book form some years ago. The menstrual periodicity of the mother may be handed down to the offspring, so that on certain days certain operations like tonsillectomy are more apt to be followed by primary or secondary hemorrhage. Cerebral apoplexy and other suddenly fatal affections may occur on the periodic days. In general the day of death, the day on which one is attacked by a given disease, the day in which labor begins, etc., may show in a given family strain a close correspondence. The day of birth, of the menstrual period, etc., correspond to the periodic days, and it seems evident that on these days the resistance to disease is lowered.—*Schweizerische medizinische Wochenschrift.*

Book Reviews.

HANDBOOK OF DISEASES OF THE RECTUM. By LOUIS J. HIRSCHMAN, M.D., F.A.C.S., Vice-Chairman, Section on Gastroenterology and Proctology, A.M.A.; ex-president American Proctologic Society; Professor of Proctology, Detroit College of Medicine; Proctologist Harper Hospital; Major, M.C., U. S. A. (Honorably Discharged), Detroit, U. S. A. With 223 illustrations, mostly original, and four colored plates. Third edition, revised and rewritten. St. Louis: C. V. Mosby Company, 1920.

THE new edition of this excellent work has been improved by the addition of a number of illustrations further elucidating the text which, thanks to the author's pleasing literary style, is in itself very clear and understandable. Any one studying this book comes as near to a clinical demonstration as is possible without the patient actually on the table. Dr. Hirschman is extremely partial to local anesthesia and asserts that fully 75 per cent. of all rectal and anal diseases are amenable to treatment without resort to general anesthesia. The reviewer lays no claim to anything approaching the author's experience in this field, yet he cannot but think that Dr. Hirschman's success with local anesthesia in this sensitive portion of the body is due very largely to his personal skill and that the majority of operators—certainly the majority of patients—will not accept this estimate of the wide applicability of the use of quinine and urea hydrochloride in anorectal surgery.

DISEASES OF THE CHEST AND THE PRINCIPLES OF PHYSICAL DIAGNOSIS. By GEORGE WILLIAM NORRIS, M.D., Assistant Professor of Medicine in the University of Pennsylvania; Visiting Physician to the Pennsylvania Hospital; Assistant Visiting Physician to the University Hospital; lately Colonel, M.C., U. S. Army; and HENRY R. M. LANDIS, M.D., Assistant Professor of Medicine in the University of Pennsylvania; Director of the Clinical and Sociological Departments of the Henry Phipps Institute of the University of Pennsylvania; Visiting Physician to the White Haven Sanatorium, with a chapter on the Electrocardiograph in Heart Disease, by EDWARD B. KRUMBHAAR, Ph.D., M.D., Assistant Professor of Research Medicine in the University of Pennsylvania. Second edition, revised. Philadelphia and London: W. B. Saunders Company, 1920.

THOSE familiar with the first edition of this work will welcome the appearance of a new and improved one. Among the additional subjects included are influenza, spirochetal bronchitis, streptococcal empyema, pneumopericardium, and calcification of the lungs. All the features that made the first edition such a valuable work are retained in this. Especially to be commended are the discussions of the acoustics of the chest, and above all the numerous and helpful illustrations; there are over four hundred of the latter, some of them colored, and most of them very apt and beautifully executed; they add enormously to the value of the work as a guide to the student and practitioner. In the sections on the various thoracic diseases chapters are devoted to the morbid anatomy and etiology, in addition to the symptoms and physical signs, but the treatment is not discussed. With this limitation, which is not made clear in the title, the book is to be most heartily commended to the study of every general practitioner, so large a part of whose practice has to do with diseases of the chest.

MANUAL OF PSYCHIATRY. Edited by AARON J. ROSANOFF, M.D., Clinical Director, Kings Park State Hospital, New York; Lieutenant-Colonel, Officers' Section, Medical Reserve Corps, U. S. Army. Fifth Edition, Revised and Enlarged. New York: John Wiley and Sons, Inc., 1920.

THIS handy little volume is growing somewhat in bulk with every edition, but the increment always contains so much of value that no possible objection can be found to it. Even this edition, with its chapters on psychoanalysis, forensic psychiatry, and its remarkably complete section devoted to various kinds of examinations, does not exceed in bulk one of De Morgan's novels. One might perhaps wish for more clinical material in this almost wholly didactic volume, for we do not believe psychiatry can be mastered in such a manner.

However, as a manual for the teacher of psychiatry to lecture from, a guide to which the student of psychiatry can turn while studying his patients and a ready reference book for the general practitioner, it is difficult to surpass. We know of only two other books of similar scope in English which are in its class. Rosanoff gives much credit to his chief collaborator, J. Rogues de Fursac, whose name, it will be remembered, formerly appeared on the title page, and also to H. L. Hollingworth, Mary C. Jarrett, and Clarence A. Neymann. Dr. Hollingworth's contributions are especially valuable.

SYPHILIS, a Treatise on Etiology, Pathology, Diagnosis, Prognosis, Prophylaxis, and Treatment. By HENRY H. HAZEN, A.B., M.D., Professor of Dermatology and Syphilology, Medical Department of Georgetown University; Professor of Dermatology and Syphilology, Medical Department of Howard University; Member of American Dermatological Association and National Association for Control of Syphilis; Visiting Dermatologist and Syphilologist to Georgetown University Hospital, Freedmen's Hospital, Washington Asylum Hospital, and Woman's Evening Clinic; Author of "Diseases of the Skin," "Cancer of the Skin," etc. With 160 Illustrations, including 16 Figures in Colors. St. Louis: C. V. Mosby Company, 1919.

IN the past few years a multiude of volumes on Syphilis have been presented to the profession. The greater part of these deal with the treatment of the malady with particular reference to intravenous injection of the arsenicals. The excellent work now under consideration deals thoroughly and concisely with every problem confronting the syphilographer. The author has induced many eminent men to write special chapters. Among them are Reasoner, Fowler, Dunlop, Lind, Hough, Dabney, Greene, Craig, Schamberg, Van Sweringen, and Reede. These chapters are so skilfully written and interpolated that they do not jar the reader, but materially balance and symmetrize the book. The sections on Syphilis of the Nervous System (by John E. Lind) and Congenital Syphilis are especially praiseworthy; as is the short chapter of five pages on "Prognosis" wherein the author's sane pessimism may halt many enthusiasts. Although a correct appreciation of the book requires its reading throughout, yet its sequential arrangement of subjects adds to its value as a volume for reference. The opening sentence of the preface may be paraphrased: "At the present time there exists no (other) small book that covers the whole field of syphilis in an authoritative way."

THE PRACTITIONER'S MANUAL OF VENEREAL DISEASES, with Modern Methods of Diagnosis and Treatment. By A. C. MAGIAN, M.D., Ancien Elève de l'Hôpital St. Louis, Paris; Hon. Surgeon Manchester French Hospital; Hon. Surgeon Wood Street Clinic for Genito-urinary Diseases. St. Louis: C. V. Mosby Company, 1919.

IT is doubtful whether or not the author has accomplished his aim "of giving a concise outline of the diagnosis, symptoms, and treatment of venereal diseases as we are acquainted with them to-day." He hopes to furnish the general practitioner with a manual which will not leave him in a mental fog, rarely dispersed without a great deal of outside assistance. In his endeavors to accomplish the first aim he thwarts his second. Gonorrhea is disposed of in fifty pages; gonorrhea in the female in four and one-half pages. He loses his opportunity to teach the general practitioner to think logically and correctly. Epididymitis is referred to as "inflammation of the testicles." The great biological principles of disease go unheeded in such statements as "To destroy the gonococcus we must use injections." . . . The latter three-fifths of the book deals with syphilis in all its phases and constitutes by far the more valuable portion of the volume. The chapter on the history of syphilis is clear and well written. The illustrations of Frenkel's methods of teaching the ataxic to walk are well chosen and of value.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held February 5, 1920.

THE PRESIDENT, DR. GEORGE DAVID STEWART, IN THE CHAIR.

THE program of the evening was arranged in cooperation with the Association for the Prevention and Relief of Heart Disease.

Extent of Cardiac Disease Among Children of School Age in New York City.—Dr. J. L. BLUMENTHAL of the New York City Department of Health, representing Dr. S. Josephine Baker, spoke on this subject. He stated that a great deal of attention had not been paid to cardiac disease in school children heretofore, because they had not had an association of this kind to get together and discuss these cases and the methods of affording relief. In the New York schools the medical inspectors were making examinations and tabulating the results, which showed that the incidence of heart disease among school children was from 1.4 to 1.9 per cent. These figures appeared so constantly that he felt they expressed about the true extent of cardiac disease among school children. Recently a complaint had come to them from clinics that they were sending too many cases of cardiac disease which were found not to be cardiac disease when they arrived at the clinics. There was an excuse for that. They felt that they would rather send to the man who was going to make the diagnosis, not only actual cases of cardiac disease, but cases in which there was any possibility of a cardiac condition, and permit him to make the diagnosis. The same was true of hypertrophied tonsils and other conditions. In the Health Department they did not make diagnoses, for they did not have a proper room in which to make examinations and they could not strip the children. They had devised a plan of having the boys open their shirts for these examinations, but all they did was to pick out the suspicious cases, and they expected the physician not only to make the diagnosis but to care for the case. In examining the girls they did not open the waist unless a parent was present. The proposition had been made that the Department of Health should establish cardiac classes. While there were many good points in cardiac classes, they in the Health Department felt that the difficulties in the way of establishing such classes far outweighed the advantages and that at the present time such a plan was not feasible. A teacher was needed for every twenty-five cardiac children and each teacher would have to have four or five grades in her class. They had felt that the matter of physical exercise was the only reason why such classes might be an advantage. Furthermore, such classes would be a large item of expense and they felt that this money might better be expended in regulating conditions in the home, as, for instance, if a family was living on the top floor and it was found that the stairs were too much of a strain for the child, it was better to assist that family to move downstairs. In the matter of exercise, a letter to the teacher would excuse the child from gymnastics, and the teachers would see that such a child used the front stairs in fire drill. Then there were psychological reasons why it was better not to put girls ten or twelve years of age into cardiac classes where they were constantly reminded that they had heart disease and came to think of themselves as invalids. Some who had made tests in children knew that a heart even with an organic lesion was not affected by exercise to the extent that some believed. So owing to the many disadvantages of cardiac classes they had decided that they should not be established. They wished, however, to make an appeal to private physicians and dispensaries to treat all children that were sent to them by the Department of Health and to send the diagnosis to the Health Department. Dr. Blumenthal said he had made a study of conditions other than heart disease and found that private physicians were low in the number of physical defects that they found in school children. There was a provision of the Sanitary Regulations that permitted private physicians to examine school children when the parents so desired. Private physicians had found only 2.3 per cent. with defective vision, whereas the inspectors of the Department of Health had found in the same age group 9.4; private physicians found 5.7 per cent. with nasal breathing, compared with 10.1 per cent. found by the inspectors; private physicians found hypertrophied tonsils in 12.1 per cent., while inspectors found this defect in 3.5 per cent. Undernutrition was found in only 5.7 per cent. by private physicians, as against 14.2 per cent. of those examined by inspectors. In cardiac disease the percentage was about the same whether the children were examined by private physicians or inspectors. On the other hand, private physicians found twice as many pulmonic defects as did the inspectors. In examining teeth private physicians found 19 per cent. defective, while the inspectors of the Health Department found defective teeth in 65 per cent. That was because the private physician did not call the attention of the parents to the teeth because they still felt that the primary teeth need not be cared for by the dentist. An association of this kind could be useful and should be encouraged because there was a real necessity for their work. He hoped that some time later the subject could be threshed out and the public invited to learn about cardiac conditions in school children and among children in general.

Incidence of Heart Disease in Adults.—Mr. LOUIS I. DUBLIN, statistician of the Metropolitan Life Insurance Company, spoke on this subject by invitation. He said that at the present time there were two outstanding public health problems about equally important, tuberculosis and heart disease. They both caused in the United States about an equal amount of sickness and death, there being about 150,000 deaths annually due to each of these two causes. From the point of view of illness there were perhaps 2,000,000 sufficiently impaired in health by heart disease to seriously interfere with their functioning in everyday life. The field of tuberculosis had been pretty thoroughly exploited for a period of over thirty years and thousands of physicians had been trained to care for the tuberculous. Institutions had been established for their care and a national program had been developed, whereas for the solution of the other problem, equally important, scarcely anything had been done. The death rate from tuberculosis had been reduced probably 50 per cent., but there was no evidence that the death rate from heart disease had been reduced at all. In fact, there were very excellent figures for the registration area which would indicate that there was a rise in the mortality from heart affections. It could be said then that there was a real need for an organization to develop a program and interest throughout the country in this problem. We had in heart disease a problem exactly similar to that presented by tuberculosis, the surface of which as yet had scarcely been scratched. Evidences in support of these striking statements might be divided into three heads: First, sickness rate; second, lethal rate from sickness, and, third, death rate from heart disease. The evidence as to the incidence of heart disease came from a number of sources, among these the material of life insurance companies, which make millions of examinations yearly. A certain proportion of applicants for insurance were regularly rejected because of heart lesions sufficiently important to justify the expectation that they would not show a longevity in excess of thirty or forty years. The life expectation to-day was fully one-third better than it was seventy years ago, yet that did not apply to cardiac disease, and 2 per cent. of the persons examined were rejected for heart lesions. Examinations were made by physicians in large industrial establishments and they concurred fully with what the medical examiners of life insurance companies had found. The United States Public Health Service had examined many thousands of individuals and had found 2 per cent. showing serious organic heart lesions. Those were also the findings of Dr. Robert Wilson of Cincinnati and of Dr. Harris in his examination of the food handlers of New York. In the draft examinations 2.16 per cent. of the men in the prime of life were rejected because of heart impairment. Putting all these figures together, there was no escape from the fact that among men from 25 to 30 or 31 years of age at least 2 per cent. suffered from sufficient impairment of the heart to markedly curtail their longevity. One life insurance company had

kept records for eighteen years of the examinations that had that had shown mitral regurgitation, and had accepted such applicants for insurance on a large extra premium. Last year they made a careful study of these records by the best actuarial methods and found that this group of some six thousand persons had a mortality of from 50 to 100 per cent. in excess of other individuals of corresponding age. The experience of the New York Life Insurance Company showed the same results. It might then be said that persons with moderate heart impairment, justifying insurance at an increased premium, had a mortality of 50 per cent. more in the younger group and 100 per cent. more in the older group, that was between the ages of 42 and 45 years, than that of the normal individual. For other heart defects such as aortic stenosis and aortic regurgitation the mortality was so much greater that they had quit that type of business. There was a large number of deaths then from organic heart disease even at the earlier ages, and at the older ages heart disease was the first of all causes of death. Taking all ages together in the registration area, heart disease was the leading cause of death, having exceeded tuberculosis. In the years just preceding the epidemic of influenza there were 150,000 deaths a year from this cause in continental United States. The rate had been rising steadily during the last decade, there being a drop last year for the first time. Beginning with 1911, the rate of 241.7 had continued with slight change until 1919, while during that period the mortality from tuberculosis had dropped 30 per cent., but in 1919 the death rate from heart disease dropped to 111.7, an unprecedented drop of 130 points. During the first nine months of 1919 the rate was practically the same as for 1918, but during the last three months there had occurred this extraordinary decrease in the number of deaths from heart disease. However, for the last three months of 1918 the death rate in America was the worst on record, there being an increase of 16 per cent. in the mortality. That same condition appeared in the figures for New York City and for New York State. This decrease in the death rate from heart disease was coincident with the epidemic of influenza. The 16 per cent. increased death rate during this period probably included a large number of those suffering from heart disease who would otherwise have died six months later. Mr. Dublin said he merely suggested that as a possible explanation of the fall in the mortality from heart disease in 1919 and did not know whether it had merit or not. The colored element, the essayist stated, suffered twice as much as the white from heart disease. The mortality from heart disease was considerable even in youth. Under twenty-five years of age there were more deaths from heart disease than from typhoid fever, and from the ages of 15 to 24 years the mortality from heart disease was higher than from lobar pneumonia. That continued up to the age of 35 years. From the ages of 35 to 44 there were as many deaths from heart disease as from Bright's disease, and after the age of 45 there were more deaths from heart disease than from any other condition. Was that a problem worthy of attention? There were 2,000,000 persons with serious heart impairment in America and there were 150,000 passing out each year, that meant that the ratio of deaths to those having heart lesions was as one to fifteen. In other words, the average case of impaired heart lingered along for fifteen years, and he was speaking only of those heart conditions sufficiently serious to interfere with a man's ability to do his work and which ultimately killed him.

Sanatoria for Cardiacs.—Dr. CHARLES HENDEE SMITH read this paper, in which he said that it would be granted by any one who had given thought to the treatment of cardiac disease that the mechanism for caring for this class of patients was far from satisfactory. There was no such complete program such as they had for the care of tuberculosis and syphilis. When the cardiac patient came to the hospital he was patched up and went back to work; sooner or later he came back with a breakdown, and finally came a hospital admission which solved the problem for that patient only. Cardiac classes had been formed and these did a great deal to avert the final breakdown by regulating the general activities, suggesting the mode of life, and detecting early symptoms of a breakdown. Several homes now took selected cases of cardiac disease, but these were few in number. The Burke Foundation took those over twelve years of age and the Pelham home took girls from six to sixteen years of age. There were, in addition, a number of other institutions who took this class of patients, but they were all too few. There was no place for a boy over sixteen years of age. A convalescent home put the heart patient further from a breakdown than did the hospital as at present constituted. The stay to be productive of real good must be two or three months and sometimes longer. In the institutions caring for cardiac cases there was room for a great deal of improvement, and lack of funds had made the care far from satisfactory. Patients convalescent from heart disease were not convalescent in the sense that they were convalescent from pneumonia, typhoid fever, or other acute conditions. Therefore it was necessary to outline a somewhat different plan for their care. There was an analogy between cardiac disease and tuberculosis. The keynote in the care of the tuberculous patient was that as soon as the diagnosis was made he was sent away to stay for three to six months, or even for one or two years, until his disease was arrested, and he must lead a careful life afterward. While in the sanatorium he was taught the laws of hygiene and advised as to the proper conduct of his life after he left the institution. He got both the cure and the education. Where did the cardiac get these things? There was no doubt he needed them both. The program was a little different from that employed in tuberculosis, but there were many points in common. The cardiac required rest and more rest, fresh air, good food, and graduated exercise. The cardiac even more than the tuberculous patient needed to be taught how to regulate his future life. It was better to have some sort of sanatorium as a basis for the treatment of cardiac disease and for putting the patient in possession of the knowledge of how to direct the rest of his life. For the sanatorium treatment of the cardiac a general plan might be outlined. Under such a plan the first essential was that the patient must be kept long enough to accomplish some good; probably the average stage should be six months or more. As yet they did not know a great deal in reference to the employment of graduated exercises; they did not know how much exercise was right for different types of heart disease. Nutrition was very important because the nutrition of the heart muscles increased with the general nutrition of the patient. In children rest and good food with attention to the way in which it was eaten was a very important asset in the treatment of cardiac disease. It was only by obeying every law of health that one could hope for improvement in this class of cases. These patients should be taught to enjoy a clean body, clean teeth, and clean clothes. Dr. Smith stated that they had been sending each year about thirty patients to the Pelham home, most of whom were quite well compensated. Children who were in danger of decompensation should be cared for in wards, and one long hospital stay was better than several short ones. About 80 per cent. of the children sent were undernourished. Children who did not do well were not kept. The average stay was 2½ months; that included all, and some had to be sent home very quickly on account of homesickness. The fact that homesickness occurred was probably owing to some error in technique; they ought to know how to make these children happy. The improvement in the condition of the girls was unbelievable. Gain in weight was significant. Nine out of ten times they succeeded in making the cardiac gain in weight and the heart condition improved at the same time. They had divided these children into age groups, and found that the average gain in weight for those under twelve years was six or seven ounces a week, or about twenty pounds a year, which was four times the average gain in weight for children of this age. The girls over twelve years of age gained thirteen or fourteen ounces a week, which was also four times the expected gain for those ages. This was true of all classes of cardiac cases, just as true of those with heart symptoms as of those without heart symptoms. This gain in weight was followed by improvement in heart action and general condition, and it gave the patient a better chance for the future. In the treatment of cardiac disease attention must be

given to the removal of other physical defects, particularly those associated with the portals of entry of infection. Every institution for the treatment of cardiac disease in children should have associated with it a good dentist and a good nose and throat specialist, and there should also be facilities for the treatment of syphilis. Amusements should be provided, and if an institution were under State control educational facilities also should be provided. Vocational training might well have a place especially as many adults might have to change their occupations. The cottage system seemed to offer advantages, as it could stimulate home conditions and the girls and women might do a share of the work. Under a cottage system patients should be grouped according to age, sex, and the severity of the condition. A separate place should be provided for girls with vaginitis. An infirmary should be attached to every institution, for even though it took only incipient cases it should be prepared to care for any case of decompensation that might occur. Provision should also be made for the care of hopeless cases, as many of these patients lived long after they were totally incapacitated for work.

Syphilitic Cardiovascular Diseases in the Army.—Dr. LEWIS A. CONNER said he had not expected to find his name down on the program for a paper and he had only a few words to say about the subject, and that only because as the subject of cardiovascular disease was considered by this organization the question of prevention was the thing that loomed large. That was what they were all thinking about and trying to make headway with. There was one particular matter in connection with syphilitic disease of the heart and arteries in the army which seemed to point in some way to this question of prevention. The point which he wished especially to bring out was the apparent extraordinary rariety of specific cardiovascular disease in the army. After the men were sent from the draft boards to the camps they were all subjected to a very thorough special cardiac examination, as they were also to a thorough examination for the purpose of detecting tuberculosis. Both of these examinations were made by men chosen and trained in the army schools, so that they were thoroughly qualified to do this work and there was every reason to believe that the work was carefully done. Among one million men so examined there were over 11,000 rejected for cardiovascular disease, and among these 11,000 cases only 20 cases of thoracic aneurism were found. For the other type of luetic disease—aortic insufficiency—it was not possible to give figures, as the luetic cases were not separated from those of the rheumatic type; but a personal investigation of this point at many camps while the examinations were going on showed that, whereas cases of rheumatic aortic insufficiency were not uncommonly found, those due to syphilis were extremely rare. In other words, in this group of men between the ages of 21 and 35 years evidences of syphilitic cardiovascular disease had been conspicuously rare in spite of the fact that a considerable proportion of the men, especially among the negro troops, were known to have had lues. These facts seemed to confirm the belief that the period of latency in syphilitic cardiovascular diseases was very long and that clinical manifestations of vascular involvement usually appear only ten, fifteen or twenty years after infection. The question as to how this fact could be utilized to prevent involvement of the vascular system was the one that concerned them. It seemed to him that it offered encouragement for the belief that, with the modern methods of diagnosis and the prompt thorough and continuous treatment of syphilis in its earlier stages, much might be done to prevent these grave, late manifestations.

Sanitarium Treatment of Cardiac Cases.—Dr. T. B. BARRINGER, Jr., spoke on this phase of the subject. He said he did not think the parallel between the sanitarium treatment of tuberculosis and that of heart disease was at all a close one. There was a small group of cardiacs composed of children and adults which was suitable for intelligent sanitarium treatment. The members of this group had had diseased hearts for varying lengths of time and were recovering from a reinfection of the heart. The average member of this group did not need sanitarium treatment longer than from four to eight weeks. If, after four weeks, any patient showed that his heart's reserve power had not been improved or improved but slightly by correct hygienic conditions and graduated exercise, he should be discharged to home or an institution for chronic invalids to make room for a patient who can be improved. Rest was *not* the important part of sanitarium treatment of cardiacs. These patients were presumably free from active infection and they need exercise graduated according to the powers of their respective hearts. His experience with exercise in these patients was quite in accord with Dr. Brushs'. Also too much empñasis should not be laid upon the nutrition of these patients, children or adults. The toxemia incident to infection and the presence of foci of infection would cause these patients to lose weight. Just as soon as these conditions no longer existed a child's weight would increase even under hygienic conditions but moderately correct. Increase in the reserve power of a child's heart did not necessarily go parallel with an increase in weight any more than it did in an adult. The small group of patients described above was most suitable for sanitarium treatment. There was another group of children and adults whose hearts were hopelessly crippled, with little or no cardiac reserve power, who should be sent to sanitarium only for humanitarian reasons and because their families could not look after them. The great bulk of cardiac patients was composed of patients who had but one heart infection and these were best taken care of in cardiac clinics.

Dr. T. STUART HART said he thought all present had been impressed by what the first two speakers had said in regard to the size of this problem. Even if one had thought it over it came home to him with new force that we had in this country 2,000,000 cardiacs and that there were among school children such a very large number classified definitely as cardiacs. We would, of course, have to take care of these people with heart trouble. The greatest problem, however, was how we were going to prevent a large proportion of these 2,000,000 from becoming cardiac cases. Dr. Smith had presented a definite program for handling the problem, and while listening to him it had occurred to him that it might be a good idea to make a study of the relation of the tonsil to cardiac disease. If any one present had access to the records in a large number of cases it might be possible to get accurate statistics as to what tonsillectomy had accomplished in the prevention of heart disease. This could be done by taking two groups of cases, one in which tonsillectomy had been done and a group in which tonsillectomy never had been done and studying the incidence of heart disease in these two groups. The other part of the program seemed rather appalling when one thought of providing sanatorial care for 2,000,000 patients, but he did not think they need worry about this when they knew what had been accomplished in the care of the tuberculous. The interest in cardiacs was quite as widespread as in the tuberculous; the only trouble was that people had not gotten together and taken hold of the problem as they had done in regard to the care of tuberculosis patients. If they could get people to thinking he had not a shadow of doubt that the same amounts of money would be provided for the care of cardiacs as had been for the tuberculous. That time was bound to come and was not a long way off. When we talked about heart disease most of us naturally thought of valvular disease, but practically every damage to the valves involved also damage to the myocardium, and that was one of the reasons why reinfection was so serious and important a matter. The importance of infection in relation to cardiac defects was recognized by the War Department. Men were accepted with systolic murmur at the apex without hypertrophy or evidence of insufficiency, *provided* they did not have a previous history of infection that might be pointed to as the cause of the lesion which gave these physical signs. For instance, a man giving a history of tonsillitis or acute rheumatic fever was not accepted, not because his heart was so much damaged at the present time, but because they knew that when a man had once had rheumatism he was more likely to have another attack, and that another attack would probably affect his heart and make him inefficient as a soldier. That common type of heart irregularity known as auricular fibrillation was one of the evidences of

myocardial damage which occurred not as a rule at the time of the first attack of rheumatism, but one which might manifest itself anywhere from three to twenty years afterward. If one took a group of these auricular fibrillations among rheumatics he would find that the auricular fibrillation appeared on the average from ten to fifteen years after the original heart damage, though it was sometimes the first patent evidence of myocardial change. That being true it gave them a considerable period in which to care for and treat these individuals and to guard against physical and emotional stress and secondary infections, thus avoiding cardiac insufficiency. The significance of secondary infections was brought out time and time again in pneumonia, for example, when the heart with a valvular lesion that had been in existence for twenty-five years manifested itself as a cardiac insufficiency during an attack of pneumonia. There were three points to be emphasized: First, and above all, we must try to prevent some of these 2,000,000 persons with impaired hearts from becoming cardiacs. Second, we must guard those who had valvular lesions or myocardial lesions from severe physical exercise and emotional stress that might cause an acute dilatation and cardiac insufficiency. Third, we must work with those who were working against infection of all kinds in order that the group in which we were interested might not become infected and develop a cardiac insufficiency because of a reinfection.

Dr. LOUIS FAUGERES BISHOP said that certain points had been brought out by the speakers that needed emphasis and they needed to have opinions expressed that would aid them in deciding certain questions. Dr. Blumenthal, in stating that he did not believe they needed separate school classes for cardiac children, and with that statement he was fully in accord. If the cardiac child were separated from other children it made him self conscious and the fact that his heart made him a mark of attention had a very bad psychological effect on him. These children did better if they grew up with a group of healthy children. A teacher who had one or two cardiac children in her class usually gave such children special attention and they got better care than though one teacher had a great number of cardiac children to look after. He was glad Dr. Blumenthal had spoken of exercise and believed a mistake had been made in limiting the exercise of children with slightly defective hearts. When there was acute inflammation of the heart it was all right to limit exercise, but he felt that children, with their small, light bodies and agility, did not do their hearts much damage by exercise and they did better if they had their liberty. For instance, sinus arrhythmia was a condition that did not indicate any damage to the heart, and the child with this condition had better be put back in the healthy group at once. Dr. Dublin's statistics were very interesting and very reliable. He had every confidence in the observations of life insurance companies; such observations were very carefully made because they meant money and their statistics were the best thing we had for our guide in medical matters. Improvement in diagnosis might account for an apparent increase in the incidence of heart disease. Modern cardiology started only fifteen years ago and had changed their views of cardiac disease, and led to the recognition of many cases that formerly might have passed unrecognized. The old-fashioned family doctor used to tell the patient with cardiac symptoms that his stomach was the source of the trouble, because to tell such an individual that he had heart disease was to give him his death warrant. That was no longer done. In the care of cardiac patients the most important point was to do, as they had done for some years in Europe, insist that the cardiac patient take a course of treatment, take some cure, every year, which meant in reality a glorified vacation. The patient thus took care of his disease and got a fresh start. There should be special hospitals for heart cases, such as they had in London, because, as they all knew, the heart patients in the big general hospitals did not get a square deal. The psychology in dealing with heart cases was all wrong. Everybody regarded the heart patient as hopeless, and he or she was shown as a curiosity to every student who came along, whereas the heart sanatorium should be founded on the idea of getting well. Those suffering from other conditions went to a sanatorium with the idea of getting well, and he felt convinced that a heart hospital founded on the right psychology would be a wonderful thing.

Dr. ROBERT H. HALSEY said he wished to bring into the discussion one thought, and to emphasize it, since it was a factor in relation to the relief and prevention of heart disease, which the society could help to disseminate, and that was a proper psychological point of view toward heart disease. Every speaker had brought out to-night, either by direct statement or by implication, that heart disease was hopeless as to life and the patient should be kept ignorant of his condition. It seemed, if the physician could be of assistance to the patient with cardiac disease, it was in educating himself first to recognize the true extent of the damage to the heart of the patient, then present the proper picture to the patient, to help him meet his living conditions without damaging his heart. Every child should be taught ways in which he can get enjoyment out of life without injuring his heart, and that heart disease is not a stigma, the knowledge of which is to be kept from his next-door neighbor; that he should avoid overtaxing his heart, just as a child with a leg damaged by anterior poliomyelitis, but not with a hopeless point of view as so many have been accustomed to regard it. The patient can cooperate with knowledge, and the physician should not let him take the chances of ignorance.

Stated Meeting, Held March 4, 1920.

THE PRESIDENT, DR. GEORGE D. STEWART, IN THE CHAIR.

THE program of the evening was contributed by the Section on Otology.

The Deafened Man's Needs and What the Physician Should Do for Him.—Dr. WENDELL C. PHILLIPS presented this paper, in which he discussed the problem of the deaf from the standpoints of congenital and acquired deafness. He said he did this because the testimony of deafened people and of social workers had shown that these two types of deafness must be handled separately. Their efforts in dealing with congenital deafness must begin in childhood. Commonly congenital deafness resulted from suppurations following diphtheria, scarlet fever, or measles. A chronic purulent otitis media frequently followed an acute mastoiditis which should have been operated upon. All cases of persistent discharge from the ear should be detected and placed under treatment. It was now known that the foundation of a chronic ear condition was usually laid in childhood or early adult life. This fact should be brought to the attention of the family physician, parents, and health authorities. It was a matter worthy of the attention of the State Department of Health which should make provision for the examination of the ears of children in the public schools, and should organize clinics for those children who had ear conditions needing treatment. In this work they should receive the cooperation of institutions devoted to ear, nose, and throat work. This was one of the departments of endeavor which the American Red Cross was going to undertake by the dissemination of literature on the prevention of deafness. Glasgow was the only city in which systematic and organized work was being done in looking after the ears of the children in the public schools until recently, when Dr. Franklin W. Bach, of Rochester, had carried out a somewhat similar work among the public school children of Rochester, N. Y., with surprisingly satisfactory results. The otologists of this country, together with the League for the Hard of Hearing, should grapple with this problem of diseases of the ear. There were many whose hearing might be improved by the removal of tissue from the nose and throat, together with improvement of the general health. The otologist should not only furnish treatment as an otologist, but should treat the patient as a client, doing all he could to insure his comfort and warning him against the charlatan who could do him no good and who would deplete his finances. The physician should also warn the deafened against his arch enemies, hypersensitiveness and despondency. He should be urged to employ aids to hearing, to engage in conversation with his friends, and

to make every effort to readjust himself and to reconstruct his life. He would receive such an impetus by meeting and learning from others who had had a similar experience. This ideal would be brought about by organized effort largely along social and economic lines. The League for the Hard of Hearing had accomplished wonderful results, and of all the things it had done, lip reading offered the greatest hope. All otologists who were long in practice were called upon to say the final word as to whether any hope of a restoration of hearing remained, and clear duty called upon them to tell the truth. But the bald fact of permanent deafness without telling the afflicted person of the chances of readjustment smacked of cruelty. Lip reading went far to replace loss of hearing, and there were a number of ways in which the deafened could readjust their lives. One thing to tell the patient to do was to go to Miss Peck and listen to her advice, and to hear what had been done for those worse off than himself.

The Deaf Child.—Dr. MAX A. GOLDSTEIN of St. Louis, founder of the Central Institute for the Deaf, made this address, in which he said the League for the Hard of Hearing, not only in this city, but throughout the land, was worthy of a boost. The problem of the deaf was one which the doctors knew little or nothing about, but something about which they should know a great deal, for it was part of the responsibility they assumed in their professional career. One could interest a body of doctors in a new operation, a new point in pathology, or a new treatment for disease, but his experience had taught him that it was a very difficult thing to interest his colleagues in otology in the problems of the deaf. He was happy to say, however, that they were waking up. This was no new problem. He had recently come across a little book published in 1648, in which the subject of lip reading was discussed. Thirty-five or forty years ago Dr. Wilhelm Meyer, of Copenhagen, read a monograph before the Royal Chirurgical Society on adenoid vegetations, which was thorough and complete, even from the critical viewpoint of to-day, on that important subject. He was hissed out, and it was two years before the ideas he promulgated regarding adenoid vegetations took root in the mind of medical men, and ten years after that before the first operation for the removal of adenoids was performed in this country. So it required time to digest a new idea before it would be put into application. Last year he had talked to the Jackson County Medical Society in Kansas City and the teachers of the deaf and social workers had the children of the Oral School for the Deaf in Kansas City give a demonstration. It was the first time the specialists had heard these children trained in their own home town. They confessed that they had not visited the school, but pledged themselves to look into the matter. He saw the head teacher six months later, who told him none had appeared. The deaf child was a peculiar psychological and pedagogical entity, and could not be treated exactly like the normal child. His lack of methods of communication until he could read left him somewhat slow in comparison to normal children, and until he acquired that form of instruction his little brain was in a condition of excommunication from the world about him. Neurologists had diagnosed such children as morons but when put in possession of a means of communication some of these children soon outdistanced the normal children about them. The education of the congenitally deaf child should begin at the age of three and a half years instead of at six years, and it would be found that he progressed as rapidly at this age as the normal child of six or seven years. Those who had made a study of pedagogical methods were firmly convinced that there was but one form of training for the congenitally deaf child, and that was oral training. Signs and the manual alphabet belonged to past and antiquated educational methods. By oral methods were meant speech and lip reading. Children could be taught speech reading as easily and rapidly as they could be taught signs or manual methods, and when they had received the oral training they had the advantage of not being ostracized from those about them. It was easier to teach lip reading to the congenitally deaf child than to the adult who had acquired normal speech. Dr. Goldstein outlined the measures that were being taken to initiate a great national movement for the better training of the deaf. He stated that Dr. Richardson, Dr. Kenyon, and himself, together with others interested in this work, had held a conference and formulated plans which would be submitted at the coming meeting of the American Medical Association for the approval of that organization. This committee was called the Committee on the Education of Deaf Children, and it proposed to make every effort to stimulate the entire medical profession to a realization of the importance of this question. The plan also provided for children with speech defects. They had held conferences with representatives of the Carnegie and Rockefeller Foundations, and were receiving their cooperation. Efforts would be made to standardize schools for the deaf, as had been done in the case of medical schools. From the standard of greatest efficiency, though he supposed he would be considered rather harsh to say it, he believed the teacher of lip reading should not be so deaf that she or he was not able to hear the individual pupil. The teacher who was unable to hear could not correct voice, pitch, accent, or pronunciation, and was not doing justice to the cause of lip reading to the child, or to the public. He preferred the term speech reading to lip reading, because it included the expression of the face, gesture, the shrug of the shoulder, all of which were as important as the movement of the lips. He felt that this was a very momentous movement and that every medical man should be cognizant of it, that the medical profession should give it their valiant support, not an indifferent cooperation, but they should come forward with actual practical suggestions and real support.

Demonstration of Reconstruction Section of Defects of Hearing and Speech.—Dr. CHARLES W. RICHARDSON of Washington gave this presentation by invitation. He stated that the Section of Defects in Hearing and Speech in the Division of Reconstruction of the Surgeon General's office was given definite form on March 1, 1918. Shortly thereafter he was assigned as director of the section. Before entering upon his duties he had made a careful study of the problems connected with this activity, and after the usual "ups and downs" incident to establishing a new procedure, they found that on July 23, 1918, they were actually a working section with a full active unit. During the period of organization they had so perfected their plans that at the end of the service, December 15, 1919, they found it totally unnecessary to alter them in any way. One of their greatest difficulties in preparation was to obtain statistics as to the probable number of patients requiring this form of treatment. The most reliable that they were able to obtain came from Major Dundas Grant of London, who held a somewhat similar position in the British Army as the writer did in the American Army. They had finally calculated one-half of one per cent. to the total number of wounded, and this they found was greater than the actual results. They had enrolled upon their list one hundred teachers in speech reading who were anxious to enter the service as reconstruction aides under full army regulations. Their list of instructors in speech defects was not quite so large. They were forced to call on only a few of these for speech reading and speech defects. It was due to the superintendent, principal, and instructors to state that he never expected to find a better equipped, more intelligent, more enthusiastic, and more devoted band to labor in any field of human endeavor than this body. They had one object in view, that was the making of a perfect speech reader out of every patient that was presented, and they came very near to the full accomplishment of the task. Individual temperament and mental status of the patient was the only obstacle that prevented them from the full accomplishment of the result. The methods employed in their work were those known as the Muller-Walle method. Miss Bruhn's text book on the Muller-Walle method was selected as a basis for the work. They had also made use of the Nitchie method. They were as catholic in their efforts as possible to obtain good results. They followed out the usual routine method in all cases, although there was a considerable amount of speech reading taught "by doing it." They resorted to the use of mirrors, blackboard illustrations, demonstrations, and the use of the Northampton charts. It had also been their in-

tention to make use of moving picture demonstrations, but they had found that unnecessary. The method of teaching was an intensive one. Each patient was at first given one or two lessons a day, which were rapidly increased to two or three periods a day, care being taken that no patient suffered mental fatigue from overwork. The time employed at each period was forty-five minutes. In the section of defects in hearing, 112 patients were treated and in the section of defects in speech, 54 patients. The reports of the Home Service Section of the American Red Cross, who followed up these patients, agreed generally with the standard of the patient when he was discharged, and indicated not only that they had gained results, but that the good results were maintained by the men many months after they were discharged from the service. He hoped to be pardoned for saying that their results were unexpectedly great. He believed the work accomplished by this section marked an advance in the teaching of speech reading to the deaf. It also demonstrated that a high grade of intelligence was not necessary to acquire facility in speech reading. They had had all types of minds, all grades of education, and all forms of temperaments, but not one required, nor was it necessary to give to any one the manual method of training. These efforts had brought more forcibly to the American medical mind the fact that the deaf could be placed upon a purely independent plane through speech reading than through any other method of which he was aware. It was possible that the method of intensive training instituted in their work might be of some service in the instruction of the lay deaf.

How the Deafened Rebuild Their Lives.—Miss ANNETTA W. PECK, executive secretary of the New York League for the Hard of Hearing, told how this organization was helping people to conquer the limitations of a handicap whose cruelty was refined to a high degree. She said that the victims of acquired deafness constituted a very considerable number of each community, and of these the ones who surrendered body and soul to the enemy were in an overwhelming majority. Yet practically every one of them might be reached and inspired to turn on that enemy and conquer gloriously. The impulse to rise and win, it must be admitted, almost invariably was applied from without, and it was in the administration of this external force that the deafened found their own greatest spiritual opportunity. Proceeding on the general principle that no one could understand a condition like him who lived under it, the deafened social worker sought to attract the despondent and all but demoralized victim of adventitious deafness by appealing to certain universal needs—the need of economic independence, the need of easier communication, the need of wholesome play, and the need to be of service. In his blighted state the deafened person out of a job read an inconspicuous "ad." in the want column of his newspaper: "Jobs for the hard of hearing. Apply at the free employment bureau of the New York League for the Hard of Hearing." Another might read that the city was conducting a free class in lip reading at the league's rooms; still another might chance upon a letter to the editor, telling about one of the league's recreation clubs and the good times enjoyed in it. At all events, hope was born, and that hope would draw until some time it might not be for months, courage was plucked up to call at the league's office. In every instance, except those few who expected deafness to be miraculously healed or exorcised, the man or woman got what he or she came for and got it abundantly. It was not too much to say that he got more; for from that moment when he opened his heart and his life to receive what he sorely needed, his reconstruction began. He was in contact with the external force, and under its pressure he turned at once to rebuilding his life. He became a self-supporting, contented, hopeful, happy man; unconsciously he then proceeded to build another story to his tower—the pinnacle of service. In reclamation work among the deaf the deafened man of riches might well join his weapons to those of the social worker. These two must be the faithful co-adjutors of the doctor's experience, while the doctor should join heartily with them in the active cooperation which alone could make their dreams come true. By means of aural examination of school children, of school clinics for the prompt treatment of conditions which arose most often during the school years; by teaching hard of hearing children the art of lip reading and giving them small recitation groups in the regular subjects without segregating them from hearing children; by the elimination of hereditary disease and infectious diseases; by making researches where these activities demanded, by all these means the end might be attained. The machinery for carrying on the work was already organized, incorporated, and ready to function in the form of the American Association for the Hard of Hearing. In closing, Miss Peck made a plea for the social worker, the physician, and the man of wealth to give this national movement their moral and financial support.

The Psychology of the Deafened from a Layman's Standpoint.—Mr. JOHN DE RAISMES STOREY (a Harvard graduate, lawyer, counsel for the Red Cross Commission in Italy, completely deaf) said that for many years he had been striving to make himself believe that the psychology of deafened people was like that of other people. Ideally it would be true that the deafened had mental processes and traits similar to those of any haphazardly selected large group. Practically, however, the limitations of the deafened and the overemphasis in their lives of certain problems tended to develop certain qualities and certain faults, and there was such a thing as a typical deaf man. To his mind the besetting sin of his afflicted brethren was fear and its derivatives, timidity, self-consciousness, sensitiveness, etc. They were afraid of being conspicuous, of being laughed at, and the covert smile they detected on the faces of many presumably decent folk when they had to be shouted at cut like a lash. Americans, as a rule, did not covet being different from their neighbors in superficial things; they liked to do the things others were doing, but to do them better, and to be like others but superior. It was just here that the deaf person was at a disadvantage. He might be a man of natural parts and cultivated attainments, but in social intercourse he felt his inferiority to the most callow youth. The deafened man knew that in social intercourse the account opened with a debit against him, as the one talking to him must shout or put himself out in some other way; and it was then hard for the deafened man to be self-forgetful. Unless the latter was a person of unusual social gifts and aptitudes he was prone to avoid as much as possible general companionship with others and gradually to withdraw within himself, not because of any genuine disposition to live alone, but because it was the line of least resistance. In this social isolation were developed practically all the mental and moral consequences which characterized the typical deafened man or woman—shyness, self-consciousness, self-centeredness, sensitiveness, queerness, discouragement, depression, timidity, the sense of shame at being hard of hearing, and all the other faults which human beings developed when they were much more by themselves than they were intended to be. Obviously this mental make-up impaired one's chances in the business world. Some fields of undertaking were necessarily closed. In others it was hard for the deafened to get an opportunity and he might be obliged to take some uncongenial inferior task because employers were too indifferent, timid, or uninspired to offer him a chance. Thus there was danger of his standard of living being lowered and his chance of social intercourse minimized, and all the faults developed by his deafness would increase. The great task of the deafened was therefore to overcome his fears. He must refuse to be a typically deafened man, and endeavor to be successfully deaf, that is, he must strive to live a normal, wholesome life, with an occupation suited to his capacities, with friends, hobbies, wide interests, etc., and not let his affliction affect his character except beneficially. To a large extent the physical aspects of his problem could be overcome, and in ways that went far to remove the psychological difficulties. Lip reading and the electrical devices invented of recent years were by no means perfect substitutes for hearing, but in many cases they offered a real opportunity to live a normal, wholesome life. Mr. Storey related his personal experience in overcoming his han-

dicap. The psychology of the deafened person, however, was not the only one to be considered. He would have to blame the public for making his task more difficult. The public had its typical psychological reaction to the deafened man. Pity, not unmingled with impatience, and then indifference, was the lot of most deafened people. They were avoided. They were not given a chance to take their place in the social and economic world. They had not been told that a deafened man could be companionable, useful, sympathetic, amusing, perhaps, in short, all that a friend should be. In the business world there was much that a deafened man could do. He was not easily distracted; he had not the same temptation to loiter in conversation as the normal of hearing, he could concentrate more readily. Personally he did not feel that the deafened man should accept a humble task if he was fitted by attainments for a better one, though there might seem to be difficulties in his way. In his experience it had been the big men that gave the deafened the opportunity to show his worth. The small man saw only the difficulties; the big man appraised the difficulties, but looked at the balance well. Nearly all the speaker's professional opportunities had been given him by people of exceptional ability. It was this fact which led him to feel confident that the deafened, in cooperation with the enlightened among the public, led by the doctors, would be able to reclaim to useful citizenship many who would otherwise become among the flotsam and jetsam of life.

Ears and the Job.—Miss ESTELLE SAMUELSON, superintendent of the Employment Bureau of the New York League for the Hard of Hearing, told how they had solicited the cooperation of business firms in getting employment for the hard of hearing. Interviews frequently laid bare the employer's ignorance of the hard of hearing, and how little thought they had given to the subject of deafness. To such persons they related what other employers reported about their hard of hearing employees. A hard of hearing person was an asset in a business office because he concentrated better than others. A hard of hearing person was more efficient at general routine work because he was accustomed to monotony and isolation. A hard of hearing person did more work in less time because he did not engage in the constant chatter going on around him. A hard of hearing person was reliable and appreciative of his employer's effort to train him because he recognized his limitations and did not seek constant change. A hard of hearing person was a master of detail.

In placing the deafened individual they always made a complete survey to ascertain the nerve strain and tension, amount of standing, dampness, varying temperature, and amount of exposure, if any. It was always their desire to place applicants where the conditions of work were such as to conserve whatever hearing he had. They now had the cooperation of 379 firms, and were making new connections daily. In the study of the types of work that were suitable or injurious for a man with this handicap they needed the aid of the otologist. They were trying to obtain scientifically accurate reports as to the type and degree of deafness. Being acquainted with their aim, the doctor who quite frequently knew the individual better than they or more intimately, offered a most valuable suggestion toward vocational selection. Their records showed that only 75 per cent. of the applicants registered in the past year had had aural examination or treatment; 39 per cent. were slightly hard of hearing, 44 per cent. hard of hearing, and 17 per cent. totally deaf. During the year 1919 they had had 272 applicants and had found positions for 207. They had helped to increase the efficiency and value of a number of them by proving to them the advantage of making their powers of comprehension greater, so that association with them would be more agreeable and less trying to the people who employed them. They were urged to attain a mastery of lip reading or to use a hearing device, if possible.

Dr. EDWARD B. DENCH said he hoped the audience had all learned as much as he had this evening. It did not take so much energy to be a surgeon where one could see the results of his work in a brilliant light, but it took courage to do a work such as had been seen here this evening, and he paid tribute to those engaged in it. They saved the mind and soul of these deafened people so that, as had been pointed out, they could commingle with their fellow men and occupy positions of responsibility and contribute their quota of service, and perhaps a larger one than many who could hear well did. Dr. Goldstein brought out an important point when he said that the training of the deaf child should begin early. He believed that was the best advice. He had seen one example of that in a boy who had learned to speak both French and German, and was prepared for college. Such examples as this showed what education would do. With reference to adult deafness, that was a most important question and concerned otologists even more than the problem of the deaf child, though that was highly important. The otologist saw cases becoming progressively hard of hearing, and he should advise such persons to take up lip reading. Then if they lost their hearing they would be lip readers, and if their hearing was only partially impaired the lip reading would assist them in hearing.

Miss CARRIE KEARNS, principal of the New York Public School for the Deaf, told of her experience in this school where she had the supervision of 300 congenitally deaf children. She said she agreed with all the previous speakers had said. The important factor in this work was to follow up all along the line. When you gave a new language exercise you followed it up until the child acquired it; the child was followed up all through school, and when it came to the last year was given assistance in selecting and preparing for an occupation. After the young people went out and took positions the school still continued to keep in touch with them and guide them.

Dr. EDWIN L. LACROSS, principal of the Wright Oral School, said that like Dr. Goldstein, he wanted to interest medical men in this question. Miss Peck had given them her cooperation, but they needed the cooperation of medical men. The physician was the person not only to tell the parents of the deafness of a child, but to point out the unlimited possibilities that lay before the deaf child, and it was the duty of the parent to assist the deaf child to take advantages of the opportunities offered him. He quite agreed with Dr. Goldstein that the training of the deaf child should be begun early, between the third and fourth year. Effort should be made to develop any residual hearing that the child might have. Fifty per cent. of the pupils at the school with which the speaker was connected were given auricular training and for the most part with benefit.

Mr. FREDERICK MARTIN, director of speech Improvement of the Board of Education, said his work with 900,000 children led him to speak of deaf children. Two points he wished especially to bring out: one was to emphasize the importance of auricular training; the other was about the sign language. He knew from his work in connection with speech defects that the sign language was still being taught. He thought this was something this body of physicians should take up, as it was a mistake to permit it to be continued. In spite of the wonderful work of the teachers of lip reading, he thought they should work through the auricular paths in cases in which there was any hearing left. He cited instances in which children supposed to be deaf were not really unable to hear, but simply lacked the perception of sound. Such children could be trained to recognize sound.

Miss JOSEPHINE TIMBERLAKE, associate editor of *Volta Review*, said she did not know whether she had understood correctly that Dr. Goldstein said that a teacher with perfect hearing could produce better results as a teacher of lip reading than one who was too deaf to hear the sound of the human voice. She said she did not know many teachers of lip reading who had perfect hearing, but she did know of many who were deaf and were producing excellent results. She felt that it was very disheartening to the deafened who hoped to serve others by teaching lip reading to feel that they were not so well suited for the work as those who had perfect hearing.

Dr. GOLDSTEIN, in closing, made a plea for an effort to develop a system of lip reading which should embrace the best points of the various systems now in use.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

CONNECTICUT STATE MEDICAL EXAMINING BOARD.

November, 1919.

ANATOMY.

1. Name the bones of the foot and describe the astragalus.
2. (*a*) Give the location of, and (*b*) describe the pituitary body.
3. Describe the blood.
4. Describe the mesentery, giving especial attention to distribution of blood vessels.
5. Describe an internal iliac vein.
6. Name tendons of thigh muscles that cross knee joint which have to do with flexion of leg on thigh, giving insertion of each.
7. What muscles cause displacement of extremities of fragments in fracture of clavicle at middle third of bone?
8. Describe the articulations between movable vertebræ. Diagram if preferred.
9. What are the three primary kinds of joints?
10. Describe briefly the development of bone.

PHYSIOLOGY.

1. What is the composition of normal urine?
2. What is the rôle of the large intestine in the digestion and absorption of food?
3. What are enzymes? Name a few. How do they aid in the process of digestion?
4. What factors influence the movements of the stomach?
5. To what extent may intra-thoracic pressure be influenced by respiration?
6. Name the events that occur during a single cardiac cycle.
7. Comment upon the various functions of leucocytes.
8. What is the function of, and mechanism of action of the iris.
9. What difference is there in the paralysis from injury to the spinal and the pyramidal neuron?
10. What chemical changes take place in muscle during contraction?

ANSWERS.

ANATOMY.

1. *Bones of the foot.* Seven tarsal (os calcis, astragalus, cuboid, scaphoid, and internal, middle and external cuneiform); five metatarsals; and fourteen phalanges.

The astragalus is situated between the tibia above and the os calcis below, and receives directly the weight of the body. It has the scaphoid bone in front, and on each side it is in contact with the malleolus (that of the fibula, on the outer side; and that of the tibia on the inner side). The bone is usually described as having a head, neck, and body. It gives attachment to the external and internal lateral ligaments of the ankle joint. On its under surface there is a deep groove for the interosseous ligament, and on the posterior surface is a groove for the flexor longus hallucis.

2. (*a*) The *pituitary body* is a ductless gland, situated on the sella turcica of the sphenoid bone, under cover of the diaphragma sellæ; in the center of this latter structure there is an opening for the passage of the infundibulum.

(*b*) It consists of two lobes, the anterior of which is the larger and belongs to the digestive tract; the posterior lobe, which belongs to the nervous system, is connected with the tuber cinereum of the brain by means of the infundibulum.

3. The *blood* is fluid, somewhat viscid, red, specific gravity from 1,055 to 1,062, alkaline reaction, saltish taste, characteristic odor, variable temperature (average about 100° F.). The *constituents* are plasma and corpuscles. The *plasma* consists of water and solids (proteids, extractives, and inorganic salts). The *red corpuscles* consist of water and solids (hemoglobin, proteins, fat, and inorganic salts). The *white corpuscles* consist of water and solids (protein, leuconuclein, lecithin, histon, etc.). The *red cells* are biconcave discs, about 1/3200 of an inch in diameter; they are nonnucleated, and there are about 4,500,000 or 5,000,000 of them in each cubic millimeter of blood. They are elastic and soft, and their shape is changed by pressure, but is promptly regained on the removal of the pressure. Their color is yellowish. They contain hemoglobin. They carry oxygen from the lungs to the tissues. The white blood cells are spheroidal masses, varying in size, having no cell wall, and containing one or more nuclei; there are about 7,000 to 10,000 of them in each cubic millimeter of blood. They differ much in appearance, and are divided into (1) small mononuclear leucocytes, or lymphocytes; (2) large mononuclear; (3) transitional; (4) polynuclear, or polymorphonuclear, or neutrophile, and (5) eosinophile. They are all more or less granular, particularly the last two varieties named. They are probably formed in the spleen, lymphatic glands, and lymphoid tissues. Their fate is uncertain: it has been asserted that they are converted into red blood cells; they play a part in the formation of fibrin ferment; they are sometimes converted into pus cells. Their functions are (1) to serve as a protection to the body from the incursions of pathogenic microorganisms; (2) they take some part in the process of the coagulation of the blood; (3) they aid in the absorption of fats and peptones from the intestine, and (5) they help to maintain the proper proteid content of the blood plasma.

There are also *platelets*, which are very small, colorless, irregular shaped bodies; they are about one-fourth the diameter of a red corpuscle. The function is not determined; it is possible that they take some part in the coagulation of the blood. In number they vary from about 200,000 to more than 500,000 in each cubic millimeter of blood.

Plasma serves to convey nutriment to the tissues; it holds in solution the carbon dioxide and water which it receives from the tissues, and takes them to be eliminated by the lung, kidneys, and skin; it also holds in solution urea and other nitrogenous substances that are taken to and excreted by the liver or kidneys. *Arterial blood* is bright red in color, contains more oxygen, less carbon dioxide, more water, and is slightly warmer; *venous blood* is purple in color, contains less oxygen, more carbon dioxide, less water, and is slightly cooler (except in the hepatic vein). It is distributed through the body by the heart, arteries, capillaries, and veins.

4. *The Mesentery.* "The root of the mesentery begins on the anterior surface of the fourth part of the duodenum in front of the left side of the second lumbar vertebra, and extends downwards and to the right. It crosses, successively, in front of the third part of the duodenum, the aorta, the inferior vena cava, the right ureter and the psoas major, and terminates in the right iliac fossa at the ileo-cecal junction. This line of attachment is only six or seven inches in length, and, in order to enclose the twenty-three feet of intestine, the mesentery spreads out in a fan-shaped manner and becomes very much pleated near the gut. Its depth varies, being as much as seven or eight inches at its deepest part. The two peritoneal layers of which it consists contain between them nerves, blood-vessels, lymph vessels (lacteals) and glands, and a varying amount of fat. The latter is more thickly deposited along the root, and it diminishes in quantity as the mesentery is traced to the intestine. . . . The intestinal arteries form a series of twelve to fifteen branches, which arise from the left side of the superior mesenteric artery and pass towards the jejunum and ileum. They break up into branches which unite and reunite to form a connected series of arcades, which are more complex in the ileum than in the jejunum. From the terminal arcades, small branches pass to the mesenteric border of the gut and there bifurcate."—(Beesly and Johnston's *Manual of Surgical Anatomy.*)

5. *The internal iliac vein* is a short vein, extending from the upper border of the great sacro-sciatic foramen to the sacro-iliac articulation at the brim of the pelvis, where it unites with the external iliac vein to form the common iliac vein. It is formed by the union of the superior vesical, middle vesical, inferior vesical, middle hemorrhoidal, uterine and vaginal (in the female), obturator, internal pudic, sciatic, lateral sacral

and gluteal veins. It lies behind and internal to the internal iliac artery, and is in relation internally with the pelvic colon on the left side, and with the lower part of the ileum on the right side. The internal iliac vein has no valves.

6. *Tendons of thigh muscles which cross the knee joint and have to do with flexion of the leg.*—(1) *Sartorius*, inserted into the inner surface of the upper part of the tibia, near the tubercle. (2) *Biceps*, inserted into the head of the fibula and outer tuberosity of the tibia. (3) *Semimembranosus*, inserted into the back of the inner tuberosity of the tibia, and into the posterior ligament of the knee joint. (4) *Semitendinosus*, inserted into the upper part of the inner surface of the tibia. (5) *Popliteus*, inserted into the triangular surface above the oblique line of the tibia.

7. *In fracture of the clavicle at the middle third*, the *outer fragment* is drawn (1) *downward* by the weight of the limb, and the action of the pectoralis major, pectoralis minor, and latissimus dorsi; (2) *forward* by the pectoralis major, pectoralis minor and serratus magnus; (3) *inward* by the pectoralis major, pectoralis minor, levator anguli scapulæ, and latissimus dorsi. The *inner fragment* may be drawn a little *upward* by the sternomastoid.

8. The *articulations of the vertebral column* consist of joints between the bodies of the vertebræ and joints between the neural arches by means of the articular processes. The former are amphiarthroses, the latter diarthroses. The *bodies* are united by the anterior common ligament, the posterior common ligament, and the intervertebral substance. The laminæ are connected by the ligamenta subflava. The articular processes are surrounded by the capsular ligaments. The ligaments of the spinous processes are: The interspinous ligaments, the supraspinous ligament, and the ligamentum nuchæ. The intertransverse ligaments extend between the transverse processes.

9. The *three forms of articulations* are: (1) *Synarthrosis*, or immovable articulation, such as that between the two parietal bones. (2) *Amphiarthrosis*, or mixed articulation, such as that between the two pubic bones. (3) *Diarthrosis*, or freely movable articulation, such as that between the humerus and the ulna.

10. *Development of Bone.* "The development of bone is either intramembranous or endochondral. In the latter a cartilage stage intervenes, otherwise the history in each case is the same. A synopsis of endochondral development is as follows: (1) A solid shaft of hyaline cartilage, non-vascular and without any marrow cavity. (2) In the center of this shaft the cartilage cells enlarge, their lacunæ enlarge and coalesce, particularly along lines extending toward the ends of the bone. The rosette produced by this excavation is called the primary areola of Sharpey. (3) Lime salts are deposited in the thin walls of these spaces, making calcified cartilage. (4) Osteogenetic cells and blood vessels from the periosteum enter the cartilage spaces. The cartilage cells disappear with this invasion and the excavation, begun by the cartilage cells, is further enlarged by the bone cells. The excavated areas are now called the secondary areolæ of Sharpey, the cavities having a rich blood supply quite in contrast with the primary areolæ. The marrow cavity is excavated and the shaft becomes longitudinally porous. Endochondral bone, therefore, develops *in* cartilage, not *from* cartilage. (5) Osteogenetic cells attach themselves to the wall of these enlarged Haversian canals and become enclosed in lime deposits, forming thus the outer lamellæ and outer row of bone cells of each Haversian system. Cells with lamellæ are added centripetally to this outer row and thus ultimately complete the Haversian system, leaving a small central canal containing vessels and a nerve. Ossification begins in the center of the cartilage shaft and proceeds gradually toward each end, so that all the above changes occur at one and the same time. After birth these changes go on at the ends of the bone, so long as it keeps growing. During this period the bone is made thicker by deposits from the periosteum forming the circumferential lamellæ of bony shafts. These lamellæ are added without the intervention of a cartilage stage and therefore represent intramembranous development."—(Hill's *Histology.*)

PHYSIOLOGY.

1. *Composition of urine:*

	(Parts in 1000)	
Water	950.00	Organic
Urea	28.00	
Uric acid	0.60	
Hippuric acid	0.35	
Creatinin	0.65	
Extractives	8.00	
Sodium chloride	8.00	Inorganic
Phosphoric acid	2.00	
Sulphuric acid	1.25	
Lime (CaO)	0.25	
Magnesia (MgO)	0.30	
Potash (K_2O) and soda (Na_2O)	0.60	
Total	1000.00	

2. *Digestion and absorption in the large intestine.* "The secretion of the large intestine, while it contains much mucus and shows an alkaline reaction, is not characterized by the presence of distinctive enzymes. When the contents of the small intestine pass the valve they still contain a certain amount of unabsorbed food material. These contents remain a long time in the large intestine, and since they contain the digestive enzymes received in the duodenum the digestive and absorptive processes no doubt continue as in the small intestine. This general fact is well illustrated in experiments made upon dogs, most of whose small intestine (70 to 83 per cent.) had been removed. These animals could digest and absorb well, and formed normal feces, provided care was taken with the diet. An excess of fat or indigestible material caused diarrhea and serious loss of food material in the feces. An interesting feature in the large intestine is the marked absorption of water. In the small intestine water is absorbed no doubt in large quantities, but its loss is evidently made good by osmosis or secretion of water into the intestine, since the contents at the ileocecal valve are quite as fluid as at the pylorus. In the large intestine the absorption of water is not compensated by a secretion; the material loses water rapidly while in the ascending colon, and before it reaches the descending colon it has acquired the consistency of the feces. The alkaline reaction of the contents of the large intestine makes a favorable environment for the growth of bacteria, particularly the putrefactive bacteria that attack protein material."—(Howell's *Text-Book of Physiology.*)

3. *Enzymes* are substances produced by living cells and which act by catalysis. The enzyme remains unchanged and exerts its activity only upon certain definite substances.

ENZYMES.	ORIGIN.	FUNCTIONS.
Ptyalin.	Saliva.	Changes starches into dextrin and sugar.
Pepsin.	Gastric juice.	Changes proteids into proteoses and peptones in an acid medium.
A curdling ferment.	Gastric juice.	Curdles the casein of milk.
Trypsin.	Pancreatic juice.	Changes proteids into proteoses and peptones, and afterward decomposes them into polypeptides and amino-acids in an alkaline medium.
Amylopsin.	Pancreatic juice.	Converts starches into maltose.
Steapsin.	Pancreatic juice.	Emulsifies and saponifies fats.
A curdling ferment.	Pancreatic juice.	Curdles the casein of milk.
Invertin.	Succus entericus.	Converts maltose into glucose.

4. *Movements of the stomach.* "When devoid of food the stomach remains in a condition of slight tonic contraction, the mucous membrane being thrown into folds. *X*-ray observations have shown that in the empty condition only the pear-shaped upper third of the stomach contains gas, the rest of the organ passing to the pylorus in the form of a collapsed tube, which corresponds in position to the small curvature of the filled stomach. Food when swallowed causes relaxation of the walls of the stomach. Moreover, the food introduced at different times bears different relations with regard to the stomach walls. That is to say, food first introduced is spread round the stomach, forming a lining to the mucous membrane. Food introduced later is retained encapsuled like a ball by its enveloping layer of mucin. This fact is of extreme importance, for the later food is protected from the gastric juice, and the admixed saliva, which is inactive in an acid medium, is enabled to prolong its activity. Cannon maintains that salivary digestion may proceed even for an hour or more after the food is in the stomach. Soon after the introduction of food into the stomach, movements begin. These proceed at first very gently, but later on increase in intensity. They are confined entirely to the pyloric portion of the stomach. Cannon, by his recent feeding experiments with bismuth subnitrate and *x*-ray observations, has succeeded in observing the movements of the stomach very closely. They consist of a series of contractions, which proceed in a peristaltic manner. The sphincter at the commencement of the pyloric vestibule contracts, in a ring-like manner, and this contraction is propagated over the pyloric portion. The time taken in transit is twenty-six seconds (in the cat), and the successive contractions follow one another at ten-second intervals. By this means the food in the pyloric region of the stomach is thoroughly disintegrated and mixed with the gastric juice. When this condition is reached the pylorus is relaxed at certain intervals and portions of the acid chyme are ejected into the duodenum. Immediately succeeding this the pylorus again enters into tonic activity. The relaxations of the pylorus coincide with the arrival at that place of a wave of contraction, although they are irregular; for every peristaltic wave there is a corresponding pyloric inhibition. It is in the pyloric vestibule of the stomach that the food is so thoroughly mixed with the gastric juice, and it is here also that solid food is most likely to injure the mucous membrane of the stomach, and so predispose to the formation of gastric ulcer. So far no mention has been made of the functions and movements of the fundus and body of the stomach. These portions do not undergo contractions in rhythmic series, but the musculature enters into a condition of maintained strong tonicity. The function of this is obvious, and is to replenish the pyloric triturating apparatus with further materials from the fundus and body store."—(Lyle's *Psysiology.*)

5. *Influence of respiration on intrathoracic pressure.* "For the pressure conditions existing within the lungs and pleural cavity, slightly different figures are given by different investigators. Due to the fact that the lungs are in a state of permanent distension within an air-tight cavity, the intrathoracic pressure is always negative under normal conditions, this negative pressure being, of course, greater during inspiration, less during expiration, and also being somewhat affected by posture. Under forced expiration, however, where the air passages are obstructed, the intrathoracic pressure may become positive, as for instance during a violent coughing attack where there is obstruction to the expiratory blast. The intra-pulmonary pressure, on the other hand, varies with the phase of the respiration, being negative during inspiration, positive during expiration."—(Osler and McCrae's *Modern Medicine.*)

6. *Cardiac cycle.* "We may begin with the closure of the semilunar valves. At that moment the second heart sound is heard and at that moment the ventricle is quickly relaxing from its previous contraction. Since the auriculoventricular valves are still closed, the ventricles for a brief interval are shut off on both sides. The blood is flowing steadily into the auricles and dilating them. As soon as the ventricles relax, the pressure of blood in the auricles opens the auriculoventricular valves, and from that moment until the beginning of the auricular systole the blood from the large veins is filling both ventricles and auricles. The venous blood which has been accumulating in the auricles during the ventricular systole flows into the ventricles with some suddenness on the opening of the auriculoventricular valves. The ventricles, therefore, dilate rapidly and the auriculoventricular valves are floated into a position ready for closure. . . . The auricular systole sends a sudden wave of blood into the ventricles, dilating them still further and momentarily blocking or retarding the flow from the large veins. The ventricular systole follows at once upon the auricular systole. As the ventricle enters into contraction the auriculoventricular valves are tightly closed, the first sound is heard, and for a short interval the ventricular cavity is again shut off on both sides. Soon the rising pressure in the interior forces open the semilunar valves, and then a column of blood is discharged into the aorta and pulmonary artery as long as the contraction lasts. During this interval the flow at the venus end of the heart continues, the blood being received into the yielding auricles. . . . At the end of the ventricular systole the excess of pressure in the aorta and the pulmonary artery closes the semilunar valves and completes the cycle."—(Howell's *Physiology.*)

7. *The functions of the leucocytes* are: 1. To serve as a protection to the body from the incursions of pathogenic microorganisms; (2) they take some part in the process of the coagulation of the blood; (3) they aid in the absorption of fats and peptones from the intestine, and (4) they help to maintain the proper proteid content of the blood plasma.

8. *Function of and mechanism of action of iris.* "For purposes of distinct vision it is essental that the quantity of light entering the interior of the eye shall be so adjusted that the formation and subsequent perception of the image shall be sharp and distinct. This is accomplished by the iris, the circular fibers of which alternately contract and relax with increasing and decreasing intensities of the light. The size of the pupil, therefore, through which the light passes, will vary from moment to moment and in accordance with variation in the light intensity. The quantity of light necessary to distinct vision is thus regulated. In the total absence of light the sphincter pupillæ muscle is relaxed and the pupil widely dilated. With the appearance of light and an increase in its intensity the muscle again contracts and the pupil progressively narrows. With a given intensity in the light, the sphincter contraction is greater when the light falls directly into the fovea. Contraction of this muscle also occurs as an associated movement in the convergence of the eyes during accommodation and in consensus with the other eye. In addition to this function of the iris, it constitutes, by virtue of the sphincter muscle contraction, an important corrective apparatus. Being non-transparent, it serves as a diaphragm intercepting those rays which would otherwise pass through the peripheral portions of the lens and by spheric aberration give rise to indistinctness of the image. The movements of the iris by which the size of the pupil is determined are caused by the contractions and relaxations of the *sphincter pupillæ* and *dilator pupillæ* muscles. The contraction of the sphincter is entirely reflex and involves those structures necessary to the performance of any reflex act, viz.: a receptive surface, the retina; afferent nerves, the pupillary fibers of the optic nerve; a central emissive center situated in the gray matter beneath the aqueduct of Sylvius; and efferent nerves, the motor oculi and the ciliary nerves. The stimulus requisite to the excitation of this mechanism is the impact of light waves or ether vibrations on the rods and cones. According to the intensity of these vibrations will be the resulting contraction of the muscle. The contraction of the dilator pupillæ muscle is determined by the activity of a continuously active nerve-center in the medulla oblongata which transmits its nerve impulses through the spinal cord, along the first and second dorsal nerves to the superior cervical ganglion, and thence to the iris by way of the fifth nerve. These two muscles appear to bear an antagonistic relation to each other, for section of the motor oculi is followed by relaxation of the sphincter muscle and dilatation of the pupil. Stimulation of the sympathetic is followed by a more pronounced dilatation. The size of the pupil

is the resultant of a balancing of these two forces." —Brubaker's *Text-Book of Physiology.*)

9. *Differences in paralysis of upper motor neuron and lower motor neuron:*

UPPER NEURON.	LOWER NEURON.
1. Diffused muscle groups affected, never individual muscles.	1. Individual muscles may be affected.
2. Spasticity and hypospasticity of paralyzed muscles.	2. Flaccidity and atonicity of paralyzed muscles.
3. May have superadded associated movements on attempted voluntary movement.	3. No associated movements.
4. No muscular atrophy, except from disuse.	4. Atrophy of paralyzed muscles.
5. Electrical reactions normal.	5. Reaction of degeneration.
6. Deep reflexes in paralyzed limbs present and usually increased.	6. Deep reflexes of paralyzed muscles diminished or absent.
7. If foot affected, plantar reflex, extensor in type.	7. Plantar reflex, if present, is normal flexor type (unless flexors of toes are themselves paralyzed).

—(Hunt's *Diagnostic Symptoms in Nervous Diseases.*)

10. The *chemical changes which occur in a muscle during contraction* are: (1) It consumes more oxygen; (2) it sets free carbon dioxide; (3) it produces sarcolactic acid; (4) it becomes acid in reaction; (5) it produces heat; (6) it loses glycogen.

(*To be continued.*)

Books Received.

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MEDICINE AND NURSING. By Sir WILLIAM OSLER. 12 pages. Published by Oxford University Press, New York.

DIE PATHOLOGISCHE BIOLOGIE. By Professor Dr. HANS MUCH. 320 pages, with illustrations. Published by Curt Kabitzsch, Leipzig.

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PATHOGENIC MICROORGANISMS By WILLIAM HALLOCK PARK, M.D., and ANNA WESSELS WILLIAMS, M.D. 786 pages, with 214 engravings and 9 full-page plates. Published by Lea & Febiger, Philadelphia and New York.

Miscellany.

Death of Glénard.—Glénard of enteroptosis fame died recently in his home at Vichy. In an obituary notice in the *Gazette des hôpitaux* for May 29, xcii, 49, an incomplete biographical sketch is given. He fought through the Franco-Prussian war as a soldier and was a prisoner at Stettin, the home of Brand of typhoid fever fame. Through this accident Glénard was later led to introduce the Brand method of treatment into France. He was as prisoner an orderly under Brand and at the time took many notes. After the completion of the war he finished his medical studies at Lyons. For a long time he strove to introduce the Brand method into the Lyons and Paris hospitals and ultimately the movement was successful. This service has been forgotten in the work of the author on enteroptosis which made him one of the best known physicians in the world and shed lustre on French clinical medicine. This work was synchronous with the first growth of the specialty of gastroenterology and did its bit in the extinction forever of the notion of "dyspepsia" as an autonomous disease. At a date not stated the author went to Vichy to take charge of the thermal hospital at that town, and it was the unsurpassed material of gastric, hepatic, nervous, and other subjects which came constantly to Vichy that made possible his book on enteroptosis, which is one of the great medical classics. So thoroughly did he perform his work that it was accepted at once. A son, Roger Glénard, resides at Vichy and continues his father's life work.

The Medical School of French West Africa.—This institution is discussed by Le Dantec in *Le Bulletin Médical* for May 29, 1920, xxxiv, 28. The idea which has given birth to this institution is recognition by the French Government of the great part played by the West African colonials in the defense of the mother country during the great war. The author is director of the new school which began its teaching in November, 1918. The name is somewhat misleading, for the seat of the institution is in Paris, and not, as the title seems to imply, in some African city like Dakar. The men to be trained for practice as colonials receive their training in the European metropolis, so that the school corresponds to institutions like the Liverpool School for Tropical Medicine. There are four departments—medicine, pharmacy, midwifery, and veterinary medicine. Colonial men and women, presumably largely African, will be trained in these branches, special courses being given to the native women in the calling of midwife. The course of medicine is four years, the first year comprising preliminary training in physics, chemistry, etc. Clinical instruction will be provided for, and among the teachers will be practitioners from the Dakar hospitals. In the pathology taught special stress will be laid on the diseases peculiar to the black races. For teaching midwifery a special maternity hospital will be created. The graduate midwife will be more than her name signifies, as she will be responsible for minor gynecology and pediatrics. The courses in midwifery and pharmacy are three years each.

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Original Articles.

THE INTERPRETATION AND CLINICAL SIGNIFICANCE OF UTERINE HEMORRHAGE.*

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THE fact that normal menstruation is in itself a form of uterine hemorrhage—the only physiological hemorrhage occurring in the human body—makes the study of this function the natural point of departure in the study of abnormal uterine bleeding. It is probably not an overstatement to say that more has been learned concerning the mechanism of menstruation during the past two decades than during many centuries preceding. The study of the steps by which modern scientific methods have gradually pushed aside the old cobwebs of mysticism and speculation concerning the study of menstruation, constitutes one of the most interesting chapters in the history of gynecology. Time will permit, however, of only the most summary statement of our modern conception of the physiology of menstruation.

Factors in Normal Menstruation.—The underlying cause of menstruation is universally conceded to be the internal secretion of the ovary. While there has been considerable discussion as to which constituent of the ovary is responsible for this menstrual hormone, the evidence points rather overwhelmingly to the corpus luteum as the responsible factor. This structure, beginning its life history immediately after the rupture of the mature Graafian follicle, passes through a series of developmental stages, which call forth a similar cyclic response in the endometrium. The latter tissue reaches the acme of its hypertrophic development, the stage of premenstrual hypertrophy, just before the onset of menstruation.

The cardinal feature of the menstrual phenomenon has usually been assumed to be the marked pelvic hyperemia which occurs. A moment's thought, however, must convince one that hyperemia of the endometrial vessels cannot in itself explain such an extensive migration of blood elements into the cavity of the uterus as is found during menstruation. So that it is necessary to presuppose the presence in the endometrium at this period of some local physiological factor which increases the permeability of the blood-vessel walls and allows of a massive exodus of blood elements, especially red blood corpuscles. Finally, the nerve mechanism of the pelvis, especially that of the vasomotor nerves, plays a part in the menstrual process; while even the influence of the higher centers cannot be overlooked. These matters I have discussed in previous papers, but their application may again be emphasized as concerns the mechanism of uterine bleeding.

Types of Uterine Hemorrhage.—In perhaps the majority of cases of uterine hemorrhage, it is possible to demonstrate a definite anatomical basis for the bleeding. This is preeminently the case with such destructive lesions as cancer, or with those endometrial conditions associated with the retention of embryonic products. In cases of this type the bleeding is clearly due to the opening up of blood-vessels by the disease process. Bleeding occurs in uterine cancer for the same reason that it occurs in cancer of the rectum, stomach, or other organs. Menstruation plays no essential part in hemorrhage of this type, although it may exaggerate the severity of the symptom.

In a second class of cases, both anatomical and physiological factors seem to be operative. Perhaps the best illustration of uterine bleeding of this variety is furnished in the ordinary cases of chronic inflammatory disease. The usual explanation given for the bleeding which is so often found in this condition has been that it induces a marked pelvic hyperemia, which thus exaggerates the bleeding associated with menstruation. There are several objections to this theory. In the first place, hyperemia, in itself, cannot, as has already been emphasized, explain the extensive diapedesis of blood elements seen in the ordinary cases of menorrhagia. Again, even in the case of the most severe grade of pelvic inflammation, the endometrium is often perfectly normal; while, on the other hand, menstruation may be normal, or even absent, in cases of acute endometritis, which is certainly characterized by more intense hyperemia than is seen in cases of chronic adnexitis. For such reasons as these, Hitschmann and Adler have championed the theory that the uterine bleeding seen with most pelvic abnormalities, such as myoma, adnexitis, uterine displacements, etc., is due to functional involvement of the ovary. It seems to me that there can be no doubt that such functional disturbances of the ovary are at least in part responsible for uterine hemorrhage in this type of case. On the other hand, it seems equally certain that other factors play some part in the causation of this form of uterine bleeding.

Finally, uterine hemorrhage may occur in the entire absence of any gross disease in the pelvic organs. In cases of this type we must seek the

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explanation chiefly along the lines of perverted physiology, as will be discussed later.

There is scarcely a lesion of the female generative organs which may not be associated with uterine bleeding in the form of either menorrhagia or metrorrhagia or both. It is scarcely necessary to enumerate these causes categorically. For the purposes of this brief paper it has seemed to me wiser to select for this discussion only a few of the most important causes of uterine hemorrhage, illustrating, as they do, the principles which have already been set forth.

Cancer.—The first place in such a presentation should perhaps be given to cancer of the uterus, in view of its frequency and its extreme gravity to the patient. In over 90 per cent. of all cases of this disease, the first symptom noted by the patient is uterine bleeding, which, therefore, constitutes a far more valuable warning than pain. The latter is rarely observed until the disease is well advanced. Bleeding usually occurs at an earlier period in the external types of uterine cancer, especially squamous cell carcinoma of the cervix, than in the intrauterine varieties, which are better protected from such traumatic influences as friction against the vaginal wall, etc.

So much has been preached as to the early recognition of cancer that one hesitates to harp again upon the same string. And yet every gynecological surgeon knows, and every general practitioner of medicine should know that in spite of these oft-repeated warnings, the majority of cases of uterine cancer which come to the gynecological surgeon have already passed the stage where surgery can promise a fair measure of hope. I cannot, therefore, resist the temptation to lay this matter before you again. Who is responsible—the patient, the family physician, or the surgeon?

The responsibility of the patient in cases of uterine cancer rightfully pertains to that period elapsing between her own recognition of abnormal symptoms and the day on which she consults her physician. Unfortunately, there is an even earlier stage, dating from the earliest inception of the growth to the appearance of the earliest symptom, and for this period no individual can be held responsible. This preliminary period is of varying length, but in some cases, as in adenocarcinoma of the cervix, the patient's doom may be sealed before a single symptom is noticed. Unfortunately, however, women are prone to delay, even after abnormal symptoms, usually uterine bleeding, make them apprehensive. The causes for this delay are chiefly the following: (1) The belief that abnormal bleeding at this age is merely an evidence of "change of life." (2) The idea that no such serious condition as uterine cancer can be present when the patient experiences no pain and is in good general health. (3) The dread which many patients have that, if a gynecological operation be submitted to, cancer may be found. (4) The erroneous idea held by many individuals that cancer is always an incurable disease.

It is in this first stage of the disease that the patient herself plays the chief rôle, and it is with the shortening of this stage that we are concerned in any popular campaign of cancer education. It cannot be too strongly urged that such a campaign of education should carry with it a note of encouragement. Women should know the possibly grave significance of uterine bleeding, but they should also be impressed with the frequent curability of uterine cancer in its earliest stage, and by the fact that hemorrhage is by no means always indicative of cancer. Only in this way can we dispel that dread of cancer which is often the chief reason for the patient's delay in seeking advice.

The second stage comprises the period between the patient's first consultation with her physician and the time at which she is referred to the gynecologist. It is unfortunate but true that even at this day this period is frequently much too long. The delay, in the case of the physician, is rarely due to ignorance; much more frequently to carelessness or to a species of "professional inertia." There is still room for education within our own ranks.

The third stage dates from the time at which the patient comes under the care of the gynecological surgeon. The latter, with all his other sins, may fairly boast that he is rarely culpable in delaying treatment in cases of uterine cancer which are brought to his notice. His own principal responsibility lies in the judicious selection of cases for radical operation, and in the perfection of his own technique, so as to lower the high immediate mortality in operations for the radical removal of uterine cancer.

Benign Lesions of the Cervix.—Among other anatomic causes of uterine hemorrhage may be mentioned such relatively simple conditions as erosion of the cervix, or the more common eversion, or ectropion, so frequently associated with cervical laceration. In the latter condition, the everted cervical mucosa is often engorged to such an extent that it bleeds on the slightest touch or after the slightest trauma. In these cases metrorrhagia, usually slight, is observed after coitus, or after severe exertion. The same mechanism is involved in the not infrequent cases of cervical polypi, especially if they protrude beyond the cervical canal. In the case of polypi springing from points higher up in the uterine canal, bleeding more frequently takes the form of menorrhagia, for obvious reasons.

Retained Gestation Products.—Perhaps the most frequent cause of uterine bleeding of the anatomical type, or of any type, for that matter, is the retention of gestation products after abortion. The large blood vessels in the placenta and in the uterine wall are often the source of the most profuse hemorrhage, caused directly by the efforts of the uterus to expel the foreign material. It is surprising how much tissue may in some cases be retained in the uterine cavity without causing any serious bleeding, while, in other cases, even a very small amount may be productive of alarming hemorrhage. Once the placental tissue has been thrown off from the uterine wall into the uterine cavity, it is, as a rule, no longer a source of great danger from the standpoint of hemorrhage, except as it prevents the uterus from contracting. If it remains attached, however, bleeding is apt to be kept up from blood vessels ruptured by the contractions of the uterus, in an effort to expel the retained tissue. This does not always follow directly

after the delivery or the miscarriage. Recently a woman was admitted to my service almost exsanguinated from bleeding occurring suddenly seven weeks after an apparently normal delivery. Evacuation of the uterus yielded a typical placental polyp, the result of the retention of a placental cotyledon.

Other Pelvic Lesions.—In the case of pelvic inflammatory disease, the explanation which has usually been given for the bleeding is that this condition causes a pelvic hyperemia which is responsible for the abnormal bleeding. There is much evidence, however, to indicate that a more important factor is to be found in the associated functional disorder of the ovary. This evidence I have reviewed in previous papers, and I shall not elaborate on this point here.

It must not be assumed, from what has been said as to the importance of the ovarian rôle in the causation of the bleeding in this group of cases, that other factors play no part whatsoever. In the case of uterine myoma, for example, there can be no doubt that the mechanical factor due to the presence, the size, and the location of the tumor is of the greatest importance. It is a well-known fact that bleeding from myomatous tumors is, speaking generally, more profuse in the submucous type than in the intramural or subperitoneal variety. The splendid researches of Sampson throw an interesting light on this question.

Another lesion which may be classed under this general group is ectopic pregnancy. The uterine bleeding so characteristic of this condition is no doubt chiefly due to a perverted physiology, but its mechanism is interesting and rather unique. While there is some difference of opinion on this point, it seems to me that the evidence is quite convincing that the hemorrhage—meaning, of course, the external or vaginal bleeding—is directly due to the death of the embryo. A number of interesting cases have come under my observation which throw some light on this question. I shall mention the three which I think are most striking:

Several years ago I operated on a woman of 35, who had been referred to me by Dr. B. S. Rankin, of Tunnelton, W. Va. She had missed two menstrual periods and had exhibited the usual subjective signs of pregnancy. Several days before I saw her she had been taken with violent pains in the left iliac fossa, and had suffered a number of syncopal attacks. There had, however, been no external hemorrhage whatsoever. Examination showed a slightly enlarged uterus, and a large, sensitive mass filled the left side of the pelvis. In spite of the absence of uterine bleeding, a diagnosis was made of ruptured tubal pregnancy. At operation the pelvis and lower abdomen were found to be filled with blood, the left tube being the seat of a ruptured pregnancy. This was confirmed by microscopic examination of the tube. The patient made an uneventful recovery. About six weeks after the patient's discharge I was rather chagrined to receive a letter from Dr. Rankin stating that the patient had had an attack of uterine bleeding, with some pain, followed shortly afterward by the expulsion from the vagina of a three-months' fetus. The explanation of the case was then quite clear. The woman, at the time of operation, had had a combined intra- and extrauterine pregnancy, the uterus being pregnant at the time of the removal of the tube. There was no way for us to determine the existence of the uterine pregnancy at the time of operation. The presence of the live fetus within the uterus explained why she had no external hemorrhage.

The second patient was a woman of 39, who came to me on January 24, 1920, through the kindness of Dr. B. F. Kader, of Baltimore. She had been married many years and had had one child 21 years previously. There had been no pregnancies since then. Menstruation had been regular until November 29, which was the date of the last regular period. Since then there had been complete amenorrhea. Three weeks before admission the patient was taken with severe pain in the lower abdomen, especially marked in the left iliac fossa. These pains had been present since that time and had often been very violent. On the day of admission the patient was suffering excruciating pain, with nausea and some vomiting. At operation there was found a very much enlarged pregnant tube, from the fimbriated end of which there protruded an intact amniotic sac about the size of an orange. To the latter was attached the placenta, which was also beginning to emerge from the tube. Within the sac was a fetus of about three months' development, apparently living. The specimen, after removal, was examined by Dr. Streeter, of the Carnegie Institute of Embryology, who stated in his report that the fetus was undoubtedly alive at the time of operation. This would seem to explain the entire absence of uterine bleeding in this patient.

The third case was a rather remarkable instance of abdominal pregnancy, which I operated upon only a few weeks ago. The patient was a woman of 36, who was referred to me by Dr. B. O. McCleary, of Baltimore. The patient had been married fourteen years without previous pregnancy. The date of the last regular menstrual period was March 21, 1919. About March 31 the patient was taken with severe pain in the epigastrium, with vomiting, and was uncomfortable for several weeks. Following the menstrual period in March, there was complete amenorrhea, and the patient considered herself pregnant. The abdomen gradually increased in size, and fetal movements were perceived in September. On December 20, at about the time the patient expected to be delivered, she was surprised at the occurrence of a rather profuse menstrual flow, lasting about ten days. In January, 1920, there was amenorrhea, but the menses occurred regularly on February 19 and March 18. When I saw her on April 12, 1920, the abdomen was enlarged to the size of a full-term pregnancy, although the fetal parts could not be clearly outlined. The breasts showed a slight hypertrophy and a moderate amount of milk (not colostrum). Vaginal examination showed the cervix to be small and not very edematous, while extending upward toward the left iliac fossa, and apparently continuous with the cervix, was an indefinite, firm body, giving the impression of a non-pregnant uterus. Without going into further detail, I may say that a diagnosis was made of abdominal pregnancy, with retention of a dead fetus. This was borne out by the operation, the details of which I shall not stop to describe. My reason for mentioning this case is the fact that it illustrates some of the factors which are concerned with the uterine bleeding in cases of ectopic pregnancy. Throughout the course of the entire pregnancy this patient showed no metrorrhagia, but as soon as the death of the fetus occurred in December there was a profuse discharge of blood, menstruation thereafter occurring regularly, with the exception of the month of January. The amenorrhea in this month, it seems to me, is explainable by the onset of lactation, the hormone of the lactating breast, as is well known, exerting an inhibitory effect on menstruation.

Functional Uterine Hemorrhage.—Perhaps the most interesting type of hemorrhage is the kind which is observed not infrequently in the entire absence of any demonstrable pelvic disease. This type of bleeding has been spoken of variously as "functional," "idiopathic" or "essential" uterine hemorrhage. It is of very frequent occurrence, especially at the two extremes of menstrual life, puberty and the menopause. It may, however, occur at any age. In these cases the most careful examination may show perfectly normal pelvic organs, and yet bleeding may be persistent and perhaps very profuse. Most commonly it takes the place of menorrhagia rather than metrorrhagia.

Cases of this type usually come to curettage sooner or later, and indeed, in the case of climacteric hemorrhage, the indication for this procedure is urgent, owing to the importance of excluding carcinoma. In the non-malignant climacteric cases and in those of puberty, the pathological report on the curettings has usually been some such designation as "normal endometrium," "hypertrophic glandular endometritis," "chronic endometritis," etc. It has seemed difficult to incriminate the endometrium as the cause of bleeding of this type. Equally unsatisfactory have been the efforts to explain this form of bleeding by such factors as arteriosclerosis of the uterus, the insufficienta uteri of Theilhaber, etc.

The point which I should like to emphasize is that the endometrium in a very large proportion of these cases—I am not prepared as yet to put it in percentage figures—conforms to the type described by Cullen as *hyperplasia of the endometrium*. The histological picture presented by this condition is extremely characteristic. As the term indicates, there is a general hyperplasia of the uterine mucosa, with an increase of both the epithelial and stromal elements. Owing to the epithelial proliferation, many of the glands become much enlarged and of cystic appearance. The disparity in the glands is, perhaps, the most conspicuous feature of this condition on casual examination, so that as a rule the diagnosis may be made almost at a glance. That the cystic condition of the glands is not due to mere retention of the contents is suggested by the fact that the epithelium, instead of being flattened out, is commonly quite intact. Not infrequently the epithelial cells are seen to be several layers thick. The stroma is also markedly increased and occasionally mitoses are noted. Grossly, the endometrium in these cases is almost always much thickened, sometimes enormously so. In the extreme cases curettage will often bring away large masses of fungoid tissue, which look for all the world like a malignant condition. In other cases the thickening is relatively slight.

An endometrium of the type above described is never observed except in association with the symptom of uterine bleeding. The reverse is, of course, not true, for uterine hemorrhage may be due to many anatomic causes. It is of interest, however, to note that with certain pelvic lesions, especially myoma and adenomyoma, the endometrium may exhibit the condition of hyperplasia, as above described. There is some evidence to believe that both myoma and adenomyoma are due to some as yet unknown aberration of ovarian function, and, as we shall see, there is little doubt that the same factor is responsible for hyperplasia of the endometrium.

The finding in a case of uterine bleeding of such a definite structural alteration as hyperplasia of the endometrium would seem at once to take such a case out of the category of functional hemorrhage. There is strong evidence, however, that this characteristic change in the endometrium does not represent a primary lesion, but that it is purely secondary to a disturbed function of the ovary. Under normal conditions the endometrium is certainly subordinate to the influence of the ovary. The ever changing histological appearance of the uterine mucosa at different phases of the menstrual cycle is undoubtedly called forth by corresponding cyclical changes in the ovary, and especially in the corpus luteum. So that there is nothing revolutionary in the idea that the characteristic picture of hyperplasia may be associated with some definite endocrine disturbance of the ovary.

Hyperplasia, generally speaking, is observed only during the reproductive life of the woman, that is, during the period of ovarian activity. This fact in itself would suggest some influence on the part of the ovary. Furthermore, curettage, in cases of hyperplasia, is most frequently unsuccessful in the relief of the accompanying hemorrhage, the latter symptom recurring in a large proportion of cases. Were the hyperplasia a local lesion in the endometrium, its removal should be followed by cure. That this is not the case would seem to indicate that the underlying cause, an endocrine disorder of some sort, still remains operative. Although repeated curettage frequently does not cure these cases, radium of the *x*-ray usually brings about the cessation of the abnormal menstruation, apparently by its destructive action on the follicles of the ovary. As a matter of fact, there is strong evidence, as has already been stated, that almost all cases of uterine hemorrhage, with the exception of those due to such destructive lesions as cancer, are functional in the sense that the bleeding is, in part at least, due to disturbances of the ovarian secretion, as the result of the pelvic disease, whether this be myoma, or pyosalpinx, or what not.

Conclusions.—The points in the above presentation which seem worthy of special emphasis are the following:

1. The logical basis for the study of uterine hemorrhage is the study of normal menstruation.

2. In many cases uterine bleeding is explainable along purely anatomic lines, especially in the case of such destructive lesions as cancer.

3. In perhaps the largest group of cases—those in which there exist one or more of such non-destructive lesions as adnexitis, myoma, uterine displacement, etc., both mechanical and functional factors play a rôle, the latter having to do most frequently with a disordered ovarian function. In the case of ectopic pregnancy, still another factor must be borne in mind—that exerted by the death of the embryo.

4. The third group, comprising the cases of uterine hemorrhage spoken of clinically as functional, is dependent altogether upon a disordered ovarian function. The hyperplasia of the endometrium so frequently found in these cases is secondary to this underlying ovarian endocrinopathy.

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Sarcomatous Transformation of Uterine Fibroids.—Paulhiac, in a recent Bordeaux thesis, states as a result of revised statistics that at least 5 per cent. of uterine fibroids will meet with this fate, the danger being greatest towards the menopause years. The transformation is usually suggested by increased rapidity of growth, but this may escape observation. Hysterectomy, unfortunately, often proves to have been only a palliative recourse. The danger from sarcomatous alteration, in these cases, the author says, is an added reason for the routine ablation of certain fibroid uteri.—*Gazette hebdômadaire des sciences médicales de Bordeaux.*

PARENTERAL PROTEIN TREATMENT OF ARTHRITIS, WITH SPECIAL REFERENCE TO MILK INJECTIONS; ITS RELATION TO ANAPHYLAXIS.

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THIS communication is prompted by several facts. At a recent symposium on the treatment of arthritis, held before a medical society that generally, as on this occasion, calls forth a large attendance of general practitioners, an orthopedic specialist who was scheduled to read a paper on vaccine treatment of arthritis, laughed the subject off and sat down. In the few moments that he spoke and during which he, in sarcastic tones condemned the method, he included, as even more foolish than specific vaccine therapy of arthritis, non-specific protein treatment of the same conditions. His reasons were that we don't understand the rationale, and that an assistant of his reported unfavorable experience with the methods. I hope to show that the reasoning here illustrated is not sufficiently sound to warrant the neglect of a possibly very useful therapeutic procedure.

Then, while there have appeared a number of good articles reporting on the parenteral protein treatment of arthritis, I came across none by English or American authors, speaking of the use of milk as the foreign protein. This in spite of the fact that Schmidt used milk by intramuscular injection, already in 1910,[1] and during 1916 there appeared in German and Austrian literature a number of articles on the use of milk for parenteral injection in the treatment of various affections, including arthritis. Reports that struck me as particularly interesting in this connection were those of Muller and Thanner,[2] of Friedlander,[3] and of Dziembowski.[4]

I began the use of milk injections early in 1917. My experience with parenteral protein treatment is almost exclusively with milk as the protein and with infectious arthritis as the disease, and is limited to about five dozen cases. I shall not give case histories nor statistics, but, after an attempt at elucidation of what is known of, and what has been accomplished with, the method, will briefly outline my experiences and technique.

When foreign protein treatment is mentioned, it is fair to say that, in the minds of a great many, an association with anaphylaxis is immediately awakened. The cerebration formula seems to be: Protein, foreign, anaphylaxis. To the medical mind it seems clear that for anaphylaxis protein is necessary. The most generally accepted view to-day does hold that this reaction is limited to protein antigens. And it is well to hold this clearly and firmly in mind. When Richet in 1902[5] coined the term, he used it as the antithesis to prophylaxis. The Standard Dictionary defines "anaphylaxis" only under "prophylaxis," and then makes the important omission of failing to mention protein. I speak of all this because if we do want to understand what parenteral protein treatment does, and if we are to differentiate it from anaphylaxis, it is necessary to understand the basic principles of anaphylaxis as far as they are to-day understood. It therefore seems in order to note briefly some of these fundamental facts.

Magendie in 1839 reported meeting with sudden death in some experimental dogs whom he had repeatedly injected with egg albumin. Flexner in 1894[6] noted active sensitization of rabbits to dog serum, but it was not until Richet[5] took up the study of anaphylaxis in 1902 that it became a purposeful one and stimulated study of the phenomenon by many workers.

In 1905[7] the very important fact was noted that, while an injection of horse serum given to a guinea pig (and let it be noted that most experiments in anaphylaxis are carried out in guinea pigs, because these animals are very susceptible to protein sensitization, while some other animals are highly resistant) sensitized the animal to another dose given after an interval of 10 to 12 days, the repeated injection of the animal with considerable quantities, at *short* intervals, rendered the animal refractory or immune to later injections. This latter condition is that of "anti-anaphylaxis."

Some of the most important and detailed work on this subject was done by Milton J. Rosenau and Anderson, working in the U. S. Public Health Service.[8] These workers established the following facts:

1. A single injection of horse serum into a guinea pig is harmless.

2. A second injection after a definite interval is harmful.

3. This interval or incubation time, with ordinary doses, is about ten days.

4. The anaphylactic reaction which results from a second injection is highly specific. There are few undoubted instances of non-specific anaphylaxis; the specificity is as a rule one of species. It is very interesting to note "organ specificity." Thus, the protein of the crystalline lens is specific. It will sensitize toward lens protein from any and all species of animals, but the lens protein of an animal will not sensitize toward any other protein of that animal. It may be noted that an explanation along these lines has been offered for sympathetic ophthalmia.

5. The reaction is extremely delicate. Only proteins act as anaphylactic antigens. Lipoids are by some said to act as such antigens, but this is doubtful. The chemical nature of the anaphylactic poison is not clearly understood.

6. The hypersusceptible state is not transient. It may last a long time; Rosenau and Anderson found it to persist in a guinea pig as long as 1,096 days, and they express the belief that it may last a life time. Please note this fact carefully.

7. Antitoxins, precipitins and hemolysins have nothing to do with the reaction.

8. The sensitive condition is transmissible to offspring; a very important fact.

There may be passive sensitization as well as active. Passive sensitization may persist 3 to 4 weeks. It may be accomplished in several ways, as follows: (1) by the injection of serum from a sensitized animal; (2) by the injection of serum from an animal in the preanaphylactic period, as on the eighth day after it was injected; (3) by

the injection of serum from an anti-anaphylactic animal; that is, an animal that has been rendered refractory, as by the repeated injection at frequent intervals.

Note further, the young of anti-anaphylactic animals are not refractory, but are hypersusceptible.

In passively transferring anaphylaxis, an interval of some hours (4 to 24) is required before the newly injected animal becomes sensitive. This point must be carefully noted, for it is a strong argument for the "cellular" theory of anaphylaxis. It thus seems that the sensitizing agent must become attached to or react with the fixed cells of the passively sensitized animal, before this animal becomes sensitive.

"We may accept as a definitely determined fact that anaphylaxis is directly or indirectly the result of the reaction within the animal body, of an antigen with its specific antibody. In *active* anaphylaxis the antibodies are present as the reaction to a preceding antigen injection. In the *passive* condition, they were conveyed with the injected antiserum. A hypersusceptible subject, temporarily desensitized by antigen, will again gradually become sensitive."[9]

Anaphylaxis is a general systemic reaction; its local analogue is called allergie.[10]

Anti-anaphylaxis, or desensitization, is best produced by giving a second dose of the antigen in the latter part of the incubation period (or preanaphylactic period). Small doses of antigen produce the susceptible state earlier than do large doses. Repeated doses given at frequent intervals may act merely as one large dose, prolonging the incubation period but leaving the subject finally sensitive. Please note this last fact carefully for its bearing on foreign protein treatment.

Pfeiffer,[11] in 1909, noted depression of temperature during anaphylaxis and this is considered an essential phenomenon of the reaction. Note the contrast between this and infection, where elevation of temperature is characteristic. At about the same time it was found that complement is reduced during the development of shock which follows the second or toxigenic dose of protein.[12] During the shock there is also lowered blood coagulability and temporary leucopenia. Eosinophilia is characteristic in anaphylactic reactions.

Acute anaphylactic shock results in respiratory death. The resemblance to an attack of violent bronchial asthma was noted by Meltzer, and his pupils, Auer and Lewis,[13] studied the condition on animals kept alive by artificial respiration. They found the bronchioles in tetanic spasm, imprisoning air, and resulting in large, non-collapsible, emphysematous lungs. They further proved the mechanism to be peripheral, and not central, for they could produce the condition with vagi cut, or cord and medulla destroyed. Furthermore, they could resolve the bronchial spasm by atropine, which pharmacologists know exerts its effect peripherally on the nerve terminals. This was a most important piece of work with an immediate, practical applicability.

In 1906 VonPirquet and Shick[10] described serum sickness. This is believed to be a manifestation of anaphylaxis, though it needs some explaining in view of the fact that the train of disturbances designated as serum sickness will appear after the *first* injection of serum, but after an incubation period of one to twelve days. The cases of serum sickness which appear only after a second injection, are, of course, easier to understand. These usually appear after briefer incubation periods, and are apt to be more severe. They may even be "immediate" and "accelerated" reactions. The severity of a serum reaction is in proportion to the size of the dose. In case of serum disease following a second injection, the severity is in proportion to the length of the interval elapsing between the first and the second injections. The best explanations offered for the appearance of serum sickness following a first injection are: (*a*) that the patient had been previously accidentally or unconsciously sensitized to the now injected serum; or (*b*) during the incubation period which follows the first injection of serum, the antigen (injected serum) is gradually split by native antibody, until finally a sufficient quantity of excess antibody has been stimulated into being to unite with the remaining antigen (and fix alexin) and produce the anaphylotoxin, with the consequent symptoms. Thus the antigen destroyed early in the incubation period sensitizes the patient to the remaining quantity.

Vaughan's[14, 15, 16] work with protein split products is a most important American contribution, and has a possible very close bearing on our subject. He split the protein molecule into alcohol soluble and alcohol insoluble fractions. The alcohol soluble fraction is toxic, but non-sensitizing; the alcohol insoluble fraction is non-toxic, but is sensitizing. Following the first injection of protein, according to this conception, the substance is slowly broken up, with the liberation of the two fractions. The alcohol insoluble, sensitizing fraction acts as an antigen, calling forth the production in excess of antibody (lysin, enzyme). When, later, protein is again injected, it meets this excess of antibody with the consequent rapid lysis of the reinjected protein, the explosive liberation of the toxic fraction (anaphylotoxin), and anaphylactic shock results.

A group of protective bodies necessary to consider in this connection are enzymes, which are present in probably every fluid and every cell of the body, and which are highly important in the completion of metabolism and final assimilation of proteins, carbohydrates, and fats. The parenteral introduction of almost any substance, and especially bacterial protein, produces a marked increment of the enzymes of the blood, including proteolytic, amylolytic, and lipolytic. The ferments so appearing are *non-specific*. The increased serum activity after protein injection may be due to the simultaneous increase of ferment production and diminution of antiferments. The mechanism is probably a mobilization of ferments normally present but not concentrated in the blood stream under ordinary conditions. This is suggested by the fact that the appearance of these substances is accomplished with a speed out of all harmony with the rate of production of other antibodies. The enzymes also disappear very rapidly after the stimulus is removed.

Now as for sneering at non-specific therapy be-

cause there is no adequate understanding of the mechanism, let us appraise somewhat what has been accomplished to demonstrate its value from the laboratory standpoint and by clinical experience.

The father of *specific* vaccine therapy, Sir A. E. Wright,[17] in 1915 admitted that good results by non-specific methods, formerly considered unscientific, are nevertheless frequently encountered.

Theobald Smith said in 1910,[18] "The effectiveness of vaccine applied in the course of acute febrile diseases, such as typhoid and pneumonia, must be accounted for by principles of which experimental medicine has as yet no definite knowledge." That is an admission of inability to explain a fact, but not therefore denial of the fact.

It was Fraenkel in 1893[19] who noted that he could benefit typhoid patients by subcutaneous injections of typhoid vaccine. This was obviously contrary to expectation based on the theory of specific vaccine stimulation. Here, too, because fact ran contrary to theory, it was long neglected.

Rumpf[20] very soon did something even much more shocking to orthodoxy, for he accomplished with subcutaneous injection of *pyocyaneous vaccine* what his friend, Fraenkel, had done with his typhoid vaccine. Then Matthes[21] showed that he could produce a tuberculin reaction with *deutero-albumose*, and that the tuberculin fraction contains toxic protein in addition (foreshadowing Vaughan's work). But it was Ichikawa's[22] introduction of *intravenous* injection of typhoid vaccine in typhoid patients that was most striking in its results and that led to the further use of protein intravenously for non-specific purposes, for Kraus[23] very soon observed that colon vaccine intravenously gave the same results in typhoid as did typhoid vaccine; Lüdke[24] obtained good results in typhoid with deutero-albumose (non-bacterial protein split product); F. P. Gay[25] in this country reported good results from the intravenous injection of sensitized typhoid vaccine in typhoid cases; while Jobling and Peterson[26] studied the subject very carefully in animals, and reported good results in typhoid patients by the intravenous use of typhoid vaccine. Jobling and Peterson in a second article[27] say in discussion of the results encountered, "The fact should be kept in mind that the effect is not specific, and that there have been found no immediate changes in the antibody concentration of the patient after the injection of the vaccine. There remains the possibility that the non-specific ferments of the body are stimulated and in some way bring about the destruction of the invading organisms and a detoxication. An increase in the protease might produce a more rapid splitting of the toxic protein fragments to lower, non-toxic forms, while an increase in the lipolytic ferments may have some influence in destroying the infecting organism itself. At the time of the crisis in pneumonia a definite increase in serum protease is demonstrable. In experimental animals we have found that the intravenous injection of killed bacteria is followed by a mobilization of non-specific ferments." These same investigators continued their study of the mechanism of "The Non-Specific Factors in the Treatment of Disease," and their work is so careful and relevant that I am tempted to quote them again. In 1916 they say, "Latterly the hemopoietic organs have come to be recognized as the chief source of antibodies. It would seem possible that the various agents act as stimulants of the hemopoietic tissue, which as a consequence suddenly floods the body with antibodies, thereby overcoming the infection. If this is the mechanism involved, it is important to keep in mind that the stimulus itself is not a specific factor, but that the hemopoietic system has been attuned to respond to a non-specific stimulus with the production of specific substances. Serumprotease, as other tryptic ferments, is without effect on bacteria; but if we consider the source of the intoxication occurring in the diseased organism as primarily due to protein split products, then such a mobilization of protease may be of considerable importance in the process of detoxication, in that the toxic fragments are hydrolyzed to lower and non-toxic forms."

Finally, Jobling opens his Harvey Lecture of February, 1917,[28] as follows: "The therapeutic measures used in the treatment of infections may be divided into two general classes: First, those specific substances which are supposed to destroy the infecting organism or neutralize its toxins, and, second, those which aim to strengthen the natural processes that normally bring about recovery." He concludes this lecture thus: "That the intravenous injection of non-specific substances exerts a marked influence on those infections in which it has been tried is very evident. It is not believed, of course, that these newer methods will cure all cases of infection. They do, however, open up new possibilities and suggest new methods for attacking infections of unknown etiology, and also those caused by organisms for which we have no specific antiserums. That all cases are not benefited does not necessarily reflect on the value of the treatment. There are very few therapeutic measures which do not have the same objection."

The clinical experiences heretofore quoted have dealt almost entirely with typhoid fever, but they led up to the use of these substances in other conditions, notably arthritis, and it is to this subject that we shall now turn. The first application of the method to cases of arthritis, in this country, was reported by Miller and Lusk[29] of Chicago, in June, 1916. They used typhoid vaccine and proteose intravenously, in cases of acute, subacute, and chronic arthritis with striking benefit, and with apparently equal results with the vaccine and the proteose, so that they later discarded proteose, finding the vaccine more convenient. In December of the same year[30] they reported further experiences with a large series of cases and find themselves encouraged to continue the method. Following this lead, we have reports on the use of the method, with good results, from a number of men. Cecil[31] used typhoid and also gonococcus vaccine intravenously. He got better results in cases of rheumatism than in cases of gonorrheal arthritis. Snyder[32] had a series of 110 cases of all types of arthritis, some in very bad condition and of long standing. He used typhoid vaccine intravenously and reports very good results. Boyd[33] used intravenous vaccine in cases of arthritis, myositis, etc., with reported good results. Duncan and Fraser[34] used "detoxicated" vaccine intravenously, with good results, and seem to feel that the "detoxication" by long storage of the vaccine makes their intravenous

use safer than fresh vaccine. Gow[25] used intravenous peptone plus sensitized vaccine and reports good results in various conditions, but especially in arthritis. He makes the notable statement that best results were obtained in multiple infective arthritis where no primary focus was demonstrable.

From what has already been said it will appear that there seems considerable warrant in reports of clinical experience for the therapeutic use of parenteral protein, and that, although the method had its origin before there was satisfactory explanation of its mechanism, yet approach to an understanding has been accomplished. It will further appear that the method has met with considerable success in various forms of arthritis, but that practically all the work reported outside of German literature has been with intravenous injection of bacterial vaccine. As already indicated, my own experience with the method has been almost entirely with milk as the antigen. I have used it in about five dozen cases of arthritis, with gratifying results in the great majority, and with results that make one enthusiastic in *gonorrheal* arthritis.

The method consists in injecting *intramuscularly* (not intravenously) with all the precautions as to asepsis and avoidance of entry into a vein that are commonly employed in giving insoluble mercury, for example, of cow's milk that has been sterilized by boiling for about five minutes, and subsequently cooled to a comfortable temperature. The initial dose for an average sized adult is 4 c.c. The injection is generally repeated every other day, and the dose is increased by 1 c.c. at every injection. The total number of injections required varies with the individual case, and may be anywhere from two to ten. I have never given more than ten injections to a case, for I always had reason to think at the end of such period that we had obtained all the good possible; the patient was either well, or had ceased to show progressive improvement. The increase in dosage also is not a fixed and constant matter, but will depend on the degree of improvement and more especially on the severity of constitutional reaction that the patient showed. When the patient has a severe reaction the dose injected following such reaction should not be increased at all over the previous one; it rarely has to be reduced. To get any good out of the treatment a constitutional reaction must be produced. If none results after two or three injections, the method must be changed. Intravenous protein injection may then produce a reaction and a cure, where the intramuscular had failed. For intravenous use some bacterial protein seems best, especially since this has been most used and something is known of the proper dosage. If it is not convenient to carry out the treatment at home, it may generally be quite safely given at the office or clinic. The patient should then be directed to go immediately home, go to bed, and stay in bed the rest of the day. The reaction following an intramuscular milk injection rarely comes on in less than one and a half hours, and this gives the patient, in most instances, ample time to get home before its onset. The symptoms (to be outlined further on) rarely last more than eight hours; but in the exceptional cases, where they last longer, the patient should be directed to remain in bed as long as there is any fever or other constitutional discomfort. Local disturbance at the site of injection is never severe enough to incapacitate the patient. I have seen several patients who showed, after the second or later injection, a local allergic reaction, but this was never severe enough to cause much inconvenience. The time interval between injections should be as stated, unless there is some good reason for lengthening it, as when the reaction is unduly prologed. An injection should not be repeated before the symptoms from the preceding one have entirely disappeared. It is hardly necessary to mention, after what has been said when discussing anaphylaxis, that the second injection should never be given, unless it can be given after an interval of less than ten days. In view of the opinion expressed by Rosenau and Anderson (mentioned above) that an animal may possibly be rendered sensitive to foreign protein for a lifetime, it would be much safer, in the event that a course of parenteral protein treatment had been interrupted for some time and it was desired to resume such treatment, to resume it with a protein from a different species.

Provided the intramuscular injection of milk gives as good therapeutic results as do the intravenous injections of various proteins suitable for intravenous administration, and my own experience has satisfied me that it does, in arthritis, it would seem quite obvious that the intramuscular method should be preferred for its simplicity, and greater safety, and ready availability of the antigen. Veins need not be repeatedly punctured. The reaction following the intramuscular milk injections is less violent. I have given it to some patients who had had their arthritis for many months and been much enfeebled with surprisingly good result, considering the conditions, and with no dangerous symptoms as a consequence of the treatment. I well recall an old woman of 73, who had had all local foci of infection cleaned up, but whose chronic infectious arthritis continued (over two years) being markedly improved by this treatment. This senile, emaciated, and much worn patient responded to the injections with the most marked reaction in my experience, yet was able and willing to stand a half dozen injections.

This treatment is properly applicable to all forms of infectious arthritis, including acute, polyarticular rheumatism, but in my experience gives the most brilliant results in gonorrheal cases. Anyone who has had experience with gonorrheal arthritis knows how resistent these cases are to all the older methods of treatment. It is unnecessary to dwell on this at length, and no amount of talking will be as convincing of the marked superiority of the method I am urging, as will a personal trial of it. I want to make it quite clear that my advocacy of this method is not meant to be to the exclusion of other unharmful, adjuvant treatment. Obviously, primary foci of infection about teeth, tonsils, etc., should be cared for. Proper splints, local heat, baking, compresses, diathermia, etc., may aid, and should not be neglected. In chronic, long-standing cases adhesions will not be resolved by this therapy, but these cases should be given the proper mechanical treatment as soon as the injections have reduced the persisting infectious proc-

ess. In regard to gonorrheal cases I want to emphasize the fact that the urethral process should generally be given the very minimum of local treatment. I have preferred to omit everything but the oral administration of urotropin in these cases, and have repeatedly seen the urethral discharge disappear and urine clear up, down to the stage of shreds, during the period of milk injections, and I firmly believe, as a consequence of the milk injections. When all inflammatory processes in joints, urethra, prostate, etc., have disappeared, the residual urethral peeling may then be treated by approved local measures. When I can say that with these measures I have seen a gonorrheal knee of six weeks' duration, plus the associated urethritis, clear up after four injections, given in the course of one week, to a point where the urine that was formerly purulent became clear and contained only a few shreds, while the knee was completely cured so that the leg could be fully flexed on the thigh, and the patient walk with comfort and without a cane, I feel justified in enthusiastically recommending a trial of the method.

I shall now briefly outline the symptoms that have been noted to follow the parenteral injection of foreign protein. This holds for all forms of this treatment, but the symptoms following the intramuscular injection of cow's milk are seemingly less marked in degree.

Within one-half to two hours following an injection the patient has a chill or chilliness of varying degrees of severity and varying duration. This is soon followed by a rise of temperature. Temperatures as high as 107° F. have been noted (and in some pneumonia cases as high as 109°). This hyperpyrexia must be taken into consideration as in itself a possible factor in the cure of the infection. Rolly and Meltzer in 1908[10] concluded that high temperatures have a favorable influence on infections. This factor may be especially significant in gonorrhea, for the gonococcus will not continue to grow at temperatures of 102° F. The "fever treatment" of gonorrheal vulvovaginitis described by Ylppo[11] is very interesting in this connection.

A profuse sweat is apt to follow the fever. There is generally accompanying headache, sometimes very severe, but in most of my own cases rather mild. Backache, generalized pains in limbs and abdomen, nausea, vomiting, and sometimes diarrhea, are not infrequent. The local process in the joints is temporarily aggravated, as noted especially by increase in local pain, and less noticeably by increased swelling and redness. After the disappearance of the chill a leucocytosis appears. This has been found as high as 75,000, but usually is a good deal lower. The increase is largely in polynuclear neutrophiles. It is to be noted that there is no eosinophile increase. At the end of 24 hours the leucocytes are back to normal. Cowie and Calhoun[8] made some very careful studies of the blood changes after the intravenous injection of typhoid protein, and call attention especially to the absence of an eosinophilia, and to evidence of irritation of the hemopoietic tissues, in the presence in the peripheral blood of atypical lymphocytes, of myelocytes, and of nucleated red cells. They found the best therapeutic results to go with the best myelocytic response. The benefit to the patient from the leucocytic increase must be looked upon as not merely a matter of phagocytosis but also a neutralization of toxin.

Mobilization of ferments as a consequence of protein injections is thus spoken of by Jobling in his Harvey Lecture, already quoted.[2] "In experimental animals the intravenous injection of bacteria, kaolin, protein split products, and trypsin is almost invariably followed by more or less marked mobilization of serum protease and usually of esterase. Similar reactions occur in patients after vaccine or proteose, but not to the same degree nor with the same regularity as in experimental animals. The influence of mobilized ester splitting ferment is as yet obscure. In the ultimate analysis, of course, we must turn to ferments of this nature in order to dispose of the invading organism, because it is more than probable that the actual surface of the bacterium consists largely of lipoids, or intimate lipoprotein combinations, for the destruction of which esterase splitting ferments are probably essential."

The kidneys show no constant disturbance.

Thus let it be noted that in contrast with the symptoms of anaphylaxis there is here a rise of temperature rather than a depression, an increased polynuclear leucocytosis but no eosinophilia, and no respiratory disturbances. Furthermore, there is no specificity.

As general contraindications to the use of this method when it is otherwise deemed desirable may be noted marked general asthenia, organic heart disease, hypertension, and pregnancy. I would add that none of these is an absolute contraindication to the intramuscular milk injections, if they are used with caution, by beginning with small doses and keeping the patient in bed. When trouble has resulted from this method, it has generally been in typhoid cases—rarely in arthritis. In the former one must especially guard against bleeding from the bowel, epistaxis, and hemophilia.

In conclusion, this is an attempt, first, to evaluate a therapeutic procedure which in some quarters is sneered at and in others neglected, in both instances without good reason; secondly, to call attention especially to the simplicity and value of intramuscular milk injections in all forms of arthritis, with particular emphasis on gonorrheal arthritis.

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INFECTED APICES OF TEETH AND PYORRHEA ALVEOLARIS.

THEIR DENTAL AND SYSTEMIC RELATION.

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NEW YORK.

MEDICAL men expect the dentist to give them inside information in reference to the revelation made by the Roentgen-ray that 79 per cent. of so-called "dead," or technically described as pulpless teeth, have—apparently—infected apices. Why should the extraction of every such tooth be advocated by certain radicals?

The truth is because the infected foramen of the root apex has not been made surgically clean. This is one of the dental sins of omission, and is chargeable to operating technique. The sin of commission is also a factor because in past years the pulps of teeth have been devitalized by the application of arsenious pastes—a slow torturing method. By the time the pulp is devitalized the root canal is thoroughly infected. The pulp is then twisted around a barbed nerve broach and forcibly extracted, thus leaving the foramen clogged with dead tissue as a focus for infection of the pericementum of the root.

When arsenious pastes have been applied to devitalize the diseased pulp which has been exposed by decay of the tooth, there is usually danger from arseniasis some months after the tooth is filled. Superficial necrosis usually follows arsenical poisoning—the radiograph presenting a dark apical area—with recurrent symptoms of periosteitis.

Since the Roentgen-ray has been the order of the day, the medical profession has been handing the dental practitioners so many nutty problems in differential diagnosis that the newly acquired dignity seems to have affected the dentists' perspicacity.

The excellent operation of apiceotomy, the precise practice of ionization and high frequency, and the application of commonsense methods have almost been lost in a maze of exodontia.

Fortunately, professional pride is aroused as modern dentistry functions to corrective details, its successful exponents being grounded in its surgical, pathological, artistic, and mechanical divisions.

Conductive anesthesia is now relieving the dread of the dental operations where the active drill and nerve broaches are to be used—therefore surgical extirpation of the pulp and immediate root filling are within the time limit of one sitting, followed by a permanent crown filling as convenient.

The writer's faith in electrotherapeutics in dental practice is founded on his association with its evolution through early failures to its present manifest success. He had the honor of introducing cataphoresis to the dental profession in 1892. (Electricity; Its Application in Dental Practice, *The Dental Cosmos*, November, 1892, page 887.)

A few pulpless teeth treated at that time are in the mouths of patients at the present writing, the majority, however, are not clinically recordable.

He predicated the claim for the stimulating action of electric medication over drug osmosis in treating periosteitis, pericementitis, and sensitive dentine. He now upholds the contention that ionic medication clots the cells of the pathogenic bacteria of the infected apices and bone sinuses. These virulent bacteria thrive on the organic nitrogen of the surrounding protein. The rapid coagulation by electroylic action renders the bacterial cells innoxious.

The writer does not agree with those who interpret a small dark point presented in a radiograph at the apex of a root to mean that the area is affected to a degree to cause reflex constitutional disorders. The infected area must become definitely circumscribed and show coagulative necrosis before there can be bacterial invasion of the blood stream. (See Fig. 2.)

Clinical history is accepted as of paramount importance in assisting an unconfused Roentgen-ray diagnosis; *x*-ray methods should be standardized.

The patient never complains of a throbbing pain until an abscess is developing, and if the objective tooth does not respond to percussion when the body resistance is lowered—as instanced in "colds," fevers, and fatigue—there is, clinically, no warrant to charge the major disorders of arthritis, sclerosis, neuritis, etc., to a tiny thrombus at the apex of a root.

The medical practitioner who believes that the pathological conditions of the mouth have an important influence on constitutional metabolism

should have a clear understanding of the operative difficulties to be overcome before dental disturbances are mastered.

The conscientious efforts of the dental practitioners, founded on their clinical experience, are directed to standardize the treatments of pyorrhea alveolaris and the filling of root canals because, if the reparative key of usefulness to the adult masticating organs is not found the economic efficiency of our complex civilization will suffer.

The operative technique used by the writer for nerve blocking preliminary to the surgical extirpation of the pulp and the filling of root canals is in some repects, allowing for modifications as the case demands, similar to the office practice of his confrères who favor electrotherapeutics. In many cases local anesthesia of the pulp by ionization is very successful. Immediately following the application of novocain-suprarenin solution, or a similar injection for nerve blocking, the objective tooth is isolated in the usual way. The metal clamp which holds the rubber dam about the neck of the tooth is painted with a heavy coat of chloropercha. When the chloroform evaporates a layer of guttapercha remains which interferes with the diffusion of the electricity used in the application of ionization. The tooth cavity is then flooded with medicated alcohol, and desiccated by warm air. The decayed tooth is drilled until the cavity is shaped for filling —the débris being blown out with compressed air. The pulp chamber thus freely exposed is flooded with iodine, the slight bleeding being wiped out and the cavity again desiccated by medicated alcohol and compressed air, as the object of this second treatment is to expose, macroscopically, the entrance to the root canals which is shown by the remaining iodine stains.

The next procedure is to sterilize the entire track. This is accomplished by zinc ions created by saturating the cavity with a 5 per cent. solution of chloride of zinc and inserting a finely tapered positive zinc electrode into the canals—the negative sponge-faced, salt-soaked electrode being held in the patient's hand on the same side of the body. The degree of current and amount of time needed to carry the antiseptic ions of zinc into the cellular structure of the roots, through to the periapices and possibly beyond depends upon the judgment of the operator, based on experience. The ionic action is more definite if the zinc electrode passes through a moist chloride of zinc field. A steady application of from one to five milliamperes from two to ten minutes usually assures an aseptic track. The removal of the remaining tissue in the root canals by sterilized finely barbed nerve broaches is now a simple operative detail—the danger from mechanical infection having been thus eliminated by the technique. The next procedure is to enlarge the root canals by a sterilized broach reamer attached to the dental engine. This part of the operation must be checked up by reference to the radiograph, showing the relative length of the root. When the operator is satisfied that the apex of the root is nearly reached, the canal is cleansed of its débris by sterilized nerve broaches and the ionization process repeated—this stage of continuous treatment requiring about three minutes.

A finer broach reamer is now carried into the canal and rotated steadily by the thumb and first finger, thus *feeling* its way into the foramen. If the instrument passes slightly through the foramen there is little, if any, additional surgical shock than when the pulp was first dissociated from its main connections.

The canals are now flooded with iodine and the negative zinc electrode is inserted to the extreme apex of the root. Five minutes' application liberates and distributes the stimulating ions of iodine to the periapical tissue.

Clinical experience warrants an immediate filling of the root canals as the pathological recovery is normal, therefore the canals are wiped with medicated alcohol to assist desiccation. A thin chloropercha solution is carried to the apex by a fine nerve broach. Immediately a stiff guttapercha finely tapered point which has been resting in chinosol powder, is rotated the entire length of the root and the canal mouth is sealed with copper cement or copper amalgam, the finishing filling of the crown being a matter of convenience.

After the rubber dam is removed and the mouth is refreshed with a copious irrigation, the gum area over the root is painted with the following solution:

Iodine crystals,	50 gr.	
Potassium iodide,	15 gr.	
Zinc iodide,	15 gr.	
Glycerin,	4 dr.	
Water,	4 dr.	(Skinner)
Menthol,	5 gr.	(Westlake)

An indented glass high frequency electrode placed over the gum conveys the warmth of this high voltage and low amperage current through the tissues. This has a soothing effect because it calls more blood to the parts to counteract the nerve irritation caused by the conductive anesthesia and ionization. A large, smooth glass high frequency electrode may be used with comfort over the periphery of the facial nerves.

Roots do not always grow straight to their apex. Root reamers usually break when forced by engine power through the canal of a curved root, therefore the operator must attempt to feel his way by rotating a hand drill. If this results in failure to reach the foramen, he has but one course open before resorting to root amputation, namely, an attempt to cause a complete mummification by ionization of the remaining fibers in the canal of the curved portion of the root. The result is problematical, because the prognosis can be made only by a time test.

If the root remains comfortable and the apical area appears normal in the radiograph for a period of three months after the canal and crown have been filled, the case may be dismissed. If, however, within thirty days after filling the tooth, it remains slightly sore when tested by percussion and the evident stagnation of circulation of the periapical area cannot be displaced by means of the high frequency current applied over the point of tenderness on the gum, then there remains the operation of apiceotomy, rather than exodontia.

The accompanying radiograph (Fig. 1) shows the root apex area at the present time of a superior lateral incisor after an excision of its infected apex

in 1901. Note the root canal filling. Fig. 2 shows a superior right lateral incisor and an impacted curved root cuspid.

The periapices of the incisor root present coagulative necrosis. These teeth were extracted in November, 1919, and the circumscribed bone curetted. The recovery was rapid as the tissues responded to ionization and high frequency treatments. For two years previous to their extraction the incisor was elongating and the patient presented casts in his urine. In March, 1920, reports showed normal urine.

The focal infection about the incisor and the pressure of the impacted cuspid may have been an *associate* cause of kidney disorganization, for when the diet of the patient was corrected after the extractions the metabolic balance was restored.

From the pathological standpoint root impaction should be considered as vital a factor in reflexes as an impaction in any other part of the economy.

To assist the reader to visualize the percentage of success to failure of ionization and high frequency, the following cases may be selected as typical.

In September of last year 117 cases were presented suffering from pulpitis, periostitis, peri-

FIG. 1 FIG. 2

dontitis—some having exposed suppurating pulps and some with devitalized pulps—all of them texts on which to preach the doctrine of dental hygiene. In December following 102 on the list showed normal apices and useful teeth. Fifteen failed to respond to treatments, so four were extracted and eleven roots were resected—showing normal tissue recovery at the present writing.

Pyorrhea Alveolaris.—The sufferer from diseased gums often presents excellent tooth structure with few, if any, decayed teeth.

Observation has proven that a male from 19 to 25 and a female from 16 to 21 whose gums show a line of redness about the gingival margin will be victims of the disease of pyorrhea alveolaris before fifteen years pass unless they follow the vigilant rules of oral and body hygiene.

The medical profession may be assisted in their diagnosis of metabolic disorders by the above statement, and a lead may also be had if the gums show a recession without pus pockets, exposing a smooth, shiny neck of the root. This latter affliction indicates to the dental diagnostician a uratic diathesis and a tendency to arteriosclerosis.

In the writer's 32 years of active office, clinical, and hospital experience, he has never handled a true pyorrhea case where the patient did not show a weak peristalic action of the intestines and consequent autointoxication. In a large percentage of cases the patient suffered from hemorrhoids.

The urinary report of a typical subject shows indican and the feces analysis presents hydrobilirubin. Shreds of meat and vegetable fibers are visible macroscopically. Urobilin and urobilinogen are evident. Starches show in greater or less amount according to the extent of the pyorrhea. With such an upset of the pancreas and bile glands the function of the enzymes and protective protein in the blood stream is curtailed.

Excess amounts of orange pigments are set free in the current and their toxic effects are noticeable at the anatomical terminals—such as the gum festoons where local irritants of serumal or salivary calculus have obstructed circulation.

Palliative treatment of pyorrhea alveolaris is useless. The surgical technique used by the writer is to open the gum down to the base of the deep-seated pocket and curet smooth the exposed serrated edges of the alveolar process. This incision exposes the affected side of the root from which all calcareous deposits are removed.

After a thorough removal of these deposits and the resection of the necrotic alveolus, the parts are freely irrigated with a warm saline solution and the iodine and iodide compound, previously described, is freely painted on the gums and around the teeth.

This is promptly followed by the application of a smooth-faced glass electrode dipped repeatedly in a saline solution to convey the high frequency current as an analgen. The patient is dismissed for three to five days with instructions to use a mouth wash and a dietary schedule. The gums are sensitive and bleed easily, therefore the diet is mainly gruels, milk, eggs, cream toast, marrow, and associated soft food.

Naturally the tooth brush is looked upon with dread, therefore a substitute is suggested. A piece of cheese cloth or cotton rolled on the finger may be used or the skin of an orange or lemon. A strip of skin of the grape fruit is an excellent abrasive used as one would a stick of sugar cane or an orange stick.

As mouth washes of alcohol and essential oils do not cut the mucin and fatty deposits from the teeth and gums the patient must call for an automatic remedy. Under these conditions there is nothing equal to citric acid juices. Lemon, orange, or grape fruit juices dissolve the mucin plaques and when followed with a glass of clear water complete a perfect irrigation. Citric fruit juices are especially effective if the skin and pulp are crushed together in a porcelain bowl, as in that way the vitamine, antiscorbutic, and antineuritic elements are retained. The gums soon present a clear light pink appearance which seems to substantiate the claim that citric fruit juices have an antipyretic action. The usual proportion for a wash is about five parts of water to two of fruit juice. The reason why lemon juice "sets the teeth on edge" is because its action cleans the mucin plaques from the teeth. The alkaline saliva is automatically stimulated by fruit acids.

At the next office appointment the treatment is

palliative. A glass-indented electrode in which has been placed a small piece of cotton saturated with a solution of five parts of sodium chloride to two parts of chinosol is applied to the gums and a snappy amount of high-frequency current is used to stimulate circulation. Concurrent use of ionization is sometimes demanded when obscure pockets develop—especially where the patient's condition is influenced by congenital or acquired lesions.

In the presence of incipient pyorrhea the studied application of ionization and high frequency usually accomplishes satisfactory results.

When about to dismiss the patient, a thin pencil-marking of nitrate of silver is made around the tooth at the gum margin, thus leaving an albuminate of silver which is not only a marking in case further recession occurs but in many cases is a curb to bacterial nests.

The dentist can restrain the decay of teeth, diseases of the gums, and the infected areas of some roots, but these inhibitory treatments do not insure immunity from recurrence if dental and body hygiene are neglected.

While the physician is studying the medical pathology of the patient, the use of a fruit laxative is suggested as an emergency correctant which not only acts as mildly operative, but has a favorable metabolic action in severe pyorrhea cases.

One-half pound of prunes, pitted, chopped fine, and soaked; ½ lb. of figs, chopped fine; 5 teaspoonfuls powdered senna, 1 cup New Orleans molasses.

Simmer for five minutes, pour into a Mason jar, and keep in a cool place.

Dose: 1 to 3 teaspoonfuls at night, as required.

After the morning and evening meal the patient drinks the juice of two or three oranges and one lemon. Part, at least, of the skin should be crushed with the pulp, because it is accepted as carrying the vitamine content. This drink, after eating, appears to have direct action on the endocrine secretions as indicated by their stimulation, due doubtless to the rapid distribution of the natural organic salts of the fruit. In some cases the physician has recommended yeast treatments, which appear to have beneficial results.

Every dentist who has been in active practice for twenty years or more knows from observation that decay of teeth and diseases of the gingiva are constitutionally associated with destructive metabolism. Decay of the teeth and pyorrhea alveolaris are primarily due to either a congenital or an acquired defect in the glandular cooperation of the individual, which has resulted in mineral catabolism. It is not true that "a clean tooth never decays." Many an individual who has never used a tooth brush will show a perfect set of teeth.

We are not required to go back to the aborigines to prove that statement. This statement may hurt the feelings of some masters of the unclean tooth brush drills. It may awaken them, however, to be diligent in the crusade to correct the "wholesale" method of cleaning teeth and enroll them as teachers of the truth that each tooth and gingiva must be cleaned with the same care as is bestowed upon the individual nail of the fingers, once daily—at least until the evolution of an improved race, who will use clean cotton or a similar product rolled on the individual finger to massage each tooth.

The progressive dentist who believes in preventive measures as evinced by his active indorsement of the great oral hygiene movement also believes in child hygiene. Both promise an evolution to standardized methods which assure a physically and mentally improved race. Therefore, the care of the young generation as the prospective parents calls for a closer association of the physician, dentist, and dietician who believe not only in calories but in the anabolism of the mineral constituents of food brought about by a normal endocrine balance.

The statement that 30 per cent. of the children are born with a pilary sac in the anal structure coincides with the observation of the writer that those who have no rectal defects or whose contracted sphincters have been corrected show a better dietary record and tooth structure than those who suffer from delayed exit of cecum-colon waste.

The first fifteen weeks of gestation are the important periods in which the dentist is interested. During this period the endocrine balance of the future mother should be carefully considered, the parathyroid and thyroid having a marked control over mineral anabolism.

The sphenoid is considered an important bone by the dentist, as its foramina allow the passage of the nutrient vessels to his anatomical workshop. Normal functioning of the pituitary gland in its fossa is important for the mouth welfare of the mother and her offspring.

About the fifth week the face portion begins to form, as does the enamel germ of the first tooth, and within the ninth week the lips and nose. The premaxillary bone which holds the six front teeth also assumes its contour and about the twelfth week the roof or hard palate should be uniting on both sides of the arch. This is closely followed by the corresponding lower jaw.

The arches or bow-like curves of the jaw are thus shaping in unison with the other bones of the head, their junction being perfect unless there is a recession of type.

When cases of cleft palate and congenital deformities are brought to the dentist he is influenced on general principles to charge the abnormality to atavism rather than to agree with the maternal contention of prenatal shocks, but when certain members of a family—raised in the same environment—have pyorrhea and sound teeth, and their brothers and sisters have decayed teeth and healthy gums, the truth is forced home that endocrine cooperation, which is coefficient with a normal anatomical exit for intestinal waste, are vital factors in maintaining a completeness of dental balance.

500 FIFTH AVENUE.

Some Spanish Health Statistics.—A recent number of the *National Health Bulletin* of Spain has caused Rodriguez to be somewhat pessimistic of the governmental control of disease. Last July the number of births in the provinces was 39,091 and in the capitals 6,755; total, 45,846. The total number of deaths for the same period was 49,328. There is, therefore, a deficit in natality of 3,482 in a single month. During the latter half of 1919 there were 2,568 deaths in Spain from typhoid fever and 1,778 from smallpox. In the first half of that year there were 18,134 deaths from tuberculosis. The total mortality in six months from preventable diseases was 62,973.—*El Siglo Medicó.*

KIDNEY FUNCTION IN A CASE OF BICHLORIDE POISONING.*

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MARY A., Italian by birth, aged 18, was admitted to Gouverneur Hospital, service of Dr. C. N. B. Camac, February 15, 1920, with the diagnosis of bichloride of mercury poisoning. She had been in the hospital before, from February 11, 1918, to March 4, 1918, for bichloride of mercury poisoning, and was discharged as cured. She had been only moderately sick, had blood in the urine for the first few days, a slight amount of albumin with a few casts. She never had any anuria and her blood pressure ranged from 104 to 140 systolic.

Present History.—Sunday, February 15, 1920, the patient swallowed three tablets of mercuric chloride, 7½ grains each, with suicidal intent. Within ten minutes she experienced severe pains in the stomach. She then told her mother what she had done. Her mother called a policeman and an ambulance. The policeman gave her milk and raw eggs to drink. The ambulance surgeon washed her stomach for twenty minutes. On admission to the hospital she complained of severe abdominal pain and soreness of the mouth and throat.

Status on Admission.—Her appearance was that of a well developed young white woman, rather pale, with an anxious expression, evidently suffering from abdominal pain. Her eyes were negative, pupils reacted to light and accommodation. Her mouth and tongue were slightly congested. The heart and lungs were entirely negative. The abdomen showed slight tenderness on pressure in the epigastrium. Her extremities were negative, reflexes normal.

Course.—She was not able to void any urine on admission, and none was obtained on catheterization. Her anuria persisted for three days. On the fourth day, four ounces of bloody urine was obtained. The urine was alkaline, of Sp. Gr. 1012, contained a heavy precipitate of albumin, a few granular casts, many white and red cells. Her blood pressure was 125 systolic, and 95 diastolic. She developed a marked stomatitis. Her gums were swollen, the mouth covered with white patches with areas of necrosis on the right margin of the tongue. She vomited considerable quantities of blood and also had numerous bloody stools.

She was placed on treatment as recommended by Lambert and Patterson,[1] including stomach washing twice a day, colon irrigation twice a day, and imperial drink by mouth. A solution of potassium acetate, one dram to a pint, was given continuously by the drop method of rectal irrigation. She also received a daily sweat in a hot pack.

Improvement was gradual. On February 23 the non-protein nitrogen was 265 mgm. per 100 c.c. of blood Her urine contained many red and white cells and a very heavy precipitate of albumin. She voided 12 ounces of urine that day. On March 1, 19 days after ingestion of the poison, she passed 80 ounces of urine. No red cells were found, and there was a faint trace of albumin. Her phthalein output for the first two hours was 5 per cent. On March 2 her phthalein output was 22 per cent. for the first two hours, and her non-protein nitrogen was 115.7 mgm. per 100 c.c. of blood. On March 4, 22 days after ingestion of the poison, the patient voided 40 ounces of urine Sp. Gr. of 1010, with a faint trace of albumin. Her blood count was as follows: Red cells, 1,376,000; hemoglobin, 30 per cent.; white cells, 7,600; polynuclears, 68 per cent.; lymphocytes, 14 per cent.; transitionals, 4 per cent.; large mononuclears, 3 per cent.; eosinophiles, 10 per cent.; mast cells, 1 per cent. March 6, her phthalein output was 25 per cent. for the first two hours, and 60 per cent. at the end of four hours. Her non-protein nitrogen was 43 mgm. per 100 c.c. of blood. March 9, her red cell count was 2,408,000, and hemoglobin 44 per cent. Sahli. Her fluid intake was 80 ounces, and she voided 60 ounces of urine. On March 11, her non-protein nitrogen was 30.7 mgm. per 100 c.c. of blood. Her fluid intake was 50 ounces and her urine output 60 ounces. The urine contained a faint trace of albumin, was alkaline, and of Sp. Gr. of 1014. Her phthalein output was 42 per cent. in two hours.

By this time her mouth had gradually improved. There was no bleeding any more, either from the mouth or from the stomach, and there was no blood in the stools. On March 12 both stool and urine were negative for mercury. On March 16 her blood count was 2,800,000, with hemoglobin 60 per cent. Sahli. The urine still contained a very faint trace of albumin. Phthalein output was 45 per cent. in two hours. She was discharged on March 19, feeling perfectly well.

The case is presented with a view to illustrate the pathological physiology of the kidney in bichloride poisoning. The bichloride kidney presents definite anatomical lesions which must be brought in correlation with the change in function. It has the advantage over other kidney lesions in that no other general mysterious metabolic disturbance need be assumed, such as is the tendency now to assume as a cause for other kidney lesions.

In a previous paper one of us[2] has attempted an explanation of the pathological pysiology of the kidney based on Cushny's modern theory of kidney secretion. Using at the same time the classification of renal diseases into tubular degeneration, glomerular inflammatory, and vascular sclerotic lesions. Briefly, it was as follows:

The glomeruli filter a deproteinized plasma, the tubules reabsorb the water and most of the threshold bodies, thus concentrating the rest of the urinary constituents. Filtration is dependent on pressure supplied by the heart, and the flow of blood to the glomeruli is regulated by the play of the vasomotors, which is extremely sensitive in the kidney. The kidney has no secretory nerve fibers.

When the glomeruli are inflamed there is a hindrance to filtration and the body attempts to maintain the filtration by increasing the pressure. In proportion as the body is able to maintain it, function will be maintained. An index to maintenance of function is given by observing the rest nitrogen level in the blood or by observing the individual non-protein constituents of the blood, such as urea, uric acid, or creatinine. The level in the blood of these substances will vary with the severity of the glomerular inflammation, the ability to call the mechanism of hypertension into play, the ability, by means of the increased pressure, to force blood through the inflamed glomeruli, and the ability to maintain the mechanism of hypertension until glomerular inflammation has subsided. What the actual mechanism in the production of hypertension is, we do not know. We can only say that the stimulus which calls for increase in blood pressure must arise from the small arterioles in the kidney and from the glomeruli, or the vessels leading to the glomeruli, as it is these vessels when inflamed or when sclerosed which call the mechanism of hypertension into play.

In tubular affections when the glomeruli are not involved, kidney function is maintained. There is no increase in rest nitrogen and no increase of blood pressure. Disturbance in function manifests itself by the permeability of Bowman's capsule, which

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forms the beginning of the tubules, to the proteins of the blood, and by the formation of casts.

In bichloride of mercury poisoning there seems to be an apparent contradiction to the above explanation of kidney function in disease. The following is an attempt to clear this up:

The bichloride kidney has been classified by Volhard and Fahr[3] as a "Necrotic Nephrosis" or as a "specifically characterized nephrosis" ("bestimmt characterisierte Nephrose"). The pathologic anatomy has been carefully studied by Heinecke,[4] Leutert,[5] and others, and is well known to pathologists. It consists of a necrosis of the proximal convoluted tubules of the kidney, involving most intensely, according to Suzuki,[6] the first part of the convoluted tubules and the fourth part where it joins the descending loop of Henle, and to a lesser extent the second and third part. The ascending loop of Henle and the distal convoluted tubules are also effected but to a less extent. Calcium is deposited in and around the necrotic cells. There is regeneration of the cells of the tubules with a throwing off into the lumen of the tubules of the necrotic and calcified cells. There is also some interstitial infiltration with edema and swelling of the whole organ. The glomeruli are not affected. There may be at times slight congestion and at times there is a fine sprinkling of fat droplets on the capillaries of the glomeruli.

As the glomeruli are not involved we should not expect to find any signs of kidney insufficiency. The only signs we would expect to find would be the presence of albumin and casts in the urine. How, then, are we to explain the anuria, the increase in the rest nitrogen level, and the presence of blood in the urine? Why, if there is an increase in the rest nitrogen level, does not the mechanism of hypertension come into play?

Hematuria.—The presence of blood in the urine is practically a constant find in the early stages of bichloride poisoning. Yet in studying the plates of the above-named authors and on viewing sections of bichloride kidney no red cells are found in the capsular space. It seems to be a rational explanation that the blood in the urine in bichloride kidney poisoning is not at all derived from the glomeruli, which are not inflamed, but is probably derived from the capillaries of the necrotic tubules.

Anuria.—The anuria is one of the most difficult things to explain in the bichloride kidney. As the glomeruli are not inflamed there is no reason why their function should cease, yet anuria or oliguria is practically a constant phenomenon in the bichloride kidney, and death is very often a consequence of the anuria. How then are we to explain it? We believe the following threefold cause explains it: First, the swelling and edema of the kidney stretches the capsule to its limit and compresses the larger vessels in the kidney, resulting in a diminution of the blood flow to the glomeruli with a lowering of the filtration pressure in the glomeruli. The lessening of filtration is in all probability aided by the choking of the tubules with the débris of necrotic cells. That the first factor is important can be inferred from the recovery of patients who have had the kidney capsule incised. There is probably also a third factor, namly, a reflex constriction of the vessels of the kidney produced by the insult to the kidney and reflected by the very sensitive vasomotor system.

Rest Nitrogen.—The increase of non-protein nitrogen has been a constant observation in cases of bichloride poisoning ever since blood studies on such cases have been attempted. Such studies have been made by: Campbell,[7] Lewis and Rivers,[8] Underhill,[9] Meyers and Lough,[10] Rosenbloom,[11] Foster,[12] Woods,[13] Meyers and Fine,[14] and others. Among the cases reported there is none with such high figures as in our case, namely, 265 mgm. per 100 c.c. with recovery.

Campbell's first case, which recovered, had 232 mgm. per 100 c.c. with 12.5 mgm. of creatinine, which, according to Meyers and Fine, is indicative of a fatal outcome. Underhill's case with recovery had 240 mgm. of non-protein nitrogen per 100 c.c. Lewis and Rivers report 184 mgm. per 100 c.c., with recovery.

This is in marked contrast to the cases of glomerular inflammation where a rest nitrogen level of above 200 mgm. is usually indicative of a fatal outcome, and where Meyers and Fine's dictum of the prognostic value of creatinine unquestionably holds true. The explanation for the benign character of the increase in rest nitrogen is, that the rest nitrogen must be considered solely as a function of the anuria which results from the causes mentioned above.

With a subsidence of the edema and swelling of the kidney, and with the relaxation of the constricted vessels, filtration is at once resumed, and the rest nitrogen level sinks with remarkable rapidity. The published cases show this clearly. In our case the rest nitrogen sank from 265 mgm. to 30.7 mgm. in 17 days. In Campbell's case it sank from 232 mgm. on February 18 to 48 mgm., on March 9, and to 30 mgm. on April 11. In Rosenbloom's case it sank from 176 mgm. to 60 mgm. in 7 days, and to 23 mgm. in 13 more days. In Lewis and Rivers' case, from 170 mgm. to 26 mgm. in 8 days.

That the increase is due to the anuria is also shown by Campbell's second and fatal case, in which all the constituents were equally increased, namely, total protein nitrogen, 319 mgm.; urea, 200 mgm.; blood sugar, 0.46 per cent, and creatinine, 21.3 mgm., per 100 c.c.

We can easily infer from this, that the rest nitrogen increase is due to the anuria and not to the alleged diminished secretion through the diseased tubules. The reduction of the rest nitrogen on improvement is entirely too rapid to allow for sufficient time for regeneration of the tubules.

Blood Pressure.—In our case, the blood pressure was 125 systolic on admission and ranged around 110 systolic and 70 diastolic. In the published cases cited above, the blood pressure is often not mentioned, and when stated, it is evidently normal or only very slightly increased. The experience of many clinical observers has been that at times the blood pressure is increased, especially later in the course. Janeway[15] remarks that it is sometimes increased early in the course. However, this is not a constant observation, and it always returns to normal on improvement. In Campbell's first case, with 232 mgm. of rest nitrogen, the blood pressure was 110 to 120 systolic, and 80 to 95 diastolic. Campbell's second and fatal case had a blood pres-

sure from 130 to 140 systolic and 70 diastolic. In Foster's fatal case it was 100 to 140 systolic.

Why, then, does not the mechanism of hypertension come into play? As this would, if effective, possibly cause filtration to continue, and lower the level of the excretion products in the blood. Of course we are not, in the present state of our knowledge, in a position to give a definite answer to this question, but we can rightly infer that a stimulus for hypertension must in some way originate from the glomeruli or the small kidney vessels, when these are affected. These are not affected in the bichloride kidney, and only at times with perhaps a continual diminution of blood in the vessel is the stimulus for increased pressure aroused. That hypertension is produced when the glomeruli are diseased can be seen in any case of acute diffuse glomerulonephritis where the blood pressure has previously been known.

We wish to call attention to another point in our case. On March 4, our patient had a blood count of 1,376,000 red cells, with 30 per cent. hemoglobin. The anemia was without question partly due to the loss of blood by mouth and rectum. But the increase to 2,408,000 red cells with hemoglobin 44 per cent. within five days, and after passing large quantities of urine, leads us to believe that there was a true hydremia. The patient had received from the beginning large quantities of water with the Lambert and Patterson treatment, and had hardly passed any urine at the beginning. With the restitution of filtration, this extra amount of fluid was promptly excreted.

Summary.—We understand the pathological functioning of the bichloride kidney to be somewhat as follows:

1. With the insult to the kidney, the tubules are necrosed, desquamated, and fill the lumen. The kidney is swollen, the capsule is tense and constricts the vessels. There is also possibly a reflex vasoconstriction.

2. This causes anuria. Consequently all excretion products in the blood are retained and the level of the total non-protein nitrogen and of the various non-protein constituents rises.

3. As the glomeruli or small vessels are not diseased, the mechanism in producing hypertension is not called into play, or only slightly and in the later stages.

4. With the lessening of the swelling of the kidney, and the relaxation of the constricted vessels, filtration at once is resumed and the retained excretion products are rapidly removed.

5. Bowman's capsule has become permeable to the proteins of the blood, which appear in the urine; these also coagulate and form the ground substance on which various cells are deposited with the formation of casts.

6. The blood in the urine originates in all probability from the bleeding capillaries of the necrotic tubules.

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THE MENTAL COMPLEX.

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Complex is a name given by psychoanalysis to an idea or a group of ideas with which is associated a tone of unpleasant feeling which keeps or tends to keep the complex out of consciousness. The difference between the complex and the ordinary forgotten occurrence is that the latter has no feeling tone connected with it when it occurs and therefore does not have the energy, so to speak, to form a connection with other registered experiences, or life to go on developing by the assimilation of other experiences. Thus every experience which arouses at the same time a pleasant emotion is welcomed again and again into consciousness. We like to recall what pleased us. On the other hand, we know that we do not try to recall unpleasant events. That a recent unpleasant event tends for a time to keep recurring to our minds is an example of what might be called an emotional after-image, and gives us the opportunity of working off the unpleasant event spiritually by consciously arranging it in our minds and finally disposing of it. It is only the unpleasant events which, crowded out of consciousness by our fear to face them as adult humans, should carry with them into the unconscious the emotions which are the life of ideas and allow that life, like the sickly growth of pale plants in a cellar to develop uncared for by the consciousness. It is natural that we should remember the pleasant and forget the painful. But the pleasant occurrences being frequently evoked and talked over with our friends, are brought into alignment with our daily conscious lives. They give us strength for our present and inspiration for our future tasks. They do not become associated in a lump in some corner of our minds, but are connected with all our friends, telling them things they want to know. A pleasant adventure makes us friends with everybody. How much more sociable are strangers when on a holiday in the mountains or at the seashore! The travel or adventure is unfolded or explicated, so to speak, and acquires relations with all of our mental life and so does not become coagulated or tangled up in one bunch.

A complex, on the other hand, being repressed into the Unconscious on account of the painful feeling connected with it, at once begins in the Unconscious

to associate with itself a number of other ideas, all of which take on the unpleasant quality. These ideas, therefore, are prevented by this acquired unpleasantness from coming into consciousness. The person in whose mind these complexes are forming will not, without an effort, be able to remember these ideas when he wants them. The complexes will detach from the foreconscious, where are stored the ideas which are subject to voluntary recall, one person's name, another person's address, another's occupation, and drag them down toward the Unconscious, where they will nevermore be subject to his will. It is thus seen that, when looked at from the under side—as it were, from the point of view of the Unconscious—there must be complexes forming down there from the time of our earliest infancy. The complexes continue to develop and attach more and more ideas to themselves until finally our minds, even those of us who are completely normal, are made up of an overwhelming majority of forgotten or repressed matter, all of it available for the purpose of feeding the complexes, and none of it of any use to ourselves. Only the fullest human lives can prevent this formation of a sodden mass of complexes in the Unconscious of every one of us. The experiences of a thoroughly unsuccessful and disappointed life keep on making for oblivion, drawing one event after another back into the unconscious part of our psyche. The most active and successful men and women, therefore, will, other things being equal, have the fullest memories, will be able to converse most entertainingly, for they will have the fewest complexes as inhibitious on their mental life, whether that mental life be expressed in words or in actions.

Any indication that reveals the working of the complex is called a complex indicator. In the tragedy of "Hamlet" that part of the play within the play where the murder takes place produces the effect upon Claudius of making him leave the room in confusion. His confusion indicated his complex, which was caked about his own guilt, and was his complex indicator. In the association experiments, where a number of words are given to the subject and he is told to utter the first word that occurs to him, the hesitation he shows in associating with some of the words is his complex indicator, and the word that caused that hesitation is invariably found to be connected with some complex. It has called up some unpleasant memory which he wishes to forget or is unwilling to publish; and his hesitation is caused by his trying not to say the word which spontaneously comes to his mind, for fear it will betray him, but to think of and say another. Any hesitation, therefore, is likely to be a complex indicator, except in the case of people who intuitively know this, and such people often betray their complexes by an unexpected or inappropriate fluency or glibness.

It sometimes happens that there is in a given individual only one obvious complex. We all know people who are a "little bit off" in one respect but are conventional in their actions in every other. The eccentricities of genius as well as of ordinary persons are examples. Other persons' peculiarities, such as an inability to touch certain substances, velvet, silk, cotton, etc., or a diet consisting of rock salt, molasses and butternuts, or a refusal to eat anything with raisins in it, or a belief that some special kind of food is impossible, like strawberries or cucumbers, all of these are eventually traceable to complexes. It is well to remember that the complex is always based on unconscious thoughts, and that the reasons given by the persons are not ever the real causes of these eccentricities. Most of them are connected with intimate attitudes toward the ideas not merely of nutrition but of reproduction.

The man who could not eat food containing raisins explained his dislike of them by saying that he judged all tastes by the feeling of the food in his mouth, that raisins felt like insects, and that he really liked soft and tender foods, in spite of the fact that he had a good set of teeth. The upshot of it all was that he showed an unconscious tendency in the direction of breast milk, in other words was, while a man in stature and years, only an infant in this characteristic, which, indeed, as the analysis progressed, was found to be paralleled by infantile traits in other spheres of life. Thus he made a demand upon his wife for an expression of tenderness of a kind that should have been expected only from his mother. He showed, too, an attitude toward the world which evinced in him an expectation that it would give him things, not that he should force things from it or even win them by his own efforts. This was side by side with traits that enabled him to do acceptably the tasks imposed upon him by his business, and to be taken by his acquaintances for a man in most other respects.

The Oedipus Complex.—The Oedipus myth has been used in psychoanalysis as a measure by which to test the relative development of the individual psyche. By means of the interpretation of a given person's dreams it is possible to tell how far his Unconscious has progressed along the line of evolution from the place where it desires the possession of the mother above all else in the world. It is shown by this method that the psyche of a great many persons afflicted with certain sorts of nervous disorders has been subject to a fixation upon the mother. This applies, in strict literalness, of course, only to men. But the corresponding unconscious mental state occurring in women is quite as common if not more so, and is sometimes known by the name of the Electra complex. A complex is a group of unconscious ideas, or, rather, a group of ideas in the Unconscious, which, having been subjected to repression, continues to have an independent existence and growth. The Electra complex is for women quite analogous to the Oedipus complex in men, so much so, in fact, that the name Oedipus complex is indifferently used for both, the relations to be changed being understood. Thus, as the primary affection on the part of the boy is for his mother and his earliest wish is to supplant the father in the affection of the mother, so the primary affection of the little girl is for her father, and she wishes above all things to supplant her mother in the regard of her father.

The Small Penis Complex.—Little boys of say four or five years of age, when passing through the period of sexual investigation are often profoundly impressed with the difference in size between their own organs and those of grown men, the older brother or the father. From these comparisons

arise a feeling of envy and jealousy and also a sense of inferiority, and this forms a nucleus for a complex which grows and persists long after the impressions with which it started have faded from conscious memory.

The Mother Complex.—In regard to the fidelity which our reactions bear to early impressions it might be said that we resemble certain primitive races, such as the Bushmen of Australia, who have practically no abstract words or ideas. In place of such a word as hard the savage thinks like a stone; long is like a river; blue is like the sky. In the same way, to our unconscious thinking, Miss Jones is not beautiful, amiable, or sympathetic, nor Mr. Smith overbearing, quick tempered, or in the way; but like mother, like father, or like brother or sister, as the case may be. But in a certain sense neurotics, and to a less extent all of us exceed the limits indicated by this feature of savage thought and language. The savage's idea of a path which is long may be like a river but he does not act toward the path as if it were a river, and, for instance, try to swim in it. Yet the qualities such as beauty in a woman or overbearingness in a man which to the Unconscious are like Mother or like Father, leads us, within certain limits, to feel, and even to act, as if the case were not one merely of like, but more or less completely, of is. For example, a wealthy young man became infatuated with a divorcée considerably older thar himself, who, as was clearly apparent to every one but him, was a thoroughly unscrupulous adventuress. But in his eyes she was the purest, truest, and best of all women. His friends who tried to save him from her clutches by bringing forth evidence from her past record or present behavior to show that she was absolutely mercenary, were to his mind but slanderers made malicious through envy of his love. He confided to her all his intimate affairs, allowed her to extract large sums of money from him on the flimsiest of pretexts, and put himself absolutely in her power with childlike trust in her being heart and soul devoted to him. The explanation is that certain features of this woman, her being older, having belonged to another, her treating him like a small boy, these, together with some vague similarities in appearance, caused an unconscious identification with his mother, whereupon the whole motor pattern corresponding to the mother-image was brought into play, and he experienced toward her all the feelings of love, trust, and devotion which had been felt toward the actual mother, but which, as anyone but himself could clearly see, were pitifully inappropriate here.

Reactions from the father complex are exemplified in the case of a male patient, an able and fairly successful professional man of considerable wealth and social standing, who complained of often being overawed by persons who, in many cases his reason told him, were really beneath him. If a loud-voiced, aggressive man made a statement, the patient was impelled to agree with him even when he knew the other to be wrong. When a street-car conductor would shout roughly: "Move up forward!" he would feel constrained instantly to obey, even while he realized that perhaps nobody else in the car was paying the slightest attention.

511 East Eleventh Street.

CONCERNING THE TREATMENT OF INFLUENZA.

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Our experience with influenza for these past two years was such that we may expect it to be an important factor in both the morbidity and mortality of the community for the next few years. While the 1920 epidemic was of a much milder and of a less extensive character than was the epidemic of last year, it was sufficiently widespread to make us fear possible recurrences of this disease, of perhaps a milder degree of severity, in the near future.

So-called influenza has been endemic in the United States for many years, particularly here in the East. With our present knowledge as to the uncertain etiology and variable symptomatology of this disease one may assume an even greater incidence of influenza, but unrecognized in normal times. The past two years have afforded an opportunity for more extensive observations, and yet we have not learned all we ought to know about this subtle infection. Despite the abundance of material, the etiology remains indefinite. Some investigators still report the frequent isolation of the bacillus of Pfeifer or the occurrence of a diplobacillus or coccus in the sputum, lungs, blood, or other tissues. There is, however, nothing approaching uniformity in these findings and most of them lack corroboration. This state of semi-confusion exists not only so far as etiology is concerned, but is also evident when the treatment of this disease is considered. The great number of cases, with the consequent opportunity for intensive study, especially in institutions and in hospitals, has not resulted in bringing forth any therapeutic specific. Early enthusiasm for vaccine and serum treatment have become less marked, judging by the recent literature.

Nevertheless, while we cannot boast of having materially aided in clearing up the etiology or in having discovered a specific in the treatment, we need not be discouraged altogether. Few, indeed, are the diseases, even when the etiology is beyond question, where we have specific remedies, and the search for specifics is not quite so acute now as it was some few years ago. However, poor as we are in specifics, we have established rational treatment for most acute diseases where our efforts are directed toward ameliorating distressing symptoms and toward supporting the patient while he is combating an infection or toxemia. This much we can do in influenza.

The treatment of influenza may, therefore, be said to consist in general measures largely directed toward placing the patient in the most favorable conditions where he may best hope to overcome the invading host, and these are: (1) Absolute rest, (2) fluids, (3) alkalies, (4) nutrition and elimination, (5) counterirritation, (6) drugs.

Absolute Rest.—It seems almost superfluous to mention the importance of rest in bed during the entire course of influenza, as well as during the immediate convalescence. Yet when it is realized how difficult it is at times to keep a patient in bed

after the first 24 to 48 hours, *i.e.* after the first rise of temperature and feeling of general malaise, it is obvious that rest in bed must be emphasized. Even the attending physician, seeing the patient on the second or third day after the onset and finding him practically nonfebrile, and perhaps asking for food and for permission to get out of bed, is apt to yield, thus depriving his patient of a possible means of preventing complications. In the light of our experience it is advisable that patients, suffering from what is clinically influenza, remain in bed for at least five days after the temperature has been normal and there have been no other signs of illness.

And by rest is meant complete rest in bed, without getting out for bathroom purposes. Sitting up and straining at stool certainly is unadvisable for one afflicted with influenza, who may soon need all his reserve energy during a complicating pneumonia. Should there be any difficulty in making the patient move his bowels in bed a simple enema will usually solve the problem.

While in bed the patient should be kept away from visitors and other sources of excitement by proper isolation. He should be given an opportunity to sleep as much as he can or at least rest undisturbed. It is hardly ever necessary to awake a patient for medication.

Fluids.—Early in the epidemic of last winter (1918-1919) when the treatment of influenza first came up for discussion someone from the Naval Hospital in New London reported excellent results from the ingestion of large quantities of water, and emphasized its beneficial effects in most acute infections. I became an early convert to this method of treatment. Whenever I could get the cooperation of the patient and nurse I pushed fluid to the limit, some patients taking as much as 5 to 6 liters of fluid in 24 hours in the first three days of illness, with apparent good results.

It matters little as to the kind of fluid taken. Tap water, orangeade, lemonade, broths, diluted and fermented milk, strained cereals, may be given freely. The addition of fruit juices to a weak lemonade or water helps to break the monotony of the frequent drinking. The large quantities of fluid aided free elimination and helped indirectly in reducing the temperature.

Alkalies.—The recent work done on acidosis and particularly the acidosis associated with acute infection led me to try the administration of large quantities of alkalies in all acute infections as ordinarily met with, such as tonsillitis, acute pharyngitis, bronchitis, and articular rheumatism. In a general way the administration of alkalies seemed to react favorably on the course of these diseases.

There are no definite figures as to the effects noted. (There is very little in the literature about alkaline treatment. Dever and Mure in January, 1919, in their report on the influenza epidemic in the United States Naval Hospital in League Island casually mention liquor potassii citratis.) However, I was so well impressed with my early cases in this epidemic that this alkaline treatment was pushed about in the same way as it is in some forms of pyelitis and acidosis. Most of the cases showing early signs of toxemia, such as extensive pallor, great weakness, apathy, and cerebral clouding, with or without high temperature, were given 2 grams of sodium bicarbonate every two hours with apparently good results. Other alkaline drugs, such as potassium citrate and potassium acetate, were also used in combination with the bicarbonate. The urine was tested repeatedly and if not definitely alkaline when freshly voided, alkalies were increased.

Alkalies and fluids were often given by rectum, especially when there was evidence of nausea or vomiting. This nausea occurs rather more frequently than one would expect. The quinine, which was often used in these cases, may have had something to do with it. It would certainly be worth while to study the various symptoms referable to the gastrointestinal tract with a view to determine the relationship between the frequency of these symptoms and the drugs used. It seems to me that the large quantities of fluid together with the alkaline treatment is of extreme importance in eliminating the toxins and protecting the kidneys against irritation and possible inflammation at the point of exit and probably preventing complications.

Nutrition.—The diet generally advised consists of gruels, broths, diluted milk, fermented milk, fruit juices, and fruit jellies. It is unadvisable to make milk the predominating article of the diet because of its tendency toward distention, and further, because so many patients tire of it so easily. The addition of cereals, fruit jellies, broths, and occasionally mashed vegetables, helps to keep the patient contented and furnishes at the same time an antiacidosis diet sufficiently rich in calories.

Elimination.—When the patient is first seen, usually within the first 24 hours of the onset, a cathartic is ordered. The kind of cathartic given depends on the acuteness of the onset and the presence or absence of gastrointestinal symptoms. I prefer calomel followed by a mild saline. Subsequently, the bowels are kept open by soap suds or bicarbonate enemeta. The bicarbonate irrigations, which are often used, also help in the elimination and in stimulating the kidneys. These rectal irrigations are carried out with a 2 to 5 per cent. sodium bicarbonate solution and about 1 to 2 gallons of this solution are used.

Counterirritation.—Whatever scientific principle may underlie the application of mustard to the chest, there is no other agent which will give as much relief to the aches and pains in the chest as does a good application of mustard paste. Where there are fine râles early or where there is an early tendency toward cyanosis, the mustard seems to have a very decided beneficial effect. In a disease where so little can be done once the graver pulmonary complications are well under way, the employment of any agency which promises something in the way of prevention of lung involvement, is desirable. The counterirritation is, therefore, looked upon as a desirable adjunct in the routine treatment of influenza. The mustard paste in the strength of about one of mustard to two of flour in the form of a paste, I like best. It can be applied to the entire chest and left for about 8 to 15 minutes, after which the skin is anointed with oil or vaseline. The application can be made every three or four hours or even more often if necessary.

Drugs.—The only drug that was used rather constantly is quinine, either as a tablet or in capsule

form. The alkaloid or any of its salts may be used. For an adult of average weight 0.3 gram every three hours or 1.5 to 2 grams in the first 24 hours, and about two-thirds this dose for each of the following three days is advised. The quinine seemed to have a decided effect on the fever, with a distinct and constant tendency to lower it. When perspiration is marked, and it usually is when quinine, large quantities of water, and alkalies are given, there is certainly a great loss of heat from the surface and a consequent lowering of the internal temperature. How valuable quinine is otherwise in influenza it is hard to estimate.

Other drugs, such as acetyl salicylic acid or pyramidon, especially when the headache and restlessness were marked, and not relieved by an ice cap, were occasionally given. The general impression gathered from observing the cases where drugs were used, is not favorable toward a continuation of drug treatment in influenza, with the possible exception of quinine. Our chief reliance, therefore, was on the complete rest, both during the active course and convalescence, large quantities of fluid, alkalies, and, perhaps, quinine and rectal irrigations.

Some of these measures mentioned here have impressed the author very favorably. They are reported not only because they are, in my opinion, of value, but I venture to make this outline with the hope of stimulating further trial and discussion. Only through fair criticism and open discussion may we hope to establish the treatment of influenza on a scientific basis.

1220 Grand Concourse.

INFLUENZA PNEUMONIA COMPLICATED BY EMPYEMA IN AN INFANT.

By A. LOBELL, M.D.,

NEW YORK.

THE report of the following case seems to me of interest for several reasons: (1) The age of the child and the uneventful recovery in spite of serious illness; (2) influenza pneumonia in the recent epidemics was invariably of the bronchial type, whereas this case presented the distinct lobar type; (3) the migratory character of the pneumonia; (4) the appearance of an unusual number of complications.

I. J., one year of age, a strong and healthy boy, weighing 23 lbs. There is nothing of interest in his previous history except that he had several attacks of acute tonsillitis, which were invariably followed by otitis media of a progressive nature.

In the latter part of December, 1919, he began with a rhinitis and tonsillitis, followed in the usual manner by a double otitis media. The fever, which was rather high, came down promptly after a double myringotomy. On January 8, 1920, about 38 hours after the incisions were made, the fever rose to 104°, pulse 140, respirations 46. The rise was sudden and the fever continued for six days, with marked remissions, so that during the twenty-four hours it was as high as 106° and as low as 99°. There was no regularity as to the time of these variations. Sometimes the highest point was in the forenoon and sometimes in the afternoon or evening. For a time it was hard to find definite signs of pneumonia, but on the fourth day there was a distinct consolidation of the right upper lobe. The fever came down by lysis, remaining stationary for about twenty-four hours. The ears were still discharging, but there was no evidence of any retention. He seemed to be comfortable and the breathing was satisfactory.

Nevertheless the fever jumped on January 16 to 105°, pulse 160, respiration 60, and behaved in a manner described above. On January 20 he was extremely restless, the right ear drum appeared congested, while the discharge was rather diminished. A myringotomy was performed, which gave him a restful night, but the fever remained high. One day later there was a consolidation of the greater part of the right lower lobe. The fever ceased again by lysis, staying normal for one whole day.

On January 23 the fever was up again and ranged as high as before, and several days later there was a definite consolidation of the left apex. On January 29 he had a severe chill, lasting 15 minutes. The next two days the respirations became more frequent and labored, the expression on the face more anxious, and he was visibly in some pain. The dullness over the right lung was rapidly changing to flatness, but we must emphasize that the vesicular murmur and the bronchial breathing were not in the least diminished, showing that one must never rely or expect such changes in the physical signs of the chest of infants when fluid superimposes on consolidation.

On February 1 the right chest was aspirated. A thin fluid was obtained, slightly turbid with a greenish tint, and on standing there appeared some fine flocculi. We did not wait for laboratory results, a simple intercostal incision was made and we obtained about 10 ounces of the same thin fluid described above. There were no fibrinous masses, such as are usually found, and the fluid drained very easily through a small sized tube.

Owing to the presence of a predominance of pneumonic processes over the comparatively mild empyema, the fever lingered for a long period. The drainage was perfect and the pleural cavity was closed within three weeks; the superficial wound also healed promptly. At no time was it necessary to probe the wound or facilitate drainage in any way.

In the latter part of February he had another attack of acute tonsillitis. In the early part of March he developed an ulcerative stomatitis and an acute general bronchitis. During the period of this illness he also suffered from difficult and very painful dentition.

To illustrate the virulence of the infection, it is necessary to state that 2 nurses and 7 members of the family were afflicted with the epidemic type of influenza immediately after the boy became sick.

Considering that the boy started primarily with a rhinitis and the irregular remittent fever, the migratory character of the pneumonia, the unusually thin fluid of empyema, with the absence of the fibrinous masses that are seen in empyema of the pneumoccus type, we may assume that the microorganism that played the most important rôle in this case was the influenza bacillus.

320 East 166th Street.

School for Nurses in Bohemia.—Prague is to have the first training school for nurses in Czecho-Slovakia. Realizing that the shortage of native doctors and nurses caused by the war was a very serious problem, and that the best way of solving it was to train native personnel, the new government, through Dr. Alice Masaryk, daughter of the president of the republic, appealed to the American Red Cross for assistance. A plan has been worked out, for which the Red Cross appropriated $20,000, and is already in operation. Two American Red Cross nurses, Miss Marian Parsons, former chief nurse of General Hospital No. 22, British Expeditionary Forces, and Miss Alotta Lentell, who served with the Red Cross in Flanders, have recently arrived in Prague to establish the school. Miss Parsons will be the superintendent and Miss Lentell will be her assistant. During the three years that these American nurses remain in Czecho-Slovakia, two young Czecho-Slovakian women will be sent to the United States to enter an American training school and prepare themselves to return to their own country and carry on the work initiated by the American nurses. The Massachusetts General Hospital, Boston, has agreed to accept these pupils as soon as they arrive in this country.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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THE DIFFERENTIAL DIAGNOSIS OF LINGUAL ULCERS.

IT is important to make a differential diagnosis of ulcers consequent to dental defects and other ulcerative processes of the tongue. In the first place an ulcer due to carious teeth develops on the margin of the tongue and is usually a single lesion situated directly opposite a decayed tooth. Should there be several jagged teeth, several ulcers may be present. When due to a tooth the ulcer is very superficial, with sharply raised edges, a clean bleeding surface, and little if any induration at the base. If the lymphnodes are involved it is a purely inflammatory adenitis. Finally, the important symptom is the pain, which is invariably confined to the area of the ulcer; it is very sharp, giving the sensation of a raw surface irritated by a hard, sharp body each time the tongue is moved. As characteristic of these ulcers their rapid cicatrization after removal of the causative factor is to be noted; quite different is that of other lesions from which they must be differentiated.

A tuberculous ulcer may be seated anywhere on the tongue and is rarely single, there usually being at least three or four. It is superficial like a dental ulcer, but its margins are undermined, its bottom irregular and grayish; its base is not indurated but pain is severe. Involvement of the lymphnodes may be absent. The presence of yellow grains and the coexistence of thoracic or laryngeal lesions will indicate the nature of the process. A cold abscess of the tongue is crateriform, with thin undermined margins, while its fundus is filled with grumous pus; it does not bleed and is usually single without any tendency to cicatrization.

A syphilitic chancre is ordinarily situated on the anterior third of the dorsal aspect of the tongue, is single, very superficial, and more like an erosion of the mucosa. It has no margin and is oval in shape, with a smooth fundus and a distinctly indurated base. It is accompanied by an enormous, painless adenopathy involving numerous lymphnodes. Its evolution is rapid.

Mucous patches are common on the tongue, but can hardly be mistaken for ulcer. In the tertiary period ulcerated gummata may be encountered on the anterior third of the dorsal aspect of the organ. Usually there are three, or two at least. The ulcer is deep and as if punched out of the tissues. The bottom is as if glazed and covered by a yellowish coating, while the base is rather more infiltrated than indurated. Pain is trifling and the lymphnodes are not enlarged, and often an ulcerated gumma will be present with others which are not ulcerated.

Cancer of the tongue, at its phase of ulceration, is usually seated on the border and at the base of the organ. It is single, rather deep, with ragged, indurated margins. The bottom is granulating, reposing on a distinctly indurated base. There is early involvement of the regional lymphnodes. The pain is shooting, very sharp and intolerable, while salivation is profuse.

Actinomycosis, although rare, may occur in the tongue in the form of a mass seated in the midst of that organ, and containing the characteristic yellow bodies. Sporotrichosis is more frequent, at least in Europe, forming a dirty grayish-yellow tumor without falsa-membrane and with a marked tendency to extend. A lupous ulcer has ragged borders; the tongue is supple and indolent, and the lesions extend by gradual destruction of the tissues. Finally, it is always accompanied by lupus of the face or nose.

THE FUNCTIONS OF THE HOSPITAL.

IN the state of general mutation through which the medical profession, together with the rest of the world, is now passing, the hospital system is not exempt from criticism and probable change. The present hospital system, in many respects, stands condemned and a new system is in course of evolution. It is said that as the future of medicine is preventive, so the hospital of the future must be preventive as well as curative. That the functions of a hospital should be of a preventive nature is being recognized more and more. The Pasteur Institute in Paris and other similar institutions in London, New York and elsewhere, are managed in accord with these modern views. In order to obtain early and accurate diagnoses and to treat cases in the most thorough manner, the opportunities afforded by laboratory research are combined in the most felicitous way with hospital treatment. For this purpose the institutions above noted have hospitals associated with them in which the patients derive the benefit of the most special possible knowledge. When a special problem is being grappled with, hospital wards can be used with this sole object in view, while the sick person needing immediate help goes to the ordinary general hospital. The chief sign, however, which has been displayed as to the direction in which medical practice and hospital management are moving is the recently issued interim report of the Consultative Council of the British Ministry of Health. In this report is foreshadowed the development of a carefully thought out and ordered system founded upon principles which fundamentally differ from those which govern the usual medical and hospital practice of

the day. The basis of this system is prevention rather than the treatment of disease. The aim is to diagnose disease in its earliest stage and to prevent its development. For the successful conduct of this scheme, the services of the general practitioner are essential, as he alone has the opportunity of witnessing the inception of disease. Not only are the services of the general practitioner necessary, but he himself must be provided with the means for learning how to distinguish the beginnings of disease. Therefore, the British Consultative Council suggests that hospitals with adequate equipment for laboratory and clinical investigation should be supplied in all parts of the country for the behoof of general practitioners and patients. These hospitals will be largely of a preventive character. So that no means should be spared to arrive at a correct diagnosis, other hospitals will be at the service of the general practitioner to enable him, when an obscure case is met with, to avail himself of the knowledge of consultants and specialists. These hospitals will be large institutions staffed by experienced, trained, and skillful men and provided with every mode of diagnosis and treatment that human scientific knowledge and ingenuity can suggest. This at least is the ideal aimed at. This change in the character of the hospital will not come at once, nor is it desirable that it should so come. The course of development will be slow and ruled by well considered judgment. The various functions of the hospitals —treatment, teaching, research, discovery, and prevention—are all necessary, and the main object of those interested must be to find out how each one of these functions can be best performed without injuring or prejudicing the others. The scheme suggested by the British Consultative Council, although in certain respects seemingly impracticable, at any rate points to a new conception of the functions of the hospital.

ABSCESS OF THE LARYNX IN CHILDREN.

LARYNGEAL abscess is relatively uncommon in early life and is the consequence of infectious diseases, such as measles, influenza, scarlet fever, diphtheria, and typhoid, and lastly, variola. The process is very exceptional in the latter affection, as well as in scarlet fever, and is more prone to occur in diphtheria, measles, influenza, and as a complication of ordinary laryngitis. In cases of retropharyngeal abscess the pus may burrow on each side of the larynx and afterward form a purulent collection in front of the larynx and trachea as well. During typhoid fever an abscess of the larynx may develop, forming a morbid entity known by the French school under the name of laryngotyphoid. In measles the laryngeal suppurative process may be a primary one, or may appear as a secondary complication, as it does in the laryngitis of measles, be it diphtheritic or not. During the evolution of diphtheria or convalescence from this infection. cases of endolaryngeal abscess have been known to occur before intubation had been done, but no cases of perilaryngeal abscess have, so far as known, been reported. It is to be remarked that intubation appears to predispose the parts to the occurrence of this complication. Laryngeal abscess in children also arises as a consequence of ulcerative processes in the larynx; however, they never contain the bacillus of diphtheria, and appear to be related to perilaryngeal lymphangitis and adenitis. The site of these abscesses varies quite considerably. At times they are endolaryngeal or submucous, projecting into the laryngo-tracheal lumen, at others, perilaryngeal in location, in which case they may be prelaryngeal, on the sides of the larynx, or even retrolaryngeal. All these processes have an obscure symptomatology in children.

From the clinical standpoint, two quite distinct conditions are met with in practice. In the first of these the abscess is evident; there are, so to speak, no clinical symptoms, but rather physical signs, such as tumefaction and edema of the neck. In the second, the abscess is latent, giving rise to no clinical symptoms or objective signs. In most instances the onset of the abscess formation takes place from the tenth to the fifteenth day of the process giving rise to it, but whether the abscess is latent or not, it undergoes its evolution rather insidiously, without giving rise to any marked general symptoms. The prognosis should always be guarded because of the possibility of sudden death. To make the diagnosis, especially when the abscess is clinically latent, it will, in the majority of cases, be enough if we will merely remember that such a complication can arise. Hence, the necessity of examining the larynx and the intubated region much more frequently than is generally done at present. When the diagnosis has been made the abscess should be freely opened without delay, as by this means sudden death of the little patient is avoided.

THE MAN AND THE HOUR.

OPPORTUNITY, George Eliot said, is but an unfecundated egg to the man who can't use it; but what it is to the man who can and will was strikingly demonstrated in the life work of Gen. William C. Gorgas. In 1899 he was an army surgeon, 45 years old, who had by faithful work and seniority attained a majority. Having had the good fortune to contract and recover from an attack of yellow fever early in his army life, he was sent as an immune to Havana with the Army of Occupation. There he, in common with other army surgeons and Colonel, now General Wood, was pestered by Dr. Finlay to try out the latter's theory of the mosquito transmission of yellow fever. Sceptical, if not scornful, at first, the army authorities were annoyed by Finlay's persistence; but finally, like the woman who is said to marry a man to get rid of him, they yielded and appointed the Walter Reed Commission to test the matter. Major Reed's capital work having demonstrated conclusively the agency of the mosquito in the propagation of yellow fever, it devolved upon Major Gorgas, as sanitary officer of the city, to put the new knowledge to practical use. How he responded to opportunity's call and how this response

brought out his latent abilities and sharpened his reasoning faculties, and the brilliant results which he achieved then and there and later at Panama and on the West Coast of South America, are facts of history known to the whole world. Opportunity knocked and Gorgas opened wide the door, winning for himself undying fame and the gratitude of a regenerated tropical world.

Anaphrodisia from Mercury.

At the winter session of the Sociedad Española de Dermatologia y Sifiligrafia (*La Medicina Ibera*, March 13, x, 125) two papers were devoted to this subject. Azuá mentions several personal cases in which an intensive mercurial cure for past syphilis as preliminary to marriage was followed by genital debility characterized by imperfect erections and the general picture of sexual neurasthenia. Suppression of the mercury was followed by complete recovery. Casal followed with an account of similar personal experience and reported the case of a man aged 25, with syphilis of one year duration, who received twenty injections of mercury benzoate, at the end of which he complained of anesthesia and impotence. The condition was found to be radicular, obtaining in the entire distribution of the third sacral root, and was regarded as a toxic radiculitis due to mercury. The patient confessed to being an onanist. The condition disappeared after cessation of the mercury treatment. It is possible that these cases would not have occurred in non-syphilitics and that syphilis may have been the first agency to affect the nerve substance, but a study of several cases shows that the picture does not appear until after a number of injections have been made. This fact and the other that improvement occurs only on stopping the remedy are sufficient to implicate the latter. Castelo, Sainz de Aja, and other who have had a very large experience in injecting mercury for syphilis have never witnessed this phenomenon.

The Psychic Factor in Anesthesia—Death in Status Thymicus.

Since sudden death from trivial causes occurs equally in subjects with and without enlarged thymus, some third factor must be invoked to explain the primary syncope which precipitates the fatal issue. It is possible that this is a neuropsychic excitability resulting in predisposed subjects from the suggestion of the approaching operation or the narcosis which is to precede it. This mental state may or may not be akin to that which is seen in Graves's disease before operation. At a recent session of the Anatomical Society of Paris (*Bulletins et mémoires de la Société anatomique de Paris*, January 20, xvii, 1), Bretignier reports a case of operation on a patient with salpingitis, aged 25, and with sound heart and lungs. She had begun to inhale chloroform and at the expiration of 6 minutes, after having inhaled 6 or 7 gms., there was sudden arrest of the heart's action. Despite all attempts at resuscitation the swoon proved fatal. Autopsy showed absence of any compression of the trachea but the thymus weighed 30 gms. just after removal. Its dimensions were 11 cm. by 7 cm. The author mentions similar cases, including two others by Lapointe, who was the operator in the present case, in which the weight of the organ exceeded 20 gms. All three of these patients had shown marked nervousness and anxiety at the beginning of anesthetization.

News of the Week.

Provision for Blinded Soldiers of the Allies.—The board of directors of the Permanent Blind War Relief Fund for Soldiers and Sailors of the Allies recently allotted 10,000 francs a month for the remainder of the fiscal year, or a total of 100,000 francs, for the maintenance of the Reeducational School for the Blinded Soldiers of Serbia, at Belgrade, a like amount was allotted for the Reeducational School and Workshop at Bucharest, Roumania, and 200,000 lire for the Comitato Torentino per l'Assitanza di Ciechi di Guerra, of Italy, making a sum equivalent to $80,000. According to William Nelson Cromwell, chairman of the executive committee, the organization has 18,000 members.

"The Child Welfare Special."—The Children's Bureau of the United States Department of Labor recently issued a pamphlet on "The Child Welfare Special," which is a motorized child welfare station. This was put into the field last summer for the purpose of informing mothers of children in rural districts concerning all the things that mothers of city children may learn at child health centers. The Special has visited five rural counties, none of which contained more than one town of over 2,500 inhabitants. Four of these were agricultural counties and one was in a mining section.

Typhus Scare Delays Ships at Quarantine.—The White Star liner *Olympic*, with 2,221 passengers on board, and the *Dante Alighieri* of the Trans-Atlantica Italiana Line, with 1,198 passengers, were held in Quarantine for nearly two days recently because of the presence among steerage passengers of the former of 180 Serbians and inhabitants of other typhus-infected areas of Europe, and because the latter had not carried out the rules and regulations of the United States Public Health Service in relation to passengers embarking at foreign ports. No cases were found.

Bonus Opposed by Physicians.—Caduceus Post No. 818, of the American Legion, has declared its unanimous disapproval of the bonus for ex-service men. The officers of Caduceus Post are: *President*, Dr. Howard Fox; *Vice-President*, Dr. Harlow Brooks; *Second Vice-President*, Dr. George E. Maurer; *Third Vice-President*, Dr. G.M. Hammond; *Secretary*, Dr. Samuel Bradbury, and *Treasurer*, Dr. William F. Cunningham.

Shortage of Doctors in the South.—The sum of $12,000 has been subscribed to an emergency fund to make possible the admission of the large number of applicants to next session's freshman class of the University of Virginia at Charlottesville. In view of the acute shortage of physicians in the South and of the necessity of turning away desirable applicants, a campaign was inaugurated by the medical faculty of the university to raise $16,000. A nucleus of $2,400 was given by the members of the medical faculty. The first-year medical class added to this an unsolicited donation

of $1,000, and the citizens of the vicinity contributed $5,825.

New York Association for Medical Education.—At a meeting of the Directors of this association, June 21, 1920, the work of the past year was reviewed approvingly and the following officers were elected to carry out plans devised for the ensuing year: *President,* Dr. Haven Emerson; *First Vice-President,* Dr. George David Stewart; *Second Vice-President,* Dr. Glentworth R. Butler; *Secretary,* Dr. Otto V. Huffman; *Treasurer,* Dr. Arthur F. Chace. A special vote of thanks was extended to Dr. Wendell C. Phillips, the retiring president, for his valuable services as the founder and organizer of the association.

Nurses Honored.—The Florence Nightingale Medal, the highest honor at which nurses aim, was recently bestowed by the International Committee of the Red Cross at Geneva upon five American nurses who "especially distinguished themselves by great and exceptional devotion to the sick and wounded in peace or war." The nurses so honored are: Helen Scott Hay of Washington, D. C., chief nurse of the American Red Cross commission for Europe, who began her war service in 1914; Florence Merriam Johnson of New York City, director of the Department of Nursing of the Atlantic Division, American Red Cross; Martha M. Russell of Boulder, Col., who went to France in July, 1917, to organize American Red Cross nursing activities in the war zone; Lydia K. Meirs of Boston, who went to Europe for the American Red Cross, but was transferred to the Army Nurse Corps, in which she performed notable service under fire at the front; Alma E. Forrester of Chicago, who sailed for service in Russia on the relief ship Red Cross, in 1914, and was in Europe throughout the hostilities. Mary E. Gladwin of New York City, who sailed on the relief ship Red Cross, in 1914, for service in Serbia, where she remained five years.

Brig.-Gen. Robert E. Noble, M.C., U.S.A., who was with Gen. Gorgas during his last illness in London, will head the mission to the West Coast of Africa which had been planned by Gen. Gorgas at the request of the British Government.

One Hundredth Anniversary of Bowdoin Medical School.—The centenary of the establishment of Bowdoin Medical School, Brunswick, Me., was observed by exercises held in the First Parish Congregational Church, June 23.

Physicians Want Penal Law Amended.—Four hundred doctors of New York City have signed a petition, which was recently presented to the Judge presiding in the Bronx County Court, at the time of the conviction of a physician of the Bronx for manslaughter in connection with a so-called "unnecessary operation," and which is said to be a forerunner of a movement among members of the medical profession of New York State to amend the penal law so as to make it possible for physicians to perform curettage as a life-saving measure without the fear that the operation may lead to a charge and possible conviction of manslaughter.

Charitable Bequests.—Under the terms of the will of Mrs. Anna M. Schmitt-Raier, who died in New York City last December, the German Hospital of this city will receive $69,866.

Obituary Notes.—Dr. John Horner died at his home in White Water, Kansas, June 20, in his eighty-seventh year. He was graduated from the Eclectic Medical College, Cincinnati, in 1880.

Dr. CHARLES D. MCCARTHY, formerly mayor of Malden, Mass., died of apoplexy in his home in that city June 22 at the age of sixty. He was graduated from New York University Medical College in 1882. He served as a member of the Malden Board of Health from 1886 to 1907, when he resigned to accept the office of mayor. He was a member of the staff of the Malden Hospital, and was a fellow of the Malden Medical Society.

Dr. JOHN CALVIN FULTON, a Civil War veteran, and practising physician for fifty years, died at his home at Bluffton, Ind., June 22, at the age of seventy-five.

Dr. JAMES C. BARKER of New Milford, Conn., died of apoplexy recently at the age of sixty-eight. He was graduated from Yale University School of Medicine in 1879. He served as local health officer for twenty-five years.

Obituary.

WILLIAM C. GORGAS, M.D.,

MAJOR-GENERAL, M. C., U. S. ARMY.

MAJOR-GENERAL WILLIAM C. GORGAS, distinguished sanitarian, and former Surgeon-General of the United States Army, died in London, July 4, at the age of sixty-six. He had been seriously ill for three weeks, following a stroke of paralysis. Bright's disease was the immediate cause of death.

General Gorgas was born in Mobile, Ala. He received his preliminary education at the University of the South, Sewanee, Tenn., and was graduated from Bellevue Hospital Medical College in 1879. He applied at once for a commission in the Medical Corps, U. S. Army, and was made First Lieutenant, and was sent to Fort Brown, Texas. While at this post he contracted yellow fever, the immunity thus acquired being of great service to him in his work of abolishing this disease which forms one of the most interesting and important chapters in the history of preventive medicine and sanitation.

The first great opportunity presented itself during the Spanish-American War, when Gorgas was placed in charge of the yellow fever wards of Las Animas Hospital in Havana. His prompt utilization of the confirmation by Reed and his associates of Finlay's theory regarding the mosquito as the means of the transmission of yellow fever enabled him to inaugurate the well-known sanitary campaign which resulted in the ridding of the Cuban capital of this plague. When it became necessary, in 1905, to render sanitary the Isthmus of Panama in order to make possible the completion of the Canal, Gorgas was assigned to the task. The achievements which followed in his campaign of extermination of malaria and yellow fever warranted his well-known prophecy "that some day a case of yellow fever will be regarded as a medical curiosity."

In 1913, at the request of the British Government, Gorgas went to South Africa to investigate conditions in the Rand mines, where the natives were dying from epidemics of pneumonia. The carrying out of the measures which he recom-

mended as a result of his investigation resulted in practically putting an end to the epidemics.

In 1914 he was made Major-General, and the following year he became permanent Director of the International Health Board of the Rockefeller Foundation. In October of last year he returned from a successful campaign against yellow fever in Guayaquil, Ecuador, undertaken at the request of the Foundation. At the time of the illness which ended his career he was en route to the West Coast of Africa to study sanitary conditions in that region.

During the world war, Major-General Gorgas, as Surgeon-General of the Army and head of the Medical Department, inaugurated the stupendous undertaking of the caring for our soldiers at home and overseas, the full significance of which cannot be appreciated until its history is written.

General Gorgas was a member of many medical societies, and had had many honors conferred upon him, among them the gold medal of the American Museum of Safety, the Mary Kingsley Medal from the Liverpool School of Tropical Medicine, and the insignia of Knight Commander of the Order of St. Michael and St. George, conferred recently by King George.

Correspondence.

DECEPTION AND SELF-DECEPTION, IN THE PRACTICE OF MEDICINE.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—I am coming up against both these unfortunate conditions frequently. It is very hard both for patient and doctor, I mean especially, the general medical adviser of the patient. If the physician wishes the best interest of his patient, as he does and should, he seeks the best medical or surgical advice, if he is at fault, or even when he believes he knows and that a consultant's judgment will confirm his own. When this has proved to be true, the wise doctor does not consider it often wisdom to consult in behalf of his patient a third physician, who has special knowledge in the direction of that disease which has been determined to exist by the two previous physicians. Still he is apt to yield to an expressed wish on the part of the patient and it is done. Sometimes, there is practically accord between the three physicians; sometimes, the specialist differs from the others. Then we must have a fourth physician, also a specialist, meet the others in consultation, and after hearing their opinions, he either agrees or disagrees. If he agrees, well and good; if he disagrees, a fifth physician must be called in, and here again there may be equal division of judgment, or it may be three against one. In the former case, matters are settled, at least, for a while; in the latter case, one is again unsettled, or else, perhaps, the patient abides by the opinion given originally by his own physician.

Such a condition of affairs, as I have briefly portrayed, is to-day not infrequently encountered. The net result is sooner or later to have a neurasthenic patient who believes no one and is bandied around from one specialist to another. Finally, the good, square, all-around physician becomes weary of well doing and soon wishes to throw up the case or does so. Meanwhile, has he received proper pecuniary return for what in reality are very valuable services? As a rule, no. The consultants, general or special, get their remuneration; he does not. Gratitude is much talked of and probably given for a while. Ultimately he is regarded as unsympathetic or almost cruel, and in place of a firm and loyal patient and friend, he has neither.

I have related the foregoing from actual experience, repeated several times in a decade or less, and by its narration I wish to illustrate what I mean by deception and self-deception in the practice of medicine. The doctor may be of the sort who feels obliged, by what to him are major considerations at the time, to go on almost without time limit, pandering as it were to what he knows is purely an effect on the neurones, such as we find in neurasthenia and hysteria, and in so far as he does so, after awhile he deceives his patient. The patient is self-deceived by his disease and it is often problematical how he or she will become undeceived. In my judgment, he is sometimes never undeceived; fortunately, in other instances, the patient finally and as a last resort reaches the conclusion that his own original physician, faithful, true, conscientious, and unrewarded, is in reality correct. Why should clever, hard-working, conscientious men embark and continue in the general practice of medicine at the present time? Cui bono? I cannot answer; perhaps the editor, or maybe someone who reads these lines, can and will.

BEVERLEY ROBINSON, M.D.

NEW YORK.

MEDICAL MEN IN THE HALL OF FAME.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—The fully justified suggestion of my friend, Dr. S. A. Knopf, that American physicians be represented in the Hall of Fame having caused the mention of my name among the nominees, I beg to submit to your readers, through your kindness, the following letter written by myself to the Senate of the New York University relative thereto:

Though greatly honored by the fact that I have been nominated for the Hall of Fame, I deem it my duty to state that the kindly advocates of my labors who suggested the nomination must have been unaware of the fact that a living man is ineligible. An editorial writer suggested that the candidate meant was a laryngologist bearing my name and not the endocrinologist now living. But here again some oversight has caused a misinterpretation of facts, for I happen to be that laryngologist, who took up endocrinology nearly thirty years ago as a normal offshoot of the laryngological field.

I do hope, however, that American Medicine will ultimately get its due if I succeed in proving, as many believe I am doing, my contention of many years' standing, that the ductless glands can so transform internal medicine and therapeutics as to place these branches on the footing of a science, and that it is only through amplified knowledge of these organs, to which so many able men are now contributing, that several of the great destroyers of humanity now resisting all efforts can be conquered. If any credit is to accrue to me on that score, the good actually done and the appreciation of my colleagues will amply reward my efforts, and ultimately perhaps merit your kindly interest.

CHARLES E. DE M. SAJOUS.

2043 WALNUT STREET.
PHILADELPHIA.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, June 11, 1920.

First Annual meeting of the Society for the Prevention of Venereal Disease.—The first annual meeting of the Society for the Prevention of Venereal Disease was held at the Barnes Hall, Royal Society of Medicine, 1 Wimpole street, London, on Thursday evening, June 3, 1920, the President, Lord Willoughby de Broke, occupying the chair. Lord de Broke's able and lengthy speech was concerned for the most part in recapitulating the aims and objects of the society and particularly in defending it from the charge that in advising immediate self-disinfection it tends to promote immorality. Also he asserted that the policy of the government as represented by the National Council for the Prevention of Venereal Disease, was inconsistent and half-hearted and in his opinion, the only wise, the only human, the only statesmanlike course, is to recognize the fact, that all the preaching, lecturing and incitement to lead a healthy life, have at present failed to suppress the sexual instinct to such a degree as to have any effect on the incidence of venereal disease, and that therefore, if the disease is to be attacked successfully, it must be attacked at a place which is so well called by Colonel Harrison, the weakest link in the chain, and the weakest link in the chain of infection is immediately after connection has taken place. Hence, the whole aim and object of this society is to urge the Government, to bring pressure upon the Government, to bring pressure upon all public bodies to issue such instructions to men and women of this country that will enable them to take advantage of the latest teachings of science in order that they may themselves use immediately after connection, if connection there must be, such simple disinfectants as have been proved to be efficacious in destroying immediately the spirochete and the germ of gonorrhea. With reference to the moral aspect of the question the speaker declared that the above is not only the common-sense point of view, but it is the moral point of view. In the opinion, the highest moral attitude that the State can adopt is the safeguarding of the health of the country, and the members of the society utterly decline to join any school of thought which is going to suppress knowledge from British men and women, and will not be responsible to future generations for having suppressed knowledge, which, if it is properly and intelligently and scientifically applied, may very well prevent thousands of them from hideous sufferings in the future and may also cause thousands of healthy children to be born, who otherwise would never have seen the light of day. It was pointed out that twelve towns have already given instructions that the inhabitants shall be given the opportunity of being taught the advantages of immediate self-disinfection and being made acquainted with the technic of the same, and Portsmouth has led the way.

The main object of the meeting was to move a resolution whereby a certain obstacle in the way of the adoption of this means of prevention may be removed, the removal of which will make immediate self-disinfection accessible to the general public. The obstacle referred to is contained in a clause in an act termed the Venereal Disease Act of 1917. The gist of this clause is as follows: That on and after Nov. 1, 1917, a person shall not hold out or recommend to the public by any notice or advertisement anything for the prevention, cure or relief of any venereal disease. This clause was inserted with the view of preventing unqualified persons, such as druggists, from treating venereal diseases or from selling so-called cures. The resolution reads thus:

"That inasmuch as the Ministry of Health has failed, and public bodies, including the London County Council, have declined to provide the means for delayed disinfection against venereal disease at Ablution Centers, this meeting calls upon the Ministry of Health and upon local authorities to instruct all qualified chemists to sell such means of immediate self-disinfection against venereal disease as may be approved from time to time by the Ministry of Health or by medical officers of health. Dr. Saleeby seconded the resolution and Sir James Crichton Browne supported it in the usual eloquent manner. In his speech Dr. Saleeby pointed out that the National Birth Rate Commission, in its report issued recently, hold that no difficulty of an official kind should be placed in the way of obtaining disinfectants by individuals for use after exposure. The Commission further tenders the advice that any difficulties of any administrative kind which may now prevent registered chemists from selling such disinfectants should be removed, provided such preparations are only to be sold when accompanied by a notice that they are to be used for disinfection only and are useless for treatment. Sir Frederick Mott, who also supported the resolution, emphasized the fact that the disabilities produced by syphilis are colossal and said that he was perfectly certain from an economic point of view that it would be of the greatest value to the Government to do everything in its power to support the propaganda of this Society both from a health point of view and from an economic point of view. The resolution was carried unanimously. Sir William Arbuthnot Lane, the treasurer, did not read the report; it was taken as read. However, Sir Arbuthnot made some apt remarks on the subject of the Society's finances. He drew attention to the fact that this is one of the most wonderful societies that ever existed; it ought to be called the Suicide Club. Men had been got together who make their living out of this disease, men whose interest it is that this disease should continue to be rampant. The Society is almost entirely supported by funds obtained from these men. He thought it the most altruistic and philanthropic institution that has ever been made in the history of the world, and he deemed it a pity that the Society should have to depend on these friends from whom the Society has to beg to provide subscriptions for this institute. The Society and its policy are not in the interest of the medical profession, but in the interest of the public, and he thought that the members of the Society ought to do their best to obtain from those who are to gain most from the prevention of venereal disease,

what indeed the medical profession is going to lose. Perhaps, on the whole, the most interesting part of the proceedings was the reading of the Secretary's report by the Secretary, Mr. Wansy Bayly, and this for more than one reason. Mr. Bayly was the prime mover in the evolution and development of the Society, and is working for its success as hard as ever he was. His report gives a lucid and succinct account of why the Society was formed and the ups and downs met with in the course of its formation. The reason for its formation was the publication in August, 1919, of the report of Lord Astor's Interdepartmental Committee of which a description was given in my London Letter a few weeks after the issue of the report. Mr. Bayly, after reading this report, resolved to endeavor to organize a new Society in order to lay before the public the purely scientific aspect of the prevention of venereal disease by immediate self-disinfection. At first in London when he mooted the idea of forming such a Society the two gentlemen he approached, because he was aware they had expressed themselves in favor of prophylaxis, gave most damping replies. In Edinburgh and Glasgow the majority of medical opinion was favorable to such a scheme, and on September 22, 1919, the first meeting of the Venereal Committee took place at Mr. Bayly's house in London. A month later the committee formed itself into the Society for the Prevention of Venereal Disease and a provisional constitution drawn up by Mr. Bayly was accepted without amendment. On December 10, 1919, Lord Willoughby de Broke, the president, raised the question, in the House of Lords, of immediate self-disinfection as a prevention of venereal disease and asked for papers relative to incidence of venereal disease in Portsmouth Military Area. The Ministry of Health replied in a white paper in February last, in which inaccuracy in former statements was admitted. The Society is now an undoubted success and established, as Mr. Bayly states, on foundations built partly on the solid rock of the sympathy of the thinking public and partly on the somewhat shifting sands of financial support by voluntary subscriptions.

British National Council for Combating Venereal Disease.—On Monday evening, June 7, last the British National Council for Combating Venereal Disease held its annual meeting. Lord Astor, who presided, said in part that before compulsory treatment of venereal disease could be even talked of, it must be seen to that there were enough facilities for diagnosis and treatment for those affected, and at present this provision was inadequate. Nor must it be forgotten that compulsion would inevitably lead to much concealment and a consequent failure to apply for treatment. Half the people who talked of compulsion had not realized the special difficulties or studied previous failures. During the war the disease was reduced more by women police and drink control than by all the regulations. Any one who had made a study of the social scourge knew how Abraham Flexner exposed the so-called success achieved on the European Continent through the system of inspected houses. Foreign countries had neither wiped it out nor produced peoples cleaner in body and mind, and it must not be forgotten, either, the lack of success of the Contagious Diseases Act in England. Some people talked as if they had succeeded; they had not. The disease increased in the army during their operation and decreased when they were abolished. Speaking as to policy, Lord Astor said they wanted to stimulate medical education. It was essential to bring the general practitioners more into touch with modern science. They proposed to work through the medical schools and the clinics, of which latter there were now 172. This was not enough; more and often better ones were needed. Greater facilities for diagnosis were wanted, with special reference to the needs of pregnant women, and seamen, and also hostels for girls. It was necessary to continue and increase propaganda both for adults and adolescents. But while improving organizations at home, foreign countries must not be forgotten, the propinquity of nations, the extent of modern traveling, the seafaring population, and their special temptations. He hoped the League of Nations, through its health section, would help to solve this and other world problems.

British Hospital in Paris.—A meeting was held on June 7, 1920, at the British Chamber of Commerce in Paris, Lord Derby being in the chair, to consider the best means to raise funds to help the Hertford British Hospital in Paris. The hospital was founded and endowed in 1871 by Sir Richard Wallace, but to-day the endowment is insufficient for its needs. The management is now in the hands of a committee appointed by the Foreign Office. It is considered that it would be a great pity should the hospital be compelled to close or even to restrict its work, as it has been invaluable to British subjects in the French capital.

Memorial to Sir Victor Horsley.—The following letter over the signature of Sir W. Arbuthnot Lane, Dr. Edward J. Domville, and Sir John Y. W. MacAlister appeared in the London lay press of June 5, 1920: "It has been decided at a meeting of friends and former colleagues of the late Victor Horsley to take steps to commemorate his services to science and the Empire by the foundation of a lectureship bearing his name. The tragic circumstances of his untimely death in Mesopotamia are still fresh in remembrance, and though the absence of so many medical men on war service prevented an earlier movement, we are satisfied that it is not too late for the recognition in a permanent form of Sir Victor's life and work. He was one of the most noteworthy students of University College Hospital, a very distinguished medallist and graduate of the University of London, and a leader and the first chairman of the representative meeting of the British Medical Association. He was a pioneer in the research work connected with the surgery of the brain and nervous system, the causation and treatment of myoedema, and as secretary of the Commission to inquire into the value of Pasteur's method of treating rabies, his investigations at the Brown Institute were of the utmost value in stamping out rabies in Great Britain. Outside his strictly

professional work there was scarcely any subject affecting the moral and physical welfare of the nation in which he was not actively interested. As a strenuous fighter, firm in the belief of the truth of his own convictions, he was, it must be confessed, often in conflict even with his best friends and colleagues, and sometimes he took action which alienated them from him, but nevertheless we find that very many of those offended are anxious that misunderstanding and invective should be forgotten, and that the sterling qualities of the whole-hearted student and unselfish worker should be recognized by a perpetual memorial. The exact form in which the lectureship should be constituted or the corporation to which it should be entrusted is left for the consideration and decision of the larger committee which is in course of formation. It is, however, suggested that the most appropriate trustee would be the Senate of the University of London, and that the subject of the lecture should be left widely open so as to secure the services of men distinguished in some department of public life who might consider it an honor to be the 'Victor Horsley Lecturer' for the year. As it is desired that the memorial should be as widely representative as possible, the maximum subscription is limited to a guinea ($5 or thereabouts). All letters and subscriptions should be addressed to Dr. Edward T. Domville, Symondsbury, Bridport, Dorset."

I have quoted the letter in full because it expresses well the very high place in medical science occupied by Victor Horsley and the estimation in which he is held by his professional brethren. Another reason is that his fame is international; he has always been very highly considered in the United States, and some of his American admirers may wish to contribute to a memorial of a really great scientific man.

Obituary.—Dr. George Ernest Morrison, aged fifty-eight, died at Sidmouth on May 30 last. Dr. Morrison graduated in medicine from Edinburgh University in 1882. He was an Australian of Scottish ancestry, and received his early medical training at Melbourne University. But his tastes did not lie in the practice of medicine. He was afflicted or blessed with the "wanderlust" and had an absolute passion for travelling. He walked thousands of miles outside the beaten track and explored parts of the world of which little was known. He happened to be in China during the Boxer outbreak, in which he took part as a combatant officer, being severely wounded. But Morrison's fame will rest, for he was one of the famous men of the world, on his work in China. He was *Times* correspondent in China for some time and gained a wide experience of Chinese affairs. This knowledge combined with a strong personality gained for him the confidence of the Chinese Government, by which he was appointed political advisor to the Government. Morrison wielded almost supreme power in China, as his advice was invariably sought and almost invariably taken, especially as regards foreign politics.

Many medical men in the United States and Canada will learn with regret of the death in London after a short illness of Doctor John Hamilton Fullarton. Dr. Fullarton was born in 1856 at Brodick in the Isle of Arran. He was of the family of Fullartons of White Farland and Kilmichel, which they have held since the time of King Robert the Bruce. The progenitor of the family is mentioned in Sir Walter Scott's "Lord of the Isles" as Fitz Louis. On entering the University of Glasgow he had a most distinguished course and there and at Leipzig, where he went later, he won bursaries to the value of £1,500. For some time he was a lecturer at Glasgow University. Many scientific distinctions were conferred upon him. In recent years Dr. Fullarton practised as a consultant, but it was his intention shortly to give up his active work.

Progress of Medical Science.

Boston Medical and Surgical Journal.

June 24, 1920, clxxxii, 26.

1. Principles of Posture. First Paper. Mabel Elsworth Todd.
2. Bodily Mechanics and Medicine. Lloyd T. Brown.
3. The Malnourished Child in the Public School. William R. P. Emerson.
4. Comparative Statistics of Physical Examinations of Pupils of the Boston Public Schools from December 1, 1915, to March 1, 1920, and Remarks with Especial Reference to Malnutrition. William H. Devine.
5. Rupture of the Rectus Abdominis Muscle. R. J. Behan.

2. Bodily Mechanics and Medicine.—Lloyd T. Brown chooses the term bodily mechanics instead of faulty posture because faulty posture is only one of the results which may occur when the human body, considered from a mechanical point of view, begins to get out of line. It may be and often is one of the first symptoms to occur and may be present without any immediate effects in much the same way that carious teeth and adenoids and constipation and many another condition may exist for an indefinite time without any ill effects. Differences of opinion as to what constitutes good mechanics of the body have retarded the development of the subject. How may one know what is good and what is bad mechanics? In order to get some definite data to work on, it seemed wise to examine a sufficient number of so-called normal men to give one a point of view. The opportunity was given the writer in 1916 to examine all the men of the freshman class at Harvard. The examination consisted of taking a tracing of every man as he stood in a natural standing position. When these tracings were collected and studied it was found that they fell into four groups, representing good and fairly good bodily mechanics, bad and very bad bodily mechanics. There were 746 men examined, of whom 7.5 per cent. were in the good group, 12.5 per cent. in the fairly good group, 55 per cent. in the bad group, and 25 per cent. in the very bad group. In other words, 20 per cent. of the men used their bodies in good or fairly good mechanical lines, and 80 per cent. were bad or very bad. In order to find out if there was a possible relation between this classification and the physical findings and symptoms, the statistics were studied in relation to the medical findings. This study showed that no man in the first two groups complained of backache, while over 6 per cent. of the third and over 8 per cent. of the fourth gave a history of backache. Functional albuminuria was much more common in the third and fourth groups than in the first two, and more common in the fourth than in the third. Operations for appendicitis were progressively more common as one went from the first to the fourth group. On the other hand, the removal of the tonsils and adenoids, which was done as a rule in early life, occurred rather more frequently in the first two groups. In the fall of 1919 a similar examination was undertaken. This time, however, the bodily mechanics was computed by two criteria; first, how the individual used his body in standing, judging not only from the position which he assumed naturally, but also from the position he assumed upon being directed to put forth his best efforts; and, second, how the individual used his feet. The classification of this group of 513 freshmen placed

.97 per cent. in the good group, 14.8 per cent. in the fairly good group, 49.3 per cent. in the bad group, and 34.8 per cent. in the very bad group. A comparison of this classification with the mechanical findings showed that in the fourth or very bad group, graded so on account of the feet, slightly over half had a history of trouble either in the past or at the present. Usually, however, the compensation was fair for ordinary activity. Like the 1916 experience, in the first and second groups the men did not give histories of backaches, but there was a definite percentage among the third and fourth groups, being nearly 10 per cent. in the fourth, which was higher than in the third. Functional disturbances, such as tachycardia, instability of the systolic blood pressure, etc., were most common in the students of the fourth group. Also the frequency of constipation, headache, etc., was greater in the fourth than in any other group. Forty cases of albuminuria, or 7.7 per cent., were found. The relation between such faulty mechanical use of the body as seen in the fourth group and the findings given is of course very obscure at the present time, and until some scientific experimental work, which takes into account the possible effects of good and bad mechanical use of the body on the physiology of the body, is done, it will remain in doubt. The point that the cases cited as having been treated by the writer brings out is not that the correction of the mechanical defects is the whole thing, but that the correction of them is one of the ways to help nature compensate for the defects which may be present from heredity, environment and occupation.

New York Medical Journal.

June 26, 1920, cxl, 26.

1. Industrial Toxicology. William S. Wadsworth.
2. The Health of the Worker in Industry. Clifford B. Connelley.
3. Filtered *X*-ray Dosage. W. D. Witherbee and John Remer.
4. Reflex Disturbances Due to Eyestrain. Homer E. Smith.
5. Malnutrition in Infancy and Childhood. J. D. Leebron.
6. The Problem of the Malingerer. Judson C. Fisher.
7. Group Study in the Surgery of the Head. Seymour Oppenheimer.
8. The Coin Test as an Aid in the Diagnosis of a Bronchiectatic Cavity. Samuel A. Loewenberg.

6. The Problem of the Malingerer.—Judson C. Fisher discusses the subject of malingering from the industrial point of view, and considers it a real problem, recognized by every industrial surgeon. He classes malingerers as real malingerers and exaggerators. A real malingerer, he holds, is a real crook and should be condemned as such. The real malingerers are about one in a hundred, in his experience, among all classes, and thirty per cent. among Italian and Polish longshoremen. The exaggerators are those who have a legitimate accident. After deriving benefits for a legitimate period for their types of accidents they malinger and prolong disability so as to get all they can. This class consists of about twenty-five per cent. of all accidents and seventy per cent. of longshore cases. The age of malingerers is dependent upon local conditions. The amount of money coming into the family from other members, lodges, sickness, insurance, etc., plus perhaps rents or dividends from building and loan associations, often determine the length of disability at all ages. In general, however, more malingerers are found from thirty-five to sixty-five than among the younger ages. Mentally he classes malingerers as abnormal—they are out of touch, as it were. Revenge, ambition for sympathy and alms, mimicism, fanaticism or manic depressive psychosis, combined with cunning, is the final diagnosis in nearly every case. To detect the malingerer is to be of service to both employer and the rank and file. Detection is a matter of study. Complaints of subjective symptoms only make a good case for the neurologist, and every industrial surgeon should have neurological training. The detection of malingerers calls for the cooperation of the able industrial surgeon, the employer, the honest employees, the industrial accident boards, and society as a whole.

7. Group Study in the Surgery of the Head.—Seymour Oppenheimer holds that to those who read the signs of the times it must be evident that the practice of medicine is in a state of transition—that it is being slowly but surely revolutionized—that the individualistic is being superseded by the combined or group method of practice. This applies to the surgery of the head and neck no less than to other branches. It is only by means of laboratory tests, close clinical observation and correlation of findings by the component members of the group, and aided further by careful studies of the body metabolism, that one may hope to elucidate the complex and often all too obscure symptomatology of head and neck lesions, and if it is admitted that the individual physician cannot specialize in all branches of medicine and surgery.

Journal of the American Medical Association.

June 26, 1920, lxxiv, 26.

1. The Future of Pediatrics. Fritz B. Talbot.
2. Obstruction of the Hepatic Veins. C. F. Hoover.
3. A Study of the Bile Pigments in Pernicious Anemia. J. P. Schneider.
4. The Reporting of Venereal Diseases by Physicians. William Edler.
5. Diseases Due to Intestinal Parasites in Colombia and Their Treatment. Otto T. Brosius and William A. Bishop.
6. Infrequency of Intestinal Parasites in Young Children. Stafford McLean.
7. Increasing the Pathologist's Usefulness and His Rewards: With Directions for Preparation and Use of a Polychrome Methylene Blue Stain for Frozen Sections Benjamin T. Terry.
8. Traumatic Aneurysm of the Right Pulmonary Artery. Henry C. Marble and Paul D. White.

1. The Future of Pediatrics.—Fritz B. Talbot. See MEDICAL RECORD, May 15, p. 844.

2. Obstruction of the Hepatic Veins.—C. F. Hoover. See MEDICAL RECORD, May 8, p. 806.

3. A Study of the Bile Pigments in Pernicious Anemia.—J. P. Schneider. See MEDICAL RECORD, May 8, p. 808.

6. Infrequency of Intestinal Parasites in Young Children.—Stafford McLean undertook this study for the purpose of determining the frequency of helmenthiasis in children attending an out-patient department in New York City. The out-patient department of the Babies' Hospital, where the examinations were made, is not a neighborhood clinic, the patients being recruited from all parts of the city. The study covered a period of five months, from July, 1919, to January, 1920. The stools were collected at random, without reference to the condition of the child or to the symptomatology. Many stools were examined of children who attended the clinic as visitors accompanying a sick brother or sister. Some were of children who attended for vaccination. The routine procedure was to place the child on a vessel for a few minutes; if no stool was obtained, the child was given an enema of warm tap water; if this was unsuccessful, the parent was given a container and told to bring a fresh stool to the next class. The method employed in this study for examination of stools was the brine flotation-loop method as perfected by Kofoid and Barber. In an examination of 308 stools in children up to 12 years of age, 2.27 per cent. harbored parasites. There were 3.7 per cent. positive in 189 examinations of children from 2 to 12 years of age. In a group of 69 children from 4 to 12 years of age, 5.7 per cent. were positive. In another group of 189 children from 2 to 12 years of age, 3.7 per cent. harbored intestinal parasites. From this it is concluded that intestinal parasites are infrequent in New York City children living under good hygienic conditions.

The Lancet.

June 5, 1920, cxcviii, 23.

1. Goulstonian Lectures on the Principles of Medical Science as Applied to Military Aviation. Delivered Before the Royal College of Physicians of London. J. L. Birley.
2. The Vital Capacity Constants Applied to the Study of Pulmonary Tuberculosis. The Importance of These Constants as a Guide to Classification and as a Means of Ascertaining the Results of Treatment. Georges Dreyer and L. T. S. Burrell.
3. Blood Transfusion: Its Theory and Practice. Geoffrey Keynes.
4. A Study of Certain Effects of Occupation and Race on the Health of Recruits. G. Rome Hall.
5. Actinomycosis of the Cæcum, with Notes of an Unusual Case. E. G. Slesinger.
6. A Case of Paratyphoid "C" Fever in East Africa. R. P. Garrow.

7. Notes on Psychoanalysis and Psychotherapy. Sir James Crichton-Browne.

2. The Vital Capacity Constants Applied to the Study of Pulmonary Tuberculosis.—Dreyer and Burrell recapitulate the procedures (described in *The Lancet*, August 9, 1919) for taking the various measurements in a study of vital capacity as follows: (1) Body weight = net weight without clothes in grammes. (2) Trunk length in centimeters was taken by making the subject sit on a level floor with the knees flexed, the os sacrum, spine, and occiput being in contact with an upright measuring standard. (3) Circumference of the chest in centimeters was taken at the nipple level in males, and just under the breasts in females, the subject being encouraged to talk and breathe naturally while the measurement was being taken. (4) The vital capacity in cubic centimeters was obtained by taking five consecutive readings with a suitable spirometer. The subject was instructed carefully and patiently how to proceed, and encouraged to make the maximum effort. Tables have been prepared, shortly to be published, giving the vital capacity, corresponding to different weights, trunk lengths, and chest circumferences, as well as the normal weight corresponding to these measurements, for males and females. It has been found that for all practical purposes people may be grouped into three classes of different vital capacity, representing conditions of perfect, medium and poor physical fitness. These tables have been used for the calculation of what the normal vital capacity should be in each case, due attention being paid to the class the subject was likely to belong to according to his mode of life. The figure for vital capacity derived from these tables is always taken as equal to 100 per cent., and the individual is said to be normal, or minus, or plus so many per cent. A general analysis is given of two hundred cases in which the vital capacity has been examined on only one occasion, and more detailed analyses of one hundred and sixteen cases in which the vital capacity has been taken on more than one occasion. It was found to increase by at least 2 per cent. in 44 cases. It was found to have decreased by at least 2 per cent. in 39 cases. It varied less than 2 per cent. in 27 cases. In the remaining 6 cases it varied—sometimes increased, sometimes decreased. From the careful analysis of the cases given in detail the following conclusions seem to the writers to be justified: 1. In cases of pulmonary tuberculosis there is a definite increase in vital capacity as compared with what should be normal for any individual, taking into account the class in which this individual should be placed according to occupation and mode of life. 2. An improvement in the clinical condition of the patient is found to be accompanied by an increased vital capacity, while an advance of the disease results in a decrease in vital capacity. The vital capacity, therefore, gives a valuable quantitative measure for the benefit, if any, which a patient receives as the result of treatment. 3. The determination of the vital capacity is useful for the classification of cases of pulmonary tuberculosis, because it is possible by this means numerically to express the injury to health (e.g. degree of toxemia) which otherwise would depend on the individual interpretation of physical signs by different observers. In this connection it should be noted that classification by physical signs alone may place a patient nearing death from an acute lesion in a high category, while another patient, with satisfactory fibrosis and extensive cavitation, likely to live for several years, may be placed in the lowest category. 4. As an aid to diagnosis a single or repeated examination of the vital capacity of doubtful cases will also prove useful. If a normal vital capacity is found in such cases, the patient is most unlikely to be suffering from pulmonary tuberculosis, whereas if the vital capacity is much decreased, the patient should be suspect, though it must always be borne in mind that other diseases may also cause a lowering of the vital capacity. 5. Finally, a systematic study of the vital capacity in its proper relationship to body size has given important information as to the beneficial effects of different treatments of pulmonary tuberculosis, and has made it possible to distinguish quantitatively the degree of improvement obtained in the several cases.

British Medical Journal.

June 5, 1920, i, 3101.

1. Clinical Observations on Jejunocolic Fistula Following Gastrojejunostomy. Charles Bolton and Wilfred Trotter.
2. Some Notes on Military Orthopædics. R. W. Sutherland and J. M. Christie.
3. Physiopathic Paralysis of the Hand, and Its Causation. R. G. Abercrombie.
4. Some Remarks Upon Syphilis, More Especially Inherited Syphilis. Frederic H. Haynes.
5. Transfusion of Blood in Nephritis. Jeffrey Ramsay.

1. Clinical Observations on Jejunocolic Fistula Following Gastrojejunostomy.—Bolton and Trotter state that the frequency of the formation of jejunal ulcer following gastrojejunostomy is unknown, but has been estimated at from one to two per cent. of operations. The ulcer forms at the anastomosis, from which it commonly spreads in the jejunum, sometimes in the stomach, occasionally in both; or it arises primarily in the jejunum near the anastomosis, but sometimes at a greater or lesser distance from it in the efferent limb. A little over ten per cent. of jejunal ulcers become adherent to the transverse colon and perforate into it, thus establishing a jejunocolic fistula, or much less commonly a gastro-colic or a gastro-jejuno-colic fistula. Four such cases are reported by the writers, whose study of the literature of the subject shows that twenty-seven cases are already on record. All the cases, including those of the writers, occurred in males. The only treatment of any avail when a jejunocolic fistula is established is by operation. The aim should be, however, to prevent the occurrence of jejunal ulcer, which is the cause of the fistula. It would seem that in general the obliteration of the fistula without interference with the gastrojejunal anastomosis is the best procedure to carry out if it is possible, and there is no contraindication such as active ulceration or the presence of stricture. To secure satisfactory closure of the openings which have constituted the fistula, it is essential that the colon and jejunum be freely separated from one another, and it is desirable that a piece of omentum be put between them. If it is not possible to get the colon and jejunum well separated without encroaching on the anastomosis, then the latter must be sacrificed and the piece of stomach wall containing it excised. If a stricture is actually present or suture of the opening is likely to narrow too much the lumen or jejunum or colon, an appropriate resection will be necessary. In any case the establishment of a temporary cecostomy is of the greatest value. The sole purpose of such an opening is to prevent the accumulation of flatus in the colon above the suture line. By it the sutures are relieved from any strain and the patient is spared the discomfort and danger of post-operative distension. If the pylorus is still obstructed and it is necessary to obliterate the anastomosis, a fresh gastroenterostomy must be done or an extensive resection of the stomach, such as described by Clairmont.

The Canadian Medical Association Journal.

May, 1920, x, 5.

1. The Ontario Medical Association Reorganization. J. Heurner Mullin.
2. The Union of Septic Compound Fractures. W. E. Gallie.
3. Wounds and Infections of the Knee Joint. Alfred T. Bazin.
4. Cancer of the Uterus with Special Reference to Diagnosis. G. Stewart Cameron.
5. The Causes of Death in Men Who Died from Gunshot Wounds of the Abdomen. H. E. Clutterbuck.
6. Certain Bacteriological and Serological Aspects of Epidemic Influenza. A. W. Caulfield and Donald T. Fraser.
7. On the Early Diagnosis of Variola. A Note on the Condition of the Blood and Spleen. N. B. Gwyn.

7. On the Early Diagnosis of Variola.—N. B. Gwyn records briefly, with charts, his findings in the few instances, in the recent epidemic of variola in Toronto, in which he had the opportunity of making very early examination of the blood. In at least two instances he was struck by the firm enlargement of the spleen. The blood picture of small-pox, he says, is by no means clearly drawn. He appends a table showing the figures in nine cases that developed in the wards of the Toronto General Hospital. The normal and low count in all cases but one was a striking feature, while

in this one case the drop of the leucocytes during the fever wave is evident. Of particular interest is a case of pernicious anemia, in which an abnormally low white blood count (2,200) was not increased during the whole of his pre-eruptive stage. The relation of the count to the termination of the primary fever is indicated in the table. No rise of leucocytes takes place during the period of primary fever. In two of the cases in the series in which the condition of the spleen was early and carefully investigated, the spleen was enlarged, firm, and presented a rounded edge. So marked was this enlargement in one case that the fingers of the palpating hand could feel the border without the respiration usually asked for. The firmness of the organ in a second case was like that felt in malarial infections. In this case the fever, absence of backache, and low leucocyte count suggested typhoid fever, but the solid impression given by the spleen was noted as unusual for early typhoid. Two complete primary fever waves were given. Four days seems to be the definite duration of the fever of the early stage. The day of the appearance of eruption is noted.

Western Medical Times.

April, 1920, xxxix, 10.

1. Grippal Pneumonia and Grippal Suffocations, Asphyxia, in 1918-19. P. G. Remondino.
2. The Value of the "No Good"—Stay Stitcher and Straps. Douglas H. Stewart.
3. The Eradication of Syphilis. Marshall Ford Morris.
4. Omental Grafts in Brain Surgery. Robert T. Morris.
5. Neurasthenia: Its Treatment by Nasal Cauterization. (Centrotherapy). A. Le Prince.

5. Neurasthenia: Its Treatment by Nasal Cauterization (Centrotherapy).—A. Le Prince adds two cases to the number reported in the MEDICAL RECORD for April 5, 1919 (p. 564). In these two cases of peculiarly grave neurasthenia the patients promptly recovered after slight intranasal cauterization and applications of high frequency current.

Western Medical Times.

May, 1920, xxxix, 11.

1. Roentgen Ray as a Therapeutic Agent. J. D. Gibson.
2. The Dawn of a Medical Union. John Round.
3. The Diagnosis and a New Treatment of Decensus of the Stomach. Louis G. Frumson.
4. The Value of the "No Good"—Artificial Dentures: Asepsis or Antisepsis. Douglas H. Stewart.
5. Pyloris Ulcer and Hemorrhoids. Robert T. Morris.
6. Diagnosis in Sputum Examinations. John C. Warbrick.

3. The Diagnosis and a New Treatment of Decensus of the Stomach.—Louis G. Frumson, after discussing the etiology, symptomatology and diagnosis of ptosis of the stomach summarizes his observations in part as follows: The stomachs which are low because of stretching and thinning of the gastric walls, and which have a greatly increased capacity, are usually indebted to an organic lesion for their plight, while the stomachs which are low, but which have not increased in capacity, which occupy the left side of the abdomen and possess a sharply angulated "V" shaped lesser curvature, have for their sponsor perverted physiology or abnormal function. The treatment of the organic is obvious and necessitates the removal of the underlying pathological condition before the stomach may be returned to its usual site in the peritoneal cavity. Almost without exception, surgical intervention is the means toward this end. The treatment of the functional, however, allows a broader field for the ingenuity of the physician, but even here the diet, habits, and domestic life of the individual must be thoroughly investigated if permanent relief is to be hoped for. The writer has tried nearly all of the bandages and binders offered for the relief of this condition, but has always found a disadvantage of some kind, and has abandoned them, one by one. For the past two years he has used a strip of elastic webbing about seven yards long and six or eight inches wide. This is inexpensive and does not retain the excretions of the skin. The elastic bandage is applied in the following manner: The patient lies supine and raises the buttocks about six inches from the table or bed, with the head remaining in position on the bed. This places the patient in a semi-Trendelenburg position. Pushing the abdominal contents towards the diaphragm with the right hand and at the same time securing the end of the bandage with the right hand, the bandage is wrapped around and around the abdomen, considerable tension being made on it all the while. The first encircling of the belly wall should be begun at the level of the pubis and each ascending turn should overlap the previous one by an inch or two; the proximal end, which should be a few inches above the umbilicus, being fastened with a safety pin. The writer recommends that the bandage be worn all day and taken off when the patient retires.

La Presse Médicale.

April 24, 1920, xxviii, 25.

The New Laws of Hereditary Syphilis.—Carle has studied the laws of inherited syphilis for the past 14 years in the effort to formulate them anew and is satisfied that his interpretation published in 1906 is correct and will stand every test of clinical experience. The original Colles law was as follows: an infant procreated by a syphilitic father does not in the vast majority of cases infect its mother, who retains the appearance of health and may nurse her infant with impunity. The author would restate this law as follows: a mother who gives birth to a syphilitic infant which develops the lesions of secondary syphilis shortly after birth is always syphilitic herself despite her appearance of health. Hence she may of course nurse her infant with impunity, but she should nevertheless be treated for her disease exactly as should any other syphilitic. Exceptions to Colles's law do not exist, but rest on false observation. Profeta's law was originally as follows: a child recognized as sound although born of a syphilitic mother does not contract syphilis from nursing the mother or other contact. Such immunity however is not permanent. The author edits this law as follows: such a child is usually syphilitic despite its apparent health and in such a case cannot of course contract the disease. In a minority of cases however such children escape infection and show a negative Wassermann. The seroreaction determines the status of these infants. Fournier's law, the third to be considered, was originally expressed as follows: a syphilitic *fetus in utero* may by the intermediation of the placenta vessel contaminate its mother, who develops secondary syphilis during gravidity. This law, which was also upheld by Finger, the author discredits entirely because of the underlying fallacy that a primary lesion has not preceded the eruption. From our knowledge of the elusiveness of the chancre in women and its failure to leave traces we cannot be sure that the woman has not been infected in the ordinary way. The author disbelieves in syphilis of the ovum or conceptional syphilis, save that a syphilitic father may beget a dystrophic child. A spirochetal infection of the ovum he regards as unproven and even untenable.

Idiopathic or Neurogenic Priapism.—A case of this condition which was reported in 1919 has been abstracted in the *Brazil Medico*. The patient was a man of 28 who entered a neurological clinic to obtain relief from priapism. The subject appeared to be in perfect health and the erection had failed to yield to coitus or other remedy. The organ was rigid and turgid in the highest degree and with the testicles was very sensitive to touch. In the clinic he was subjected to all possible tests, but there could be found no reason for the behavior. All forms of sedation including chloroform anesthesia were tried one after the other, but none of them afforded any relief. But finally, after the condition had persisted for 28 days, it slowly subsided under the galvanic current. Eight days were required for complete subsidence. Six months before the major attack the subject had had priapism lasting three hours without apparent cause. While in the clinic his general condition became poor either as a result of his disorder or for some unknown reason. Sleep was poor and he lost his appetite. As a result of the prolonged priapism the penis even while normally relaxed had increased in size.—*Brazil Medico*.

Book Reviews.

THE TREATMENT OF SYPHILIS. By H. SHERIDAN BAKETEL, A.M., M.D., Fellow of the American College of Physicians; Lt. Colonel, Medical Reserve Corps, United States Army; Professor of Preventive Medicine and Hygiene and Lecturer on Genitourinary Diseases and Syphilis in the Long Island College Hospital, Brooklyn; Attending Syphilologist and Chief of Clinics, Volunteer Hospital, New York; Genitourinary Surgeon to the House of Relief of the New York Hospital; Medical Director of the H. A. Metz Laboratories; Member of the American Urological Association, etc. New York: The MacMillan Company, 1920.

THE outstanding feature of this volume is the careful and detailed description of the technique of intravenous administration of the arsenical preparations in the treatment of syphilis. All reference to the history, etiology, and pathology of the disease is omitted. Due attention is accorded to the chemistry and chemotherapy of arsenic compounds, their indications, contraindications, and efficiency. The author avoids polemics and states his own opinions in straightforward and sincere manner. He generously quotes from contemporary writers and gives due credit to other workers. This book is of especial value to the beginner in intravenous therapy.

MENDERS OF THE MAIMED: The Anatomical and Physiological Principles Underlying the Treatment of Injuries to Muscles, Nerves, Bones, and Joints. By ARTHUR KEITH, M.D. (Abdn.), F.R.C.S. (Eng.), F.R.S.; Conservator of the Museum and Hunterian Professor, Royal College of Surgeons, England. London: Henry Frowde—Hodder & Stoughton, New York; Oxford University Press, American Branch, 1919.

THIS book is based on a series of lectures given at the Royal College of Surgeons of England in the winter of 1917-18 on "The Anatomical and Physiological Principles Underlying the Treatment of Injuries to Muscles, Nerves, Bones and Joints." The title of these lectures fairly states the ground covered in so far as instruction of a surgical nature is concerned; but a large part of the text is also given over to descriptions of the work and biographical sketches of the men, such as John Hunter, Hilton, Thomas, Little, Stromeyer, Sayre, Syme, and many others, whose discoveries, researches, and teachings laid the foundations for the development of orthopedic surgery; while there are also many pages on the work of Wolff, Ollier, Macewen, Albee, and others who have laid the foundations for or actually developed bone-graft surgery as it is practised to-day. This book will appeal not only to the orthopedist, but also to those practitioners of medicine and surgery who are interested in the history and development of orthopedic principles and currently accepted methods of treatment. The author has an easy and graceful diction, so that reading the book is soon found to be a pleasure rather than a task.

SEXUAL IMPOTENCE. By VICTOR G. VECKI, M.D., San Francisco, Cal. Sixth Edition, Revised. Philadelphia and London: W. B. Saunders Co., 1920.

THIS little book impresses one as being a thoroughly scientific and logical presentation of this subject. The author has read the books, he has had a vast experience with patients, and he has reasoned clearly. Not the least to be commended are his remarks on continence, where he refuses to adopt the moralistic tone which too often vitiates the views of urologists, and gives us a plain comprehensible opinion, stating the arguments pro and con. The hypercritical will find in the text much at which to cavil on the grounds of purism, occasionally awkward expressions occur which in some cases render his meaning a trifle obscure, as, *e.g.* "In acute urethritis the fuchsin injections should be made every three days once, gradually increasing the strength of the solution used" (p. 289), but the thorough and practical nature of the work as a whole far outweighs any such petty blemishes. That this book is now in its sixth edition is in itself an argument of its value, but even should the present volume stand without its five predecessors we would not hesitate to predict a large audience for it.

MANUAL OF DISEASES OF CHILDREN. By JAMES BURNET, M.A., M.D., M.R.C. P. (Edin.) Physician for Diseases of Infancy and Childhood to, and Physician in charge of The Child Welfare Clinic at, the Marshall Street Dispensary, Edinburgh; A Vice-President of the Royal Society of Medicine (Section for the Study of Diseases in Children); and Late Examiner in Materia Medica and Therapeutics to the University of Aberdeen; Author of the Nursing of Sick Children, the Pocket Clinical Guide, etc., etc. Second Edition. New York: William Wood & Company, 1920.

THIS manual is intended as a pediatric guide. It describes the method of examination of sick children and gives interesting points of difference between children and adults. The chapter dealing with the diseases of the newly-born is instructive. In the chapter on nutrition we find the author condemns the use of dried milk and holds that its indiscriminate use is wrong. He advocates a careful study of the infant before giving haphazardly any advertised food. The author has had excellent results with citrated milk feeding. Empiric methods of feeding are advocated. The illustrations are pratical and excellent. The book will serve as an excellent guide to one desiring up to date pediatric suggestions.

PRINCIPLES AND PRACTICE OF INFANT FEEDING. By JULIUS H. HESS, M.D., Professor and Head of the Department of Pediatrics, University of Illinois College of Medicine; Chief of Pediatric Staff, Cook County Hospital; Attending Pediatrician to Cook County, Michael Reese and Englewood Hospitals, Consulting Pediatrician Municipal Contagious Hospital, Chicago. Illustrated. Second Revised Edition. Philadelphia: F. A. Davis Company; London: Stanley Phillips, 1919.

THAT a second edition of this work has been called for within one year is ample proof of the interest in and value of infant feeding. There are many new points in this book which are of value to the general practitioner. The chapter dealing with the metabolism of fats and proteins is very instructive. On pages 20 and 21 we find a very interesting discussion of the vitamines. On page 24 in the discussion of stools the author states that thin watery stools must always be taken seriously, but that the same cannot be said of green, curdy stools, which are not infrequently seen in thriving breast-fed infants. These curds are almost invariably due to fatty acids and soaps. These stools are perfectly consistent with a normal growth and well-being of the baby. It is not an indication for a change of food.

The author favors the use of saccharose (cane sugar) for his milk modifications. In addition to the carbohydrates, the disaccharides such as maltose. and the polysaccharides, represented by the cereal flours and dextrine, are advised.

In the past it was taught that a study of the stool gave definite information for the differential diagnosis of the gastrointestinal disease, but experience has taught us that conclusions are of value only when based upon stool examinations in conjunction with a careful study of the diet and the clinical examination of the infant.

The nature of the dominant organisms which develop in diets rich in carbohydrates varies with the carbohydrate itself. Bacillus bifidus is more commonly predominant when lactose is the sugar fed without an excess of protein. If maltose or dextrose is substituted for lactose under the same conditions, bacillus acidophilus is very frequently the more prominent.

The greatest change noted in this little book is in the chapter on artificial feeding in that an absolute relationship between the quantity of the individual food elements of the diet and the requirements of the infant per pound body weight of fat, protein, carbohydrate salts and water for growth and development are made the basis for preparation of diets. This establishes a fixed basis for comparative quantitative studies of relation of diet to growth and development independent of the size and frequency of feedings, and the percentage composition of the mixture.

Society Reports.

AMERICAN GYNECOLOGICAL SOCIETY.

Forty-fifth Annual Meeting, Held at Chicago, Illinois, May 24, 25, and 26, 1920.

THE PRESIDENT, DR. ROBERT L. DICKINSON, NEW YORK, IN THE CHAIR.

Analgesia and Anesthesia in Labor.—Dr. EDWARD P. DAVIS of Philadelphia stated that the best quality of ether, skillfully administered, was successful in the majority of cases of spontaneous labor during the second stage. If given at the height of the pain, quickly removed so soon as the pain subsided, it stimulated and did not retard labor, but the moment when expulsion occurred a few deep inhalations without air would render the patient insensible to pain, although capable of comprehending sensations of feeling, of hearing, or often of sight. The mother roused easily after delivery and required no anesthesia while the placenta was separating. For the insertion of stitches immediately after labor ether properly administered with oxygen was comparatively safe and efficient. He had seen no evidence that such use during the stage of expulsion injured the fetus. It was true that ether was inflammable, that some patients were excited by it, that it was irritable to the bronchial tubes and kidneys, and that it was difficult to anesthetize some patients with ether, but if skillfully administered it was usually successful and its combination with oxygen rendered it in his experience the safest of obstetric anesthetics. The modern anesthetizer should be prepared to use nitrous oxide and oxygen, ether and oxygen, chloroform with or without oxygen, changing, if necessary, from one to the other of these during a prolonged operation. In special fields of surgery the invention of special apparatus had made anesthesia vastly more accurate and successful. For the obstetrician analgesia or anesthesia, skillfully given, made for more accurate diagnosis during labor and for the successful management not only of spontaneous and normal parturition, but of complicated conditions. It was a familiar fact that recovery from parturition was greatly delayed by exhaustion during labor. In this regard modern analgesia and anesthesia was one of the greatest advances made by modern obstetric science. One must not forget the considerable fatal mortality and morbidity produced by prolonged birth pressure and by unregulated and violent expulsive efforts. The danger of asphyxia to the fetus during labor by analgesia and anesthesia was vastly less than the danger of cerebral or other hemorrhage from birth pressure and the avoidance of this latter complication was greatly enhanced by obstetric analgesia and anesthesia.

Induction of Labor; Indications and Methods with Special Reference to the Use of Pituitary Extract.—DR. BENJAMIN P. WATSON of Toronto, Ontario, said that Blair Bell in 1909 was the first to employ in practice the results of experimental investigations carried out on the extract of the pituitary gland up to that time. Since then a great mass of literature had accumulated on the subject. It was universally recognized that it was a most valuable agent for accelerating the second stage of labor when delay was due to feeble uterine contraction. In most of the articles which had appeared the reader was warned against using it for the induction of labor or, before the cervix was fully dilated. He had used it extensively for the induction of labor and during all stages of labor, and had never had any bad results. In 1913 he recorded 3 cases in which he had successfully induced labor by its means. One of those was at the eighth month, one at full term, and one at three weeks post term. He stated that the method was worth an extended trial and he thought that his further results bore this out. The method used was to begin with a dose of one-half to one c.c. administered intramuscularly with a long needle. In most cases uterine contractions commenced in about ten minutes and increased in severity during the next twenty minutes. At the end of this time the second injection of one-half c.c. was given. If, after a time, the contractions tended to weaken, or to come at longer intervals, the dose was repeated. As many as six or eight doses might thus be given at intervals of about one-half hour. The important point was to administer a further dose before the effects of the previous one had entirely passed off. The effects from a single dose appeared only to last for about one-half hour and there was no cumulative effect. Sufficient doses must, therefore, be given to keep up uterine contractions sufficient to produce a certain amount of opening up of the cervix. When the cervix had begun to open and the membranes to bulge into it the uterine contractions would continue without the further administration of the drug. The failures which he had in the beginning were the result of not pushing the dosage far enough. He had found it perfectly safe to give eight or ten ½ c.c. doses at half-hour intervals. In 19 multiparæ the average duration of labor was 19 hours as contrasted with 18 hours as an average in 18 multiparæ. With the bag method the average time elapsing before labor began was 13 hours and the average duration of labor was 10 hours. This number, of course, was very small and not sufficient to draw conclusions from. With quinine alone, in 25 cases the average time elapsing from the last dose to the definite onset of labor was 7 hours, while the average duration of labor was 9 hours, 7 for multiparæ and 11 for primiparæ. With pituitrin alone in a total of 18 cases the average time elapsing between the first dose and the definite onset of labor was 2 hours. The average duration of labor was 10 hours, 16 hours for 5 primiparæ and 9 hours for 13 multiparæ. With quinine and pituitary extract, in a total of 62 cases 53 were successful, 9 were totally unsuccessful. Six of the successful cases required repetition of the routine before labor began. In the 53 successful cases the average time elapsing between the first dose of pituitrin and the onset of labor was 2 hours and the average duration of labor was 10 hours; 14 hours for 23 primiparæ and 7 hours for 30 multiparæ. The labors in the quinine and pituitrin cases were spontaneous except in 4 cases in whom forceps were used when the head was on the perineum. In the total of 53 there were four stillborn babies. Recently two of his colleagues, members of his staff, J. G. Gallie and W. A. Scott, had recorded a series of 65 cases in which they used pituitary extract alone for the induction of labor. Out of this total 55 were entirely successful. The average number of doses given was three, the average duration of labor was 7 hours. There was one fetal death 28 hours after delivery from atelectasis. The delivery was normal in 45, by forceps in nine and by version in one. Taking these results along with the ones which he had recorded, he thought we must recognize that the method had a definite place in obstetrical practice and should be considered before other methods were adopted. It had very special advantages in cases of slight disparity between the head and pelvis, as it did not in any way prejudice the cesarean operation should it prove to be necessary—an argument which could not apply to the bougie or bag method.

The Induction of Labor at Term.—Dr. CHARLES B. REED of Chicago said that labor could be inaugurated by quinine and pituitrin, by castor oil and quinine, by the modified de Ribes bag, or by both. The castor oil acted in about two cases out of five and most reliably when the patient was a little bit past the calculated date. The Vorhees bag in his experience was the most dependable and was, therefore, the favorite agent at his hospital. The patient's bowels should receive attention the night before and in the morning the external genitalia was given a careful obstetric preparation. Assemble and sterilize by boiling 20 minutes a modified de Ribes bag No. 4 (Vorhees), a Simon speculum or vaginal retractor, a pair of long Pean forceps (dressing forceps would serve), two pairs of vulsellum forceps, two pairs of compression forceps, a Goodell dilator a tenaculum forceps, a hand bulb syringe with glass tubes and rubber connections for the bag or a large piston syringe. The bag and accessory apparatus must be tested for defects before using. The patient prepared as for delivery was placed upon the table in exaggerated lithotomy position with legs held by assistants or by stirrups. The vagina was retracted, a smear made from the cervix and the mucous membrane wiped clean with pledgets.

Anesthesia was only occasionally necessary even in primiparæ. One lip of the cervix was seized by the volsellum and brought down. If the bag had been properly prepared the os would admit it originally without dilatation. The bag must be emptied of residual air and the flat end pulled out. It was next rolled into a compact mass like a cigarette and seized by the Pean forceps so that the tips extended just to the largest diameter of the rolled bag. After annointing the bag with sterile glycerin the bag was passed into the cervix with the concavity of the forceps turned toward the patient's left leg and as it entered the os the concavity was turned upward one-quarter of a circle so that when the maneuver was completed the curve of the instrument conformed to the flexure of the uterus. The lock of the introducing forceps was then released; tube of the bag was connected with the filling apparatus, and the sterile solution (lysol, boric acid, or plain water) was forced slowly into the bag. One should not overfill by force or the bag would break. Tension in the tube of the bag and the feeling of resistance to the injection were signs of fullness to the experienced operator. If uncertain of the technique, a measured amount of fluid might be used. A piston syringe of tested size would also serve to inform the operator when the capacity of the bag (6 oz.) had been reached. The Pean forceps were removed as soon as the bag was sufficiently filled to keep it from slipping out. The compression forceps should now be snapped on the tube, the vulsellum removed from the cervix, and the syringe disconnected. The tube of the bag must be tied strongly with tape, and the compression forceps removed. Two sterile pads were placed on the vulva, one on either side of the tube, the stirrups were then removed and the patient pulled up in the bed. The bag might break from overfilling or being insufficiently filled might slip out of the cervix before the uterine contractions began. If so, another bag should be inserted. If the pains did not start within an hour a weight of one or two pounds was attached by a tape to the protruding tube and passed over the foot of the bed. Usually in from five minutes to half an hour the contractions began and labor was under way. In a variable period, rarely more than four hours (three hours and twenty minutes in his series), the bag was expelled by strong pains, the dilation was practically complete, and the head followed the bag down into the pelvis, the membranes ruptured and the second stage began. From then on the case was managed according to general obstetrical principles. The tedious exhausting and painful first stage had been definitely shortened. The bag acted as a mechanical aid to cervical dilatation, a dynamic stimulant to the contractions and preserved the membranes from injurious pressure until physiological rupture occurred. When the membranes had been accidentally ruptured by the insertion of the bag no attempt should be made to pull on it to mark advancement lest it came out and by suction bring down the cord. When the bag came out after accidental rupture of the membranes at the time of insertion it was good practice to make an internal examination to discover the presence or absence of a prolapsed cord. In the series of 200 cases hitherto reported he had multiparæ 114 and primiparæ 86. The average duration of labor was 7 hours and 56 minutes, the longest labor was 30 hours, and was due to a tough inelastic cervix. Two others were in labor 28 hours from cervical conditions. In one the cervix was a mass of cicatricial tissue. The shortest labor in a multipara was 55 minutes and in a primipara 60 minutes. The bag broke while being filled or shortly after insertion nine times. Another bag was introduced four times. The membranes were ruptured by the insertion of the bag seven times; in one case intentionally for hydramnios. The bag was expelled in an average period of 3 hours and 20 minutes. The longest detention was nine hours; the shortest was 10 minutes. Two mothers died. One had myocarditis associated with a marginal insertion of the placenta. Her labor lasted only an hour and a half and was accompanied by a normal amount of hemorrhage only. Death came two hours after the delivery. The other had pneumonia and died eight days after labor. In no case did the bag fail to inaugurate contractions nor the woman to deliver.

The Prophylactic Forceps Operation.—Dr. JOSEPH B. DE LEE of Chicago said that the prophylactic forceps operation was the routine delivery of the child in head presentation when the head had come to rest on the pelvic floor and the early removal of the placenta. Primiparous labors and those where the conditions of the soft parts approximated a first labor, were treated by this method, which really comprised more than the actual delivery of the child. It was a rounded technique for the conduct of the whole labor, with the defined purpose of relieving pain, supplementing and anticipating the efforts of nature, reducing the hemorrhage, and preventing and repairing the damage. Sir J. Y. Simpson had said that labor, in the intention of nature, should be normal, but that in a large proportion of cases it was not so. So frequent were these bad effects, that he had often wondered if nature did not deliberately intend women should be used up in the process of reproduction, in a manner analogous to that of the salmon, which died after spawning. The radical interference with the mechanism of the third stage was intended to reduce the amount of blood lost, shorten the anesthetic period and reduce the danger of infection from retained blood clots and membranes and insufficient uterine contraction. He freely admitted that this method of treating labor was a revolutionary departure from time-honored custom and must have really sound scientific basis for recommendation. This it had. *First*, it saved the woman the debilitating effects of the suffering in the first stage and the physical labor of a prolonged second stage, and in the modern nervous inefficient product of civilization, this was becoming more frequently necessary. The saving of blood had much to do with the quick and smooth recoveries he had observed in his cases. In the combination with morphine and scopolamine in the first stage, gas or ether in the second stage and operative delivery, one had robbed labor of most of its horrors and terrors, and the increase of the population ought to be thus favored. *Second*, it undoubtedly preserved the integrity of the pelvic floor and introitus vulvæ and forestalled uterine prolapse, rupture of the vesicovaginal septum and the long train of sequelæ. Virginal conditions were often restored. *Third*, it saved the babies' brains from injury and from the immediate and remote effects of prolonged compression. Incision in the soft parts not alone allowed shortening of the second stage, but it also relieved the pressure on the brain and would reduce the amount of idiocy, epilepsy, etc. The easy and speedy delivery also prevented asphyxia, both its immediate effects and its remote influence on the early life of the infant.

The Value of the Wassermann Reaction in Obstetrics Based Upon the Study of 4,547 Consecutive Observations.—Dr. J. WHITRIDGE WILLIAMS of Baltimore said that 4,000 of the women were delivered between the 28th week of pregnancy and full term—1,839 whites and 2,161 blacks. In the series a positive Wassermann was noted in 421 cases, an incidence of 4.2 per cent.; 2.4 per cent. in whites and 16.29 per cent. in blacks; 302 children were born dead or died during the two weeks following delivery, and 102, or 34.4 per cent. death was proved to be due to syhpilis. Study of the 421 positive cases showed (1) that the presence of a positive Wassermann did not necessarily mean the birth of a syphilitic child; and (2) that efficient treatment instituted by the middle of pregnancy gave almost ideal results as far as the child was concerned. Observations showing that a negative maternal Wassermann did not necessarily imply the absence of syphilis, as shown by positive autopsy findings in 22 children. Study of the significance of the fetal Wassermann at birth and a comparative study of the diagnostic value of the Wassermann reaction and placental findings, also a brief discussion of the applicability of Colles's law was undertaken.

Extraperitoneal Cesarean Section.—Dr. JOHN A. MCGLINN of Philadelphia stated that extraperitoneal cesarean section operations could be divided into two general types: (*a*) The true extraperitoneal in which the peritoneal cavity was not invaded at any stage of the operation. This operation would be referred to

as the extraperitoneal. (*b*) The transperitoneal in which the peritoneal cavity was opened and subsequently isolated by attaching the parietal and visceral peritoneum and the uterus opened in this artificial extraperitoneal space. This operation would be referred to as the transperitoneal. The advantages of the two types of extraperitoneal operation might be summed up as follows: (1) The peritoneal cavity not being opened was isolated from the field of operation. The danger from infection was less and therefore a better operation in the infected or supposedly infected case. (2) If the uterus ruptured at the site of the incision in subsequent pregnancies or labors it was an accident of no material consequence. (3) There was no danger from the formation of peritoneal adhesions. (4) The scar was not unsightly and the possibility of incisional hernia *nil*. (5) There were no postoperative intestinal complications. (6) Hemorrhage during the operation was slight. His own feeling was that the Beck operation with thorough protection of the peritoneal cavity and perfect peritonealization of the uterine incision was superior to the transperitoneal operation as a routine procedure. While theoretically it was not as efficient as the extraperitoneal method, practically on account of the many disadvantages of the latter, it was the better operation.

Sterility in the Female; a Report of Operative Cures.—Dr. CHARLES G. CHILD, JR., of New York City said that in his series of cases the average period of sterility was three and one-half years. One case of seven years' duration was cured in 10 months. The average time from operation to the birth of the first child was 15.3 months, while seven patients gave birth within one year after operation. Seven of these patients were unconditionally sterile due to tubal occlusion, and these subsequently bore eight children—quite a respectable sized family—that owed their appearance in the world absolutely to conservative surgery. These 11 women operated upon had, to date, borne 16 living children, and eight were still in the child-bearing period. Such results as had been obtained in these cases should go far towards creating in the surgeon added respect for the art he practised, and a firmer belief in the value of conservative gynecology.

A Neglected Form of Cervical Endometritis.—Dr. HENRY T. BYFORD of Chicago stated that as a result of acute cervical endometritis a permanent exudate was sometimes left about the internal os uteri which for descriptive purpose he called a constriction ring, although in reality it was merely a greater thickness of the mucosa at that point. This constriction ring not only produced the characteristics of stenosis in many cases but gave rise to the ordinary symptoms that were usually attributed to endometritis, such as backache, reflex stomach disturbances, malaise, dysmenorrhea, intermenstrual pain, menorrhagia and sterility. The number and severity of the symptoms varied greatly in different patients, depending in part upon the interference with the patency of the lumen, the chronicity and the associated pelvic conditions, and partly upon the patient's general resisting powers and nervous habits. The diagnosis was made by means of the sound which detected a tender area at the internal os and which caused more or less bleeding. In the more chronic cases firm pressure exerted by a dilating wound produced a slight discharge of inspissated mucus which adhered to the sound. The treatment called for gradual progressive dilatation with round dilators under the strictest aseptic and antiseptic precautions, and later stimulating applications of iodized phenol. The occasional failure of an Emmet trachelorrhaphy to cure the symptoms was laid to a persistence of such an exudate at the internal os.

The Treatment of Suppurating Wounds Following Abdominal Section.—Dr. THOMAS J. WATKINS of Chicago said that no sutures were removed on account of suppuration except when they cut deeply into the tissues, and no drains were inserted. No probing was permitted. Moist boric acid dressings were placed over the wound as soon as signs of suppuration appeared and were continuously applied until excessive redness disappeared. The moist dressings were used to keep the wound secretions from desiccating and to thus promote drainage. Experience had shown that a large amount of drainage would take place through very small openings when thus treated, that the drainage would be efficient, and that the suppurating surfaces, by virtue of atmospheric and intraabdominal pressure, would keep in relative apposition. The author had used this treatment for about fifteen years and had found that the wounds healed quickly; that the treatment was painless; that the patient was not unnecessarily disturbed mentally, and that the ultimate strength of the abdominal wall was seldom injured by the suppuration. When the discharge ceased no open wound remained to heal by granulation. Antiseptic solutions were not employed, as they injured the tissues more than they harmed the bacteria. Irrigations, drains, and the like did much damage to the delicate tissue repair which was present in the healing wounds. Photographs were presented of wounds which had suppurated and showed no evidence that there had been any suppuration. It was not uncommon for patients who had had suppurating wounds to entirely recover, and leave the hospital at the end of the third week after operation.

Errors in Gynecological Diagnosis Due to Misplaced Organs.—Dr. REUBEN PETERSON of Ann Arbor, Mich., drew the following conclusions: (1) Mistakes in gynecological diagnosis arising from misplaced organs are not uncommon as shown by the literature in which only a small proportion of such mistakes is probably recorded. (2) Such errors in diagnosis arise from either carelessness or preconceived ideas of diagnosis whereby important facts in the history and equally important physical findings are either overlooked or ignored. 3) Such diagnostic errors can be averted by greater care in systematically considering with a free mind the facts in the case relating to the history and physical findings provided the latter be obtained through the employment of the most modern methods of examination. (4) In every case a preoperative diagnosis should be made and recorded in order to profit by mistakes revealed at the operation or autopsy.

The Gynecological Problem in Industrial Medicine.—Dr. HARRY E. MOCK of Chicago said that the scope of industrial medicine involved the supervision of the health of employees in industry and other problems connected with the factor of human maintenance. It included the prevention of diseases and accidents; the constant supervision of the physical conditions of the employees by medical examinations and frequent conferences; the adequate medical and surgical care; industrial sanitation and nursing service. Comprehensive medical systems had been installed in a great many of the large industries of the country. Where women were employed this health supervision had given a great opportunity to study many gynecological problems and their effect upon the efficiency and desirability of women employees in industry. A common cause for absenteeism among women workers was dysmenorrhea. Personal observations of this condition among several thousand women employees in a large industry were given extending over a period of several years. Other gynecological problems met in industry among women employees included the frequency of venereal diseases where complete medical examinations of women were made; the frequency of pregnancy among girl workers and how this problem should be met; the effect of dress, diet, and habits upon the health and efficiency of women workers; the need of convalescent homes in large cities for the women workers. Industrial medicine presented a wonderful opportunity for studying certain medicosociological problems as related to the large group of employees.

Hemorrhages Into the Pelvic Cavity Other Than Those of Ectopic Pregnancy.—Dr. RICHARD R. SMITH of Grand Rapids, Mich., said that although ectopic pregnancy was by all odds the most frequent cause of hemorrhage within the pelvic cavity, it occurred occasionally from other causes. The most frequent source of such hemorrhage was the ovary. For clinical purposes they might be conveniently divided into three groups: (1) Caused by a ruptured Graafian follicle or corpus luteum which occurred most frequently in young women, and in which the symptoms rather closely resembled an ectopic pregnancy. Many cases had been operated upon also for supposed appendicitis. Blood might be found in lesser amounts

or in amounts large enough to cause grave symptoms. A microscopical examination ordinarily showed a normal Graafian follicle or corpus luteum. (2) The second group was not uncommonly designated as hematoma ovarii. Here one was dealing with a distinctly pathological condition. This might be evidenced with hematomas into the Graafian follicles, with secondary changes following in the ovarian structure. This condition was rather frequently associated with fibroids or with some inflammatory trouble with the appendages. In other cases no such association apparently existed nor was the cause clear. In young women it was sometimes the cause of severe dysmenorrhea. (3) A group of hemorrhages associated with ovarian tumors (cystic or solid) of some size in which the bleeding occurred into the tumor or from it into the peritoneal cavity. Such bleeding tumors were commonly the seat of a twisted pedicle or of inflammatory adhesions; also a ruptured pedicle had been the cause. Although the tube might on rare occasions give rise to hemorrhage without the cause being evident, in most cases the reason for such hemorrhage was apparent. A tube involved in the twisted pedicle of an appendage was a good illustration of such hemorrhages; occasionally it was found associated with the thickened tubes of an old infection. Such hemorrhages were small in quantity in the reported cases and the condition should be easily differentiated from ectopic pregnancy. Intraperitoneal hemorrhages from fibroid tumors formed a very interesting group. Wallace reported 17 collected cases and Gerstenberg one. The hemorrhage was often severe and the mortality had been very high (35 per cent.). They occurred from dilated veins or from a rupture of the tumor itself.

Presidential Address.—Dr. ROBERT L. DICKINSON of Brooklyn, N. Y., delivered this address in which he said that in all other departments of medicine and surgery the war made an inventory of men and methods. Gynecology should now conduct a complete self-survey. The specialty was limited but large, the procedures being few, yet gynecological operations, as studied in clinical congresses or in daily operation notices of large cities, omitting lesser operations, were shown to comprise one-fourth of surgery. Operation was required in less than one-tenth of patients with disabilities peculiar to women, obstetrics being excluded. The future problems that gynecology was alone qualified to solve were considered. The first was its own portion of a standard nomenclature, whereupon the new census volume was presented. The operation nomenclature was under way. Standards were defined as the best present practice, widely studied, fairly epitomized, succinctly written down, warily applied, both flexible and progressive. There was need of taking stock of obstetrical and gynecological clinics. The lack of leaders was deplored, one cause shown by the war census being a want of hospital connection, only one medical man in 28 and one surgeon in four having such connection. Therefore, deliberate selection, training, full knowledge concerning specialists, teaching centers for the future were urged, and the carrying of obstetrical education directly to the practitioner in his own locality. Women should be given hospital opportunity, so that American women might prove themselves as good as British. What were some of the sociological problems? Sterilization of women by simple means, with tests of tube patency; artificial impregnation; contraception; the definition of normal sex life; the doctor's section of sex instruction; and extension of routine pelvic examination before marriage, and the harder forms of industry, the result of hard labor and schooling. He advocated a journal under the auspices of the society, and collaboration in a finely illustrated standard type of student's manual; also gynecological centers in libraries and museums, including slide library, loan charts, and a studio. Finally, action was considered looking toward certification of specialists, such certification to hold good some ten years at a time.

The Development of Prenatal Care and Maternal Welfare Work in Paris Under the Children's Bureau of the American Red Cross.—Dr. FRED L. ADAIR of Minneapolis said that pre- or ante-natal care was that part of a public health program which had as an ultimate object the beneficial influencing of the health of the offspring by surrounding the mother with proper conditions during the period of pregnancy. Any complete health and social welfare program should include two public welfare activities, i. e., maternal and infant welfare, which were closely related and should be very carefully coordinated. These activities were intimately bound up with the family and concerned particularly the mother and child. While these two subprograms were more or less closely related to all the other public welfare work, they had more points of contact with each other than with the rest of such activities. From an administrative viewpoint these two activities should be comprised in a maternal and child welfare program, but from a medico-social standpoint the work should be handled by experts in the different lines of work. The objects of the maternal welfare program were: (1) To develop healthy parents, especially mothers who were intelligently trained; (2) To bring them through life to maturity capable of having and rearing normal children; (3) to reduce the maternal, fetal and newborn morbidity and mortality to the lowest possible level; (4) to leave the mother with a desire and capacity to bear and rear children properly in a sufficient number and of such a quality as not only to maintain the integrity of the human race, but to constantly improve its character. The family should be protected from various detrimental influences by education, legislation, and proper help and advice. This meant that each family should have a normal economic status, proper housing, etc., good sanitary surroundings, proper advice, and care in case of physical or other needs resulting from disease, economic reverses, or distress of any kind. Some of the medical problems which vitally affected the individuals and the family were those dealing with tuberculosis and venereal diseases. These activities were very closely allied to maternal welfare work. The educational program involved the education of adolescents along proper sex lines. This necessitated careful study and thought in laying out the educational program as well as in selecting those who were to give this instruction. The legislative program included those laws which were designed to protect the family unit in health, economic independence and happiness, or to prevent any invasion by medical or social disease. The relief of social distress and disease was not less important than the cure of physical ailments and diseases. For the happiness and well-being which could be brought to the individual mother and those associated with her by intelligent guidance, sympathy and help were unmeasurable.

The Importance of a Follow-up System.—Dr. GEORGE W. KOSMAK of New York City introduced the question of whether a recently delivered mother in either private or hospital practice was accorded as much attention in a follow-up sense as a patient recovering from medical and surgical illness. During the past decade the development of prenatal care might be regarded as one of the most important advances in obstetrics. In view of the liability to injuries resulting in invalidism remaining unrecognized in the usual postpartum examination, a discharge of the patient should not be made for at least three months after the birth of the child. During this interval at least two or three examinations of the patient should be made. It was possible to treat minor traumatic and other lesions during this period and avoid later complicating conditions resulting in invalidism. A survey of 48 American maternity hospitals showed that 36 of this number maintained some sort of follow-up system, but in the majority of the latter the patients only returned if abnormalities developed. The admission was made by practically all observers that a follow-up system for obstetric patients was not only desirable but necessary. Certain difficulties must be acknowledged in instituting such a system, but with the better education of the patient the realization of the need would become apparent to her and her family. A regularly organized postpartum clinic should be part of the equipment of every maternity hospital and in connection with the same an organization of social service workers or follow-up nurses to visit the patients in their homes was essential. The necessity of more prolonged postpartum observation should be included in every scheme of hospital stand-

ardization and the shortcomings of institutional work in this field applied with equal force to private patients. The advisability of some form of maternity insurance might do a great deal to obviate some of the difficulties connected with the scheme of more prolonged postpartum care of obstetric patients.

Operation or Radium for Operable Cancer of the Cervix.—Dr. WILLIAM P. GRAVES of Boston gave a comparative analysis of personal cases treated by operation and by radium. Personal experiences with radium in cancer of the cervix had not justified its use in operable cases as a substitute for radical operation. Personal results of the radium treatment compared with those of the Memorial Hospital led to the conclusion that success depended largely on equipment and method of application not possessed by the users of moderate quantities of radium. There was a possibility that the view of operators would be changed by the future development of technique in radium application. For the present, however, operation was the treatment by choice by those to whom the highly developed radium therapy was not available.

An Analysis of the Failures in Radium Treatment of Cervical Cancer.—Dr. FREDERICK J. TAUSSIG of St. Louis stated that radium treatment of uterine cancer should be kept in the hands of the gynecologist rather than the roentgenologist, but such a gynecologist should seek preliminary training in the use of radium and must have continued opportunity for observation and treatment of cancer cases in order to reduce mistakes to a minimum. Good permanent results could be obtained in a certain proportion of cervical cancers with amounts of radium not exceeding 100-150 mgs. of the element, though the use of large amounts in the form of emanation would doubtless decrease complications and increase the number of cures to some degree. If possible, all necessary treatment should be given within the first 6-8 week period before sclerosis had set in and rendered the cancer less accessible and the normal tissues more susceptible to injury. Tumor filtration or light metal filtration together with intracervical application did most good and least damage; 2500-3500 mgs. were usually enough to give results in the favorable cases. In the absence of the Bailey bomb and large amounts of emanation, well directed and prolonged *x*-ray from 6-8 portals would usually affect the parametrial and glandular involvements. Prolonged necrosis and fistulas were due to repeated treatments, to vaginal applications and to heavy gamma radiation or to a combination of the three. Rectovaginal fistulas were more frequent and vesicovaginal fistulas less frequent after radium treatment. Operation was to be preferred in all operable cases under 35 years and in the early operable cases beyond this age. Radium was to be recommended wherever obesity, lung, heart or kidney lesions made operation difficult or dangerous, and in advanced operable, border-line, and inoperable cases but not in the advanced inoperable group with cachexia. The advanced inoperable cases had better be treated with acetone, since radium increased the tendency to fistulas and pain in most instances. These views are based on an experience extending over two and a half years in the treatment of 86 cases of cervical and vaginal cancer and 6 cases of vulvar cancer, in which radium or a combination of radium with operation was employed.

Lutein Cysts Accompanying Hydatiform Mole.—Dr. W. A. COVENTRY of Duluth, Minnesota, said that the cases which he reported presented several very interesting features: (1) The appearance of the ovarian tumors; in one case appeared with the mole (in fact, clouding somewhat the history of the mole) and in the other case seemed to arise and started to grow rapidly after the mole had been removed. (2) The gross and microscopical appearances of these cysts were in marked contrast to those of the ordinary type of ovarian cyst. (3) These multiple lutein cysts were beyond a doubt different from those normally appearing during pregnancy. (4) These lutein cysts undoubtedly accompanied only the formation of chorioepithelioma and mole and were probably not to be found in any associated condition. There were many references in the literature as to the occurrence of cysts of the ovaries accompanying pregnancy, mole, or chorioma, but he was sure that many of these references were only to small cysts, which disappeared spontaneously after expulsion of the mole or the fetus, as the case might be. From the appearance of such large cysts he was sure this was an uncommon condition. As regards prognosis and treatment, Eden and Lockyear asserted that some of these cysts receded following the expulsion of the mole, and some such cases had been recorded by Russell, Andrews and Albert, but this literature was not available. Findley commented that occasionally cystic ovaries became greatly reduced in size following delivery of the mole, and reported in the 58 cases collected by him that in only four was there any retrogressive change following the expulsion of the mole. Still, he did not specifically state that these were large lutein cysts such as described in this condition. In view of the fact that the literature in the large majority of cases connected this condition with the presence of chorioepithelioma, and also in view of the fact that the condition was undoubtedly a retrograde metamorphosis from the normal cystic conditions found in the ovary, he believed that we were perfectly justified in not waiting for the recession of these tumors, but that we should operate and remove them when found. The small cystic tumors of the ovaries, accompanying mole, he would be inclined to keep under observation. Whether a hysterectomy should be done at the same time as the removal of the tumors was an open question in the speaker's opinion.

A New Method of Covering Raw Surfaces Upon the Uterus.—Dr. GEORGE GELLHORN of St. Louis, Mo., stated that the practitioner started to do a Gilliam operation or one of its numerous modifications or substitutes in a case of fixed retroflection. The adhesions that held the uterus glued to depth of the cul-de-sac or the rectum were broken up, the round ligaments were shortened and the uterus was now lying in a more normal position, but with a more or less extensive area of denudation on its fundus which invited the speedy formation of new adhesions. The difficulty was easily solved by a procedure the various steps of which were given by the author in the following language: "The fundus is grasped by a vulsellum and pulled backward and upward in the direction of the promontory. The reflection of the bladder peritoneum upon the cervix, which now becomes plainly visible, is incised transversely as in a hysterectomy, and pushed off from the uterus. If this blunt dissection with the finger is gentle enough and does not extend into the broad ligaments, the bleeding is usually insignificant and is quickly checked by the pressure of a sponge. The uterus is then tilted forward, the bladder peritoneum is pulled over the uterus and stitched to the posterior aspect of the fundus, where an intact peritoneal surface presents itself. In small uteri, the bladder peritoneum may be fastened as far back as the insertion of the sacrouterine ligaments, if necessary. After the first or second turn of this continuous catgut stitch the vulsellum is removed and the stitching is continued until the entire fundus with its denuded area has disappeared beneath its new peritoneal covering. By using an inverting stitch, even the catgut knots become visible. The newly formed covering consists only of the bladder peritoneum which, in many cases, is so thin and transparent that the raw uterine surface and even the vulsellum holes may be distinguished." The method just outlined not only supplied the raw fundus with a new serous coat, but it also safeguarded a normal position and mobility of the uterus, and the late results had remained most satisfactory. It was, however, not to be relied upon exclusively in a case of fixed retroflexion. In such a case the order of the operative steps was, *first*, loosening of the bladder peritoneum as described above; *second*, shortening of the round ligaments; *third*, fastening of the bladder peritoneum to the back of the uterus beyond the area of denudation. He anticipated two pertinent questions. Was the function of the bladder disturbed after this procedure, and what happened to the bladder in a subsequent pregnancy? In the six or seven years that he employed the method, he had never observed an instance of vesical disturbance other than those that might follow any laparotomy.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON SURGERY.

Stated Meeting, Held March 5, 1920.

DR. SEWARD ERDMAN IN THE CHAIR.

Recurrent Dislocation of the Shoulder. Operative Results.—(4 cases.)—Dr. JAMES N. WORCESTER presented these cases.

CASE I.—This man, 35 years of age, had dislocated his left shoulder, on the Mexican border in 1917, by quite severe trauma. The arm was never immobilized but carried in a sling for two weeks. Ten days after this he sustained a second dislocation, which was reduced and treated as the first. Following this there were repeated recurrences up to forty or fifty times, caused by the slightest motions, as slipping off a coat. He was totally incapacitated for work. A brace was tried for preventing abduction without success. The first two reductions were rather difficult; the following ones were easy with the Kocher method. Physical examination showed a typical subcoracoid dislocation. Operation was performed on October 3, 1919, at the Clinic for Functional Re-Education. On the inferior and unsupported aspect of the capsule of the joint was a definite defect, triangular in shape, the base of the triangle being the line of attachment of the capsule to the margin of the humeral head and being about three-quarters of an inch in length. The longitudinal tear extended almost to the margin of the glenoid cavity, gradually diminishing in width. The anterior margin of the defect was quite sharply defined, while the posterior was much thickened and was formed by the adherence of the turned back triangular portion of the capsule. During operation by simple abduction of the arm a dislocation was easily produced. The operative procedure was as follows: A four inch incision beginning at the coracoid process running downward and slightly outward was made, the sulcus between the deltoid and pectoralis major found, and the two muscles separated in the axis of their fibers. This exposed the tendinous insertion of the subscapularis, which was divided transversely as was also the insertion of the pectoralis major for a distance of an inch. With deep retraction the inferior surface of the joint capsule was exposed. Considerable difficulty was found in overlapping the two edges of the defect in the position of abduction and external rotation which gave the best exposure. The outer three-quarter inch of the posterior margin of the defect were sutured to the periosteum along the rim of the humeral head and the remainder of the rent in the capsule was closed by means of mattress sutures with the arm in internal rotation and partial abduction. The subscapularis and pectoralis major were resutured with mattress sutures of chromic gut. The deltoid and pectoralis were approximated with plain gut, and the skin closed with silk worm and silk. There was no drainage. The arm was approximated to the chest with a Velpeau bandage. The wound healed by primary union. The arm was kept in adduction and internal rotation for twenty-one days. Following this active motion was started, limiting external rotation until 35 days when active and passive motion and massage were started. At the start abduction and external rotation were markedly limited but at present the limitation comprised only a few degrees. There had been no recurrence. He rather encouraged a slow stretching. There was still some doubt as to the man's ability to stand extreme muscular effort.

CASE II.—This patient, 32 years of age, Dr. Worcester said had first dislocated his shoulder by a fall aboard a transport in June, 1918. The dislocation was reduced but not immobilized. It recurred shortly after and had since been out thirty to forty times, gradually occurring more and more easily. At operation, on October 9, 1919, no defect could be found in the capsule at any point. The inferior portion of the capsule was very much elongated, so that the head could be slipped into the dislocated position with great ease during the operation. No other anatomical abnormality was found. The inferior portion of the capsule was opened transversely, parallel to the humeral margin and about one inch distal to the humeral margin, the incision being about two inches in length. The cut inner edge was then sutured underneath the outer flap to the margin of the humeral head by mattress sutures of chromic gut and the free edge of the outer flap was tacked down with chromic gut. The muscles and skin were sutured as in other cases. The wound healed by primary union. Immobilization was carried out as in the preceding case. On the first day after the Velpeau bandage was removed the patient fell down a subway steps receiving multiple contusions, but did not dislocate the shoulder though he struck it. Abduction and external rotation were moderately limited following removal of bandages but had rapidly returned to almost normal with exercise and mechanotherapy. He was doing fairly hard work as a farmer.

CASE III.—This patient, 25 years of age, first dislocated his shoulder in January, 1918, by a fall. No retentive dressing was applied, and a few months later it was dislocated again. Since then dislocation had recurred about nine times. In August of the same year his left shoulder was dislocated by a fall from a platform about four feet high, and this had also recurred about eight times. On several occasions both shoulders had been out simultaneously. He was admitted to the Second Surgical Division of Bellevue Hospital, and operated upon on June 17, 1919. On reflexing the subscapularis tendon and exposing the inferior aspect of the capsule, a triangular defect was found with the base of the triangle along the humeral attachment. The long axis of the tear ran toward the glenoid margin for a distance of about two inches, gradually diminishing in width. The anterior margin was sharp and well defined while the posterior was thick and apparently doubled back. A slight amount of clear fluid was present. A small fragment of cartilage escaped when the joint was opened. The inferior portion of the capsule was definitely increased in length. The humeral head did not seem to escape through this rent as the dislocation could be reproduced on account of the laxity of the capsule. A similar exposure was made as in the other cases. No attempt was made to resuture the capsule to the humeral margin as, owing to the laxity of the capsule, it was possible to overlap the posterior margin of the tear over the anterior for a distance of three-quarters of an inch along the whole length of the capsule, forming a distinct band or ligament. This definitely shortened the capsule without limiting abduction unduly. A Pagenstecher suture was used in this overlapping and the free edge was tacked down with chromic gut. The subscapularis was resutured with chromic gut and also the pectoralis major. The deltoid and pectoralis major were approximated with plain gut, and the skin with silk worm and silk. The arm was approximated to the side with a Velpeau bandage. The wound healed by primary union. The arm was kept in abduction and internal rotation for fifteen days, and abduction prevented for fifteen days more, when active and passive motion were started with caution. There was very slight limitation of any motions. The patient returned to the hospital on October 22, 1919, for operation on his left shoulder, which was done at the Clinical Congress of Surgeons. There was a distinct separation of the capsule from its humeral attachments on its inferior aspect, about 1½ inches in length, filled with a thin fibrous tissue. The gap between the torn edge of the capsule and the rim of the humerus was almost an inch in length, making the capsule on its inferior aspect markedly elongated. The torn edge of the capsule was freshened and sutured to the periosteum of the humeral margin with mattress sutures of chromic gut passed through the capsule about one-half inch from its edge and the free edge was sutured to the periosteum at the base of the lesser tuberosity. The wound healed by primary union. The arm was kept in adduction and internal rotation for twenty-one days. There was very slight limitation of motion and the patient was doing heavy work, which he stated would have dislocated his shoulders before the operation. Three of these cases showed a condition different from that described by the majority of writers on the subject in that the separation of the capsule from its bony attachments was at the margin of the humeral head rather than at the glenoid margin. The simple laxity of the capsule described in Case II had been

reported frequently, but if we were to regard all dislocations as sprain fractures, which he thought we should, it might be that he had overlooked a similar condition to that found in the left shoulder of the last case and that the separation had been healed with firm fibrous tissue which had stretched. This type of case was not particularly common when one considered the number of shoulder dislocations. He thought an exception to the theory of early mobilization of joint injuries might be made in these dislocations, and that a position of internal rotation and adduction for 18 to 29 days might give a chance for the torn capsule to heal in a fairly normal relation and prevent recurrence.

Dr. GEORGE H. SEMKEN said he felt that Dr. Worcester should be congratulated on having obtained such brilliant results in all three cases. He recalled two cases, one of which showed a laceration of the capsule. If the dislocation was the result of trauma and there was laceration of the capsule the method of procedure indicated was to repair the capsule. If there was no such obvious trauma the question arose as to what produced the condition. In repairing the capsule he had used a fascial graft such as Ferguson adopted in operating on keloid. This skin graft contracted and was converted into a fibrous cord which strengthened the flaccid capsule. One could make use of this procedure to reinforce tissues still remaining. It was an easy matter to expose the shoulder joint through the inferior and anterior aspect, which gave access to the triceps fossa.

Dr. ARMSTRONG asked Dr. Worcester if he had had any trouble from injury to the nerves coming from the brachial plexus. He knew of one instance in which there was a very troublesome complication due to injury to a nerve.

Dr. ERDMAN said that Dr. Worcester's cases suggested the question whether mobilization was applicable to all points and whether there were not certain types of operation in which early motion was contra-indicated.

Dr. WORCESTER, in closing, said that in all these cases there had been a definite defect or a definite laxity of the capsule which would be repaired by this operation. His idea was not to reef so tightly as to limit abduction and rotation. He had never tried to use a fascial graft for he feared it would contract too much and one would then get marked limitation of abduction. Another point was that the incision used perfectly avoided the vessels, going a little to the inside; then they could be retracted, and there was no hemorrhage. If there was hemorrhage it would make operation difficult, because one was working in a deep cavity. He did not think the incision through the deltoid gave as free access to the anterior and superior parts of the joint as the one he had used. As to Dr. Erdman's question concerning mobilization, he felt quite strongly that every dislocation was a sprain fracture, the capsule being torn from the margin. Certainly in the shoulder the way that capsule would heal most normally was when the inferior portion was without tension and that was by abduction and internal rotation; hence he felt that the shoulder should be immobilized, as in these cases, from 18 to 20 days. Then a torn capsule would heal in a fairly normal position, and there would be fewer recurrences than if the arm were mobilized immediately.

Injection of Gasserian Ganglion for Trifacial Neuralgia.—Dr. EDWARD W. PETERSON reported this case. He stated that the patient had suffered for eight years with intractable trifacial neuralgia. He had had to give up work and was under the influence of opiates most of the time. His condition was such that relatives thought his mind was affected. An injection of ½ c.c. of 2 per cent. novocaine, followed by 1 c.c. of 95 per cent. alcohol resulted in perfect anesthesia, so that the patient could not feel a cut or pin prick. Following this procedure he had not ordered morphine, and the man complained of a little pain, so a second injection was given, but he was inclined to think the man complained of the pain because he desired an opiate. Following the second injection there was dilatation of the pupil. The anesthesia and analgesia were perfectly satisfactory. The man was able to return to work in a few weeks and had gained from 15 to 20 pounds. His general condition was satisfactory. As to the technique of making the injections, he had first tried it out on the cadaver. One could use the Hartel, Schlosser, or Offenhaus methods. The puncture was made opposite the second upper molar, passing a spinal anesthesia needle in until the infratemporal plane was reached, and then going downward and inward until one entered the foramen ovale. One could tell when the foramen was reached because there was no sense of resistance. One should then pass the needle about 1½ cm. further, and make the injection very slowly. If the needle had reached the proper place the anesthesia would be immediate, one would have injected all three branches of the trifacial nerve, and anesthesia would result in the area supplied by the branches of this nerve. It might be necessary to make the injections from one to three or four times in order to get complete analgesia. Dr. Peterson said he had treated about twenty cases in this way. The method was 100 per cent. efficient if the technique was properly carried out; if the results were not good it was the fault of the technique and not of the method. As the procedure was painful, it was better to do it under gas anesthesia. As the novocaine produced immediate anesthesia the injection of the alcohol was practically painless. The needle should be left in place after injecting the novocaine, and the alcohol injected before removing it. Some of these patients had been taking morphine and might claim that they had pain when such was not the case. As a rule one injection into the ganglion sufficed; if it did not it could be repeated.

Dr. ROBERT T. MORRIS asked Dr. Peterson whether in these cases he knew anything about the possibilities of recurrence, and how long after this procedure the patients had had immunity from neuralgia. Neuralgia was a symptom for so many conditions that it was merely a sort of expression like a cough indicating trouble somewhere else. The neurologist, with his attention centered on neuralgia as a diagnostic entity, was very apt to overlook other conditions. A study of peripheral irritation and of focal infection was required in almost any case of neuralgia. As a rule the ground was only partly covered by the diagnostician. The length of immunity period after an operation like that Dr. Peterson had described would depend upon the kind of trouble that had expressed itself in this symptom of neuralgia.

Dr. PETERSON, in closing, said the average time these patients were free from neuralgia was about one year. The shortest time in his series was about six months, and the longest time where the injection had to be repeated was about three years. He thought the average time was from twelve to fifteen months. As to the cause, if one could find any of the causes that Dr. Morris had mentioned the case was not suitable for injection. These were the "essential" neuralgias. If there was sinus trouble, tooth infection, eyestrain, syphilis, tumor, or any other definite cause to explain the neuralgia, it was not a suitable case for injection. As to the possibility of corneal ulceration, one had to protect the eyes just as in a Gasserian ganglion operation. The anesthesia was such that the possibility of corneal ulceration had to be taken into consideration. The injection method was only palliative, or occasionally curative. According to Sicard quite a number of cases had been relieved permanently by this method. He had one patient, sent to him by Dr. John Erdman, whom he had injected three times. The first injection gave relief for fifteen months, the second for twenty-five months, and the third injection was given last May, nearly one year ago; the patient was still free from neuralgia.

Willem's Treatment Following Operation for Internal Semilunar Cartilage.—Dr. BURTON JAMES LEE reported this case for the purpose of bringing up the subject of Willem's treatment by active joint mobilization following joint operations as it was employed in the war zone, where immediate mobilization without splints had been used with marked success. The patient who illustrated this principle entered the New York Hospital early in February. He was 24 years of age and had had symptoms for eleven months. On several occasions the right knee joint had locked, with pains over the internal semilunar cartilage and a subsequent

effusion into the joint. The man had been incapacitated for work for almost a year. The operation was done through a small transverse incision through which the semilunar cartilage could easily be seen and readily delivered. The synovial membrane was sutured separately with catgut, the ligaments with chromic gut, and the skin with silk. Active mobilization was instituted immediately following the operation, and was continued at frequent regular intervals. No passive motion was allowed. The point made by Willems was that passive motion traumatizes while active motion was nontraumatizing. Another point made by Willems was that most dressings applied to the knee were large and bulky, and interfered with immediate mobilization. Very limited dressings were used after the third day. The case also illustrated the degree of flexion that could be obtained by immediate mobilization. Seven days after the operation the man was walking about the ward with the aid of a crutch. Dr. Lee said he reported the case because he felt that we should make use of the lessons learned during the war in civil surgery. This principle had been used abroad very successfully, giving good results even in suppurating joints and acute septic knees if there was not a massive fracture with displacement. The patient was encouraged to move the joint from the first. In the war hospitals he had seen at one time as many as six or eight patients walking about the ward with their knee joints exuding pus and without pain. The patient presented this evening had been operated upon one month ago. There was still a certain amount of fluid in the joint which he attributed to the fact that the patient had not worn a compressive bandage.

Dr. CLARENCE A. MCWILLIAMS said that Willems did not use splints. The patient, as soon as he came out of the anesthetic, was immediately made actively to use the joint, and to keep up moving it every two hours of the day and night until the joint had perfect function. The movements were all active, never passive, as passive motion caused pain and injury to the joint which took time to repair. He had recently seen two cases of semilunar fracture, one of which was caused by a bullet wound, in which there was effusion into the joint. This sometimes happened, and with the old form of treatment it took from three to five or six weeks to get over the effusion. Willems, in such cases, immediately aspirated the joint, and as soon as the fluid was removed the patient moved the joint. It was frequently the fluid in the joint, and not inflammation, that prevented motion. The fluid might reaccumulate and the joint might have to be aspirated four or five times, but if active motion was begun at the time of the first aspiration the patient lost no time from work and was cured. That was true also of chronic synovitis. The method was, as Dr. Lee said, particularly applicable in septic joint. Willems had published a report of 100 cases, in which there was not a single death. In one hospital of the A. E. F. there were 80 cases of septic joints; there were 8 deaths among the 80 cases, and something like five or six amputations. He had seen the Willems method employed in other hospitals in France, and the results of the treatment were infinitely better than by any other means. As soon as the patient came out of the anesthetic he was made to actively move the joint, lifting it a little from the bed. It was surprising how little pain movement caused. It was likewise surprising how much drainage was obtained by the contraction of the joint. These patients walked about the ward without temperature or constitutional symptoms, such as one expected to see in septic joints. All fractures in which there was no dislocation of the fragments to be produced by the movement should be treated by this same method, and there were comparatively few fractures in which there would be a dislocation of the fragments because of motion.

Dr. JOHN J. MOORHEAD asked why Dr. Lee had used the transverse incision. He said the incision he used when he was not sure whether or not he was dealing with a semilunar dislocation was the patella-split, the one advised by Sir Robert Jones. He could verify the usefulness of early mobilization in all sorts of joint injuries. He had learned of a modification of the method from English surgeons, namely, in sensitive individuals who would not move the joint a start was made by placing a small pillow under the knee and gradually raising it as the day progressed. Then at night the pillow was depressed. In this way the patient would retain more confidence than if he was forced to bend the joint against his will.

Dr. LEE, in closing, said he thought with the transverse incision one gained easier access to the cartilage. He had used the vertical incision and thought it not so good. Concerning the general principle involved in Willem's treatment, it was very revolutionary, particularly in septic joints. One word of warning should be given, however, for one heard all sorts of opinions as to the efficiency of this method of treatment. What really happened was that when there was great activity in the American army abroad green surgeons were assigned to duty who did not apply the treatment well. Dr. McWilliams had followed out the treatment carefully. Dr. Lee stated that after the armistice he had visited all the American hospitals, and had found that the treatment had always been immobilization in the cases which had come to amputation or had resulted fatally. In bad septic knee joints nothing would drain the joint except active motion.

The Use of Picric Acid in Preparation of the Skin.—Dr. CHARLES E. FARR read this paper, in which he stated that picric acid had been used in the preparation of the skin for operation at the New York Hospital for about two years. The properties which particularly commended it for this purpose were the absence of irritation, its quality of penetration, and its bactericidal power. Picric acid in 5 per cent. alcoholic solution could be applied with impunity except to the conjunctiva. Care must be taken not to tan the skin too much or blebs might form and infection ensue. It was true that where infection or impetigo existed irritating chemicals, such as iodine, must be used with exceeding care in connection with picric acid. In order to determine the effect of picric acid on the peritoneum, experiments had been carried out on guinea pigs, applying acids of varying strengths to the peritoneum. There seemed to be no ill effects except that the animals were slightly shocked by the peritoneal irritation. Laparotomies were performed on these guinea pigs after several weeks, and no adhesions were found. The intestines at the time of applying the picric acid were subjected to a good deal of handling, and in spite of this the animals made a good recovery, and later, at post mortem examination, nothing abnormal was found. They had concluded that in guinea pigs picric acid did not cause adhesions. There was no systemic or toxic reaction following its use, even when large areas of the skin were covered. It was not to be expected that any germicidal preparation would penetrate to all the layers of the skin, but the penetrating power of picric acid was about that of iodine. It had decalcifying qualities and because of these it might extend further and last longer than iodine. It seemed possible that picric acid acted not so much through its germicidal power as through its mechanical properties; it enmeshed, held, and sealed germs in the skin. Practically all the picric acid applied remained on or in the skin. That was the great objection to its use; it was exceedingly difficult to remove. Following the use of picric acid in the New York Hospital there had been a marked improvement in the appendix cases. Formerly the bad end results in chronic appendix operations had run as high as 28 per cent. Later they dropped to 20 per cent. Then they began using picric acid and the bad results fell to 11 per cent. It was noticed that the number of patients complaining of bad end results and of pain in the neighborhood of the incision, presumably due to adhesions, markedly diminished. The technique in the appendix cases was exactly the same with the exception of the use of picric acid. From the standpoint of clinical results picric acid compared favorably with iodine for the preparation of the skin, though no method could be accepted as satisfactory unless laboratory investigation showed that it met bacteriological requirements.

Dr. GEORGE WHITING WHEELER said that when Dr. Farr began these studies he had been asked to provide him with laboratory data as to the relative efficiency of picric acid and various antiseptics, especially iodine. It had been customary to accept the phenol coefficient described by Rideal and Walker, or by the United

States Public Health Service as the test of bactericidal power. By this test it was found that a 5 per cent. alcoholic solution of picric acid had a phenol coefficient of 0.3, giving it only one-third the bactericidal power of phenol. In the presence of organic material this coefficient was still less, being below 0.2. Seven per cent. iodine had a phenol coefficient of 15, therefore its bactericidal power is about 45 times that of 5 per cent. picric acid. These methods, however, did not take into account the fact that picric acid was to be used on the skin. To make the test under conditions more analogous to those of the skin, Elser's method, which gave an index of the penetrating and bactericidal power, was employed. With this test strikingly different results were reached than those obtained by the phenol coefficient test. This test consisted in making cultures of staphylococcus in agar-agar tubes. The tubes were inoculated and allowed to solidify, and then various disinfectants were added and their action observed in this resistant medium. After making these tests they concluded that the phenol coefficient alone was not very reliable, as an index of the practical value of any antiseptic to be used for skin sterilization. They then studied the question by the use of blood serum and body fluids, in order to approach still more closely to the conditions existing in the living tissues. In that way they decided that the practical value of picric acid lay not simply in its bactericidal power but rather in its penetrating power. In tests of this kind picric acid, so far as its penetrating power was concerned, was almost if not quite as efficient as iodine.

Acute Osteomyelitis; Experimental and Clinical Study.—Dr. FREDERIC W. BANCROFT gave a lantern slide demonstration showing the results of attempts to produce experimental osteomyelitis in animals. In certain of these experiments a cavity was made in the bone of the animal and staphylococcus introduced and the hole sealed up with bone wax. By this method they had succeeded in producing a hematogenous osteomyelitis. In some of the animals in which the staphylococcus was introduced an acute fulminating infection resulted, causing death in about four days. Post-mortem examination of these animals showed an extensive suppurative oseomyelitis, and abscesses were found in the kidneys. By modifying the conditions of the experiments a chronic osteomyelitis was produced. In considering the treatment of osteomyelitis Dr. Bancroft emphasized the importance of conserving the blood supply and of preserving as much as possible the integrity of the bone. Even in cases in which there was pus under the periosteum, a certain number of cases would get well without medullary drainage. Secondary sequestra sometimes developed and involved a joint. When this occurred the joint should be aspirated. When septicemia developed blood transfusion was one of the greatest aids in treatment.

Dr. REGINALD H. SAYRE exhibited a series of *x*-ray plates bearing on the paper, though in this instance the epiphysis was involved rather than the shaft of the bone. He said that the child came into the hospital with a very high temperature. The abscess was opened and the culture of the pus showed the *Streptococcus hemolyticus*. The *x*-ray of the femur, showing a large sequestrum, made him feel that perhaps he should do a resection. The child, after the abscess was drained, was doing well, so he waited and had successive *x*-rays taken, which showed the gradual disappearance of the foci, so the child was not operated upon. The last *x*-ray, taken in October, 1919, showed that the focus had apparently disappeared. The child was running about. The question in this case had been whether to scoop out the bone or follow a waiting policy, since some of these cases healed up of themselves, as shown by Dr. Bancroft, particularly in children. There was no question that early drainage in acute osteomyelitis was most essential, and it seemed to him that a good many physicians not connected with hospitals did not recognize the urgency of the need for immediate operation. They waited until the child was acutely septic, and it was too late to save him. With the influenza there had occurred a great many bone infections with subsequently secondary infections in other bones.

Dr. L. T. LE WALD asked how early Dr. Bancroft was able to obtain *x*-ray evidence of the existence of acute osteomyelitis. He was often asked to diagnose an acute osteomyelitis by radiographic examination, and ordinarily he could not do it early in the course of the disease.

Dr. BANCROFT, in closing, said they did not get pictures of the cases that died of acute fulminating osteomyelitis. He had found the *x*-ray of no help in the early stages. He did not think it showed anything for two weeks, not until there was death of the bone and subperiosteal involution.

Non-Rotation of the Colon and Its Relation to Appendix Pathology.—Dr. DUDLEY ROBERTS reported this case, which he illustrated by lantern slides. He stated that when the *x*-ray examination of this patient was made and showed the bismuth streaming into the iliac fossa, they thought they were dealing with an artificial fistula connecting the small with the large intestine, but on further study it proved to be a case of non-rotation of the colon, a condition which he found had not often been reported. Non-rotation of the colon was characterized by the ileum entering the cecum on the right side rather than on the left; the cecum faced the inner side of the body and that happened in all cases, no matter at what stage of rotation the case was left. In going through the literature he had found only 18 cases. In six of the 18 cases the operator had been unable to find the appendix in the normal location, and subsequently found that there was a non-rotation of the colon and the appendix was on the left side. This patient gave a rather interesting history of pain in the lower abdomen, somewhat to the left of the median line, and attacks of nausea and vomiting during a period of ten years, but his condition was never definitely recognized as related to the appendix. Dr. Roberts thought that failure of rotation of the colon was likely to be associated with a pathological condition of the appendix, though he could offer no explanation.

Dr. L. T. LEWALD said he had seen four other cases of non-rotation of the colon besides the one Dr. Roberts had reported. All were of about the same type, though there were several variations, most of which had been illustrated by Dr. Huntington in his work on the subject. The first slide which Dr. LeWald showed he said was of considerable interest, as it showed almost the duplicate of what Dr. Huntington had shown, namely, the relationship of the duodenum to the non-rotated colon, which might lead to serious error if the condition was not recognized. In one instance a radiologist reported a lesion about the duodenum, and advised operation. In this case no *x*-ray study had been made of the colon, but when finally the entire intestinal tract was studied the condition was recognized and no operation was performed. A second case of which *x*-ray plates were shown gave practically the same history, and in this instance also only the stomach had been examined by the roentgenologist. At operation an incision was made in the median line high up, and then by reaching over to the left side an attempt to deliver the appendix was made. This was impossible to do. No further operative procedure was carried out. He scarcely felt that there was justification for associating appendicitis with non-rotation of the colon. He had seen two cases associated with duodenal ulcer. In one of these Dr. Downes had not known that the condition of non-rotation existed and he had picked up a piece of the small intestine and nearly started to anastomose it with the stomach. Dr. LeWald said he had immediately suggested that it was a case of non-rotation of the colon; this was proven to be the case and an anterior gastro-enterostomy was done. In another case, the *x*-ray plates of which were shown, was not operated upon. The fourth case was one with pylorospasm and pyloric obstruction in a child 12 years of age, in which the *x*-ray showed non-rotation of the colon. So he felt that one could not say that non-rotation of the colon was associated especially with appendiceal disease. Dr. LeWald said he had mentioned in the article to which Dr. Roberts had referred that one might see a combination of non-rotation of the colon and transposition of the viscera, which would bring the appendix back on the right side. Such a case he believed had been reported in one of the South American journals.

Miscellany.

How Smallpox Was Fought at Milan.—Bordoni Uffreduzzi, director of the health office at Milan, describes in the *Annali d'Igiene* for February, 1920, xxx, 2 the recent stamping out of variola in that locality. The disease had appeared in 1896, 1901-4, 1911-2, and lastly in 1917, when it was diffused over much of Italy. It first appeared at Turin among war prisoners and in a short time 1,467 cases had been reported in several hundred foci. In 1918 the total number of victims had reached over 4,000, and in 1919 the total had advanced to 32,780. In Milan there was no case until 1918, and that year but two were reported, and in 1919 the total was but 75 in a population of over 700,000. It is therefore evident that an effective prophylaxis must have been in force. This goes back to 1902, when it was made compulsory to notify cases of varicella. There have been vaccination laws in Italy, making the act compulsory since 1892. These comprise revaccination after a stated interval. If left to the community not a third of the newborn children would receive the primary vaccination. Hence summons are issued to refractory patients and if need be repeated. The period of primary vaccination reaches through the first two years of life, while revaccination is intended to occur between the ages of eight and eleven years. There is a special provision to cover immigrants to the city. Not less than 80,000 individuals are vaccinated annually in Milan, but despite the large figure it is not claimed that the community as a whole is protected. But relative immunity is secured so that chain transmission is impossible. The number of nonimmunes and partly immunized cannot of course be computed and one can only compare Milan with other places, often of relatively small size, in which the laws have not been enforced with the same rigor. Thus in Bari in 1919 the number of cases reported was 2,687, and most of the victims were young children, as was always the case in Jenner's day. In Naples, which is about the size of Milan, the number of smallpox victims in 1919 was 2,066. The immunity of Milan is due to strict enforcement of the laws. In the twenty-four years of the Isolation Hospital not a single attendant or physician has contracted smallpox from the patients, vaccination having proved a full protection.

The First Case of Ainhum in Peru.—Drs. Soto and Raffo of Lima have reported this case in *El Siglo Medico* for May 8, 1920, lxvii, 3465. The patient entered the San Juan de Dios Hospital in that city in August last. He was a negro aged 29 and engaged in agriculture in Chincha. There was apparently no question as to the diagnosis and the patient affirmed that several other members of his immediate family suffered from the same malady. These were his mother, his mother's mother, and a cousin on the maternal side. The father and his people were intact. The patient had noticed his affection six years before. The author points out the countries in which ainhum is endemic. These comprise much of Africa where the negro is the usual victim, Madagascar, India, etc., and in the Western hemisphere Brazil. Rarely cases have been seen in the North American negro. The disease has been practically limited to the dark races and especially is the negro affected. It has been seen in Argentina, but the author mentions no other South American State, always of course excepting Brazil. On account of its prevalence on the African West Coast it might conceivably be smuggled into Eastern South America, but not the Pacific coast. It seems to have made its way into Polynesia, however, and in time may spread to countries thus far immune. The cause and mode of propagation are obscure. It is said to be due to local trophic causes, central trophic causes, parasites, etc., and at times, as in the present episode, has a familial or hereditary tendency. Castellani regards it as parasitic and the flea ox-chigger may possibly be the agent of transmission. Manson sees nothing more than a purely mechanical motivation beginning in petty wounds in men who go barefoot, these wounds leading to the development of a cicatricial process which amputates the toes. Division of the constricting bands interrupts the process.

Rabies Disappears from Poland. — One of the curious results of the war reported by the American Red Cross in Poland is the almost complete disappearance of rabies. Five years ago rabies was a very common disease in that country, presumably owing to the large number of wolves and semi-wild dogs. The Pasteur Institute in Warsaw, which was opened by Pasteur himself, and which was the second Pasteur Institute in the world, is said to have given more innoculations than any other institute. When the American Red Cross first visited it, however, to offer assistance, they found only one doctor and one patient. The building had been stripped by the Germans, but the lack of equipment was not taken very much to heart by the two occupants. "You see," explained the doctor, with a smile, "we don't have very many mad-dog cases now, because the Germans ate up all the dogs."

Early American Edition of Lavoisier's Chemistry.—Graham Lusk of New York and Jean Le Goff of Paris contribute an article on this subject in the *Gazette des hôpitaux* for May 1, 1920, xciii, 41. The edition in question does not seem to have been known to bibliographers, but a copy fell into the hands of Professor Lusk which is merely an American imprint of the fourth edition of Robert Kerr's English translation of the original French work. The date is 1799, and the publisher, Matthew Carey, Philadelphia. The original English edition was issued in 1790, and according to data found in the British Museum the fourth English edition bore, like the American issue, the date 1799. It is known that a fifth edition appeared in Edinburgh in 1802 and in New York in 1806, and up to the time of Dr. Lusk's find this edition passed as the first American. The original French edition came out in 1789 and, as already stated, the first English edition appeared one year later. The first Spanish edition appeared in 1798, the first Italian in 1791, the first Dutch in 1789 and the first German in 1792. Five English—seven including the two American editions—appeared in the space of sixteen years and four Dutch editions in twelve years. Three French editions are mentioned.—1790-1801.

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TONSIL INFECTIONS.

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SINCE Billings first emphasized the importance of focal infections, considerable literature has sprung up on this subject. Many physicians have been very enthusiastic concerning the results obtained by eradicating focal infections, while others are still lukewarm and at times skeptical. I feel, however, that too much importance cannot be attached to the tonsils as a source of infection. It is my conviction from careful observation of all patients that have come under my care during the past ten years that the tonsil is by far the most common source of chronic focal infection we have to deal with, and that this infection is far more common and widespread than most of us are apt to conceive. A few moments' thought will readily convince one that this is but natural.

The tonsils are infected in many cases early in childhood. Everyone doing general practice has seen cases of tonsillitis in very young children, even in infants of one to two years old. These tonsils may be repeatedly infected, so that throughout childhood a number of such attacks occur, and the glands in the neck become enlarged, showing that the infection has spread past the tonsils into the lymph stream.

From the anatomical structure of the tonsils we can readily see that once the deeper parts are infected, the tonsil can never completely empty itself of the infected material; but, on the other hand, as shown by Rosenow, the gradatibns in oxygen pressure within the tonsil make for excellent culture material.

The fact that when the child reaches the age of fourteen or fifteen the attacks of acute tonsillitis subside, often mislead us into the belief that the infection has subsided. It is at this time, however, that the systemic effects become manifest, slowly, insidiously, but nevertheless, surely.

The majority of otolaryngologists to whom I have put the question regarding the function of the tonsil agree that the tonsil normally should atrophy after adolescence. If this be true, we are justified, I believe, in considering practically every tonsil in the adult a pathological structure, and that this tonsil tissue was prevented from undergoing physiological atrophy because of the residual infection within it. If this be true, the possibilities of injury to the body by this focus of infection become of greater importance than we have heretofore realized. It is easy to go one step further and realize that it is entirely possible (and often the actual state of affairs) that the tonsil is the primary source of infection from which many other foci of chronic infection may be developed (excluding, of course, dental infections).

Deaver[1] states that in many cases of gall-bladder infection he has been able to trace the infection back to the appendix. I believe that we can go still further back and trace the infection of the appendix to the tonsil. That the infection of the appendix, gall-bladder, and even ulcer of the stomach and duodenum are hematogenous in origin, and that the tonsil is often the source of infection, has been conclusively shown by Rosenow. While this fact has been recognized in a general way, its specific application to the cases of appendicitis and gall-bladder infection constantly coming under our observation is usually overlooked.

In a paper read before the Toledo Academy of Medicine, February, 1914, I made the following statement: "In order that more definite information may be obtained, it is necessary that the tonsillar history of every case of appendicitis going to operation should be specifically noted. Only in this way can we hope to determine whether hematogenous infection of the appendix does occur and its frequency."

I have paid particular attention to this history. I can say definitely that I cannot recall a single instance in which the tonsils were not infected, or had not been the cause of so much trouble that they had been removed within a short time prior to the attack of appendicitis. This holds true, though not so uniformly, for gall-bladder infections also.

In gall-bladder infection, lymphatic infection and infection upward from the duodenum undoubtedly occur. But here again we must consider the possibility of it being secondary to an infective gastritis[2], which may result from the infective material being swallowed as it is forced out of the tonsil crypts.

But little need be said at this time upon the subject of rheumatic, arthritic, and endocardial infection. This is universally recognized. The fact that I am anxious to bring out is that a large proportion of the patients that ordinarily visit our offices are suffering either directly from a tonsillar infection, or it is an associated factor in the patient's debility, and that the economical importance of this subject has been largely underrated.

The number and variety of conditions which in

my experience have been due to tonsillar infections are very large and it might be worth while to mention briefly a few of these varieties. In the young child it is a common thing to be told by the mother that the child does not eat. These children not only are poor eaters, but they are very particular in the choice of foods. They eat only foods that tickle their palate, sweets. It is very difficult to get them to eat vegetables or even cereals, unless well sweetened. They have not a healthy appetite. The majority of them also complain of "belly ache" in the morning upon arising and will not eat any breakfast. They feel better along about eleven or twelve o'clock, and will partake of a little food at this time. Attacks of acute pain in the abdomen with some elevation of temperature and vomiting are not uncommon, often not associated with painful sore throat. Examination of the tonsil, however, will invariably show a number of white, cheesy deposits in the crypts of the gland.

Typical acute appendicitis will occasionally be seen in these children after a number of the attacks previously described have occurred. Removal of the tonsils brings about a remarkable change. The mother will tell the physician that it is almost impossible to give the child enough to eat, and that she has no further trouble in feeding vegetables. This is a rather common picture and not overdrawn. Many attacks of fever (febricula?) with no symptoms may be accounted for if the tonsils are examined in every case.

Mild infection with a moderate degree of anemia is not uncommon. This anemia may or may not be of the chlorotic type. One example may illustrate the type very well.

CASE I.—Miss J. H., age twenty-three, came to the office March 5, 1910. Complaint: feels tired, noticed some slight loss in weight, appetite has been poor, cannot do her work as saleslady as efficiently as previously. Menstruation scanty, but regular; bowels constipated. Has almost daily headaches. Physical examination revealed nothing abnormal anywhere, except that the tonsils were reddened and a slight amount of pus could be squeezed out from the crypts. She told me that so far as she could remember she had never had an attack of tonsillitis. Blood examination: Hb. 65 per cent., red cells 4,000,000, white cells 8,000.

After appropriate treatment for her anemia and attention to her bowels, she was soon feeling well again, weight and strength increased, and within three weeks she thought herself perfectly well. At the end of two weeks more the treatment was discontinued. She returned in three weeks feeling as bad as before; Hb. had again dropped to 70 per cent. Another course of iron and arsenic brought results similar to the first course, with a third relapse shortly after treatment was stopped. Examination of the tonsils again revealed considerable pus in both tonsils. Removal of the tonsil was then advised, and this was done by Dr. A. L. Steinfeld. Improvement began almost immediately, and without any further medication, within one month the patient thought she felt as well as ever; her Hb. was 85 plus, her color was good. This patient has remained well up to this time, a period of five years. This type of condition is very common.

Another very common type is one in which the chief complaint is of constant fatigue and lassitude. The patient gets up tired in the morning, feels moderately well along about mid-day, and again is fatigued by three or four o'clock in the afternoon. Headaches are common. Her social duties are too much for her, yet she cannot say that she is sick. A physical examination may show nothing whatsoever wrong, except the presence of infection within the tonsil, and at times I have noted a low systolic blood pressure of less than 110 mm. Hg. Removal of the tonsils in these cases is immediately followed by relief from the sense of fatigue. Often this result is brought about within twenty-four hours. The improvement may be in other ways also, as one patient remarked to me, "For years I have been mean and irritable. I have felt like biting people's heads off. Why, I feel like a different individual now."

Somewhere in my student days it was impressed upon my mind that the sense of exhaustion or fatigue upon arising is significant of neurasthenia. However, I am becoming more and more convinced that it is a characteristic symptom of infection, and particularly of tonsillar infection, because this is the most common infection in the body. A careful consideration of this class of patients will, I believe, still further lessen the number of cases that can be put into the class of neurasthenia.

Another type is one showing abnormal findings in the urine. These can be grouped under three different headings: (1) Cases of simple albuminuria. (2) Cases showing casts, slight amount of blood, with or without albumin. (3) Cases showing unusually large amount of blood, even to the passing of what appears to be pure blood.

The first type is not at all uncommon, and it is possible that if orthostatic or adolescent albuminuria were studied in large groups, as reported by Roger I. Lee[1] of Harvard University, and particular attention were paid to the condition of the tonsils, some association between the tonsillar infection and this albuminuria might be found. Lee found albuminuria present in 5 per cent. of every group of students examined. It is safe to say that the percentage of tonsil infections in these students is greater than 5. I have had five or six such cases all of whom came to me because they had been rejected for life insurance because of albumin in the urine. In all these cases removal of the infected tonsils cleared up the albuminuria.

It might be of some interest to try to account for the appearance of albumin in the urine in the students, as reported by Lee, after track work and exercise. The following experience is rather illuminating:

CASE II.—M. E., following scarlet fever, developed cervical adenitis and had daily fluctuations in temperature from 99.2° in the morning to 102.5° in the afternoon. She was a plump, healthy, active little girl of seven, an only child and rather spoiled, and as she felt comparatively well, despite her temperature, the mother was unable to keep her quiet. She bounced around in bed, played rather hard, and even got out of bed. It occurred to me that as she was not sick, if I could keep the little patient quiet, the temperature would subside. That her extreme activity probably resulted in massage of toxins from the glands into the circulation, resulting in her afternoon rise in temperature. As it was impossible to keep her quiet by ordinary methods, on account of the temperament of the child, I resorted to the use of sedatives. Sufficient chloral hydrate was given through the rectum to keep her somnolent for forty-eight hours. The first afternoon temperature was 99.8°, the second afternoon it was 99.4°, and never went higher. I had been watching her urine because of the possibility of nephritis; a trace of albumin was present during the time of her

high temperature and physical activity, but disappeared promptly with the drop in temperature and the complete physical rest.

This and a similar experience with a case of cervical adenitis following tonsillitis may throw some light on the effect of physical exertion on the presence of albumin in the urine, when a focus of infection, such as infected tonsils, is present in the body. A study of the cases reported by Lee from this standpoint may reveal some association between the tonsils and the albuminuria.

The second type is most common in the fourth decade of life. These patients occasionally complain of debility, lack of energy, often have a slight headache, suffer from vague and fleeting pains in various parts of the body, especially in damp or wet weather. An examination of the urine shows a considerable number of casts, chiefly hyaline, from 6 to 10 blood cells to a field, and occasionally a trace of albumin. The urinary findings vary from time to time; occasionally the urine being normal, at other times these findings are present. Not infrequently a history of a slight sore throat and stiffness in the muscles of the neck will precede the presence of these findings in the urine. Functional tests of the kidney show no loss in function.

The third type is less common, but very important.

I have had three examples of this type.

CASE III.—The first, S. S., eighteen years old, came into the office in March, 1916. Complaint: for four or five days had been passing what he considered pure blood in the urine. Urine passed at the office was of a bright red color, resembling thin, fluid blood. No pain was complained of, no backache. Has had repeated attacks of tonsillitis since childhood, otherwise considered himself well. The tonsils were very large—in fact, large enough to produce the thick voice associated with very large tonsils. Physical examination otherwise showed nothing unusual. The urine under the microscope resembled a drop of blood. The patient was referred to Dr. F. A. Douglass, who made a cystoscopic examination, and reported him back as suffering from "essential hematuria." The bleeding persisted for one week, at the end of which time an attack of tonsillitis again occurred. The patient was then advised to have the tonsils removed; after this attack subsided. Dr. A. L. Steinfeld removed the tonsils. Within one week no signs of blood could be seen in the urine with the naked eye, within another week the microscopic specimen was clear. The following summer the patient returned, stating that that morning he had again voided what appeared to be pure blood, and careful inquiry revealed the fact that he had eaten an unusually large quantity of rhubarb. The condition cleared up on advising him to eliminate this vegetable from his diet. Up to a year ago, when I last saw the patient, there had been no recurrence of the bleeding. The susceptibility of this kidney to hemorrhage from irritation by the oxalate crystals possibly points to some actual damage in the kidney as a necessary factor in the hemorrhage.

CASE IV.—The second case, S. G., boy, seven years old, had a nystagmus since birth. Except for this and repeated attacks of tonsillitis, the child had been well, until May, 1916, when the mother noticed the urine was of a bright red color. The urine showed both macro- and microscopically large quantities of blood. Physical examination showed the nystagmus and extremely large tonsils, with crypts wide open, a few of which showed cheesy débris and pus. The liver and spleen were slightly enlarged, but not tender. No other abnormal physical findings. Blood, Wassermann negative. Because of my recent experience with the previous case I advised tonsillectomy, which was done. The urine cleared up promptly, general improvement in the health of the child was also noticed, and no recurrence of the bleeding occurred during the next year, when the patient and family moved West.

CASE V.—The third case, W. M., age twenty-two. I saw the patient on August 30, 1919. He had been passing what appeared to be pure blood in the urine for a number of months. Felt extremely weak, tired, unable to work for several weeks, because of general debility. He stated that four years ago he had been refused life insurance because of some abnormal finding in the urine. Physical examination revealed a thin, rather sick looking individual, with a lemon yellow color of the skin. General physical examination: pupils react to light and accommodation; tongue pale, not fissured, normal moisture present; teeth clean, no pyorrhea, gums normal; tonsils submerged, hard on palpation, the pharynx pale; lungs normal; heart outlines normal, slight systolic murmur at the apex, transmitted upward and to the left; pulse 78; abdomen normal; liver and spleen not palpable, no tenderness anywhere. Extremities normal, except for slight muscular weakness. No pain or tenderness over the sternum, ribs, or long bones. Reflexes normal. Blood count: red cells 2,500,000, whites 4,000; Hb. 70 per cent.; color index 1 plus; blood smear; anisocytosis, polychromasia. No nucleated reds. Platelets appeared about normal in the smear. Blood, Wassermann negative; blood culture negative. Report of the bladder and kidney examination by Dr. M. B. McGonigle: essential hematuria. Gastric analysis showed total acidity 40; free HCl 20; no blood. Superficially the condition resembled pernicious anemia, but the normal condition of mouth and tongue, the absence of achylia and bone tenderness, the presence of a normal number of blood platelets, and the absence of spinal cord changes rule out this diagnosis. The injection of 10 c.c. of normal horse serum for three successive days failed to check the hemorrhage. Tonsils were then removed by Dr. J. J. Lasalle.

It is of interest to note that the pus in the right tonsil was evidently under greatly increased tension, for when the snare was tightened on the pedicle of the tonsil the pressure resulted in pus being forced out with so great a pressure that it shot past the face of the operator for a distance of at least two feet. The visible blood in the urine did not clear up within two weeks, and the patient became discouraged and sought advice elsewhere, despite the fact that I had warned him that I did not expect results in less than one to two months, because of the long standing of this condition.

After seeing a number of physicians he was again given some normal horse serum about six weeks from the time that the tonsils had been removed. Shortly after this the blood disappeared from the urine and the horse serum was given credit for the cure. However, I think it is safe to say that the disappearance of the infection after tonsillectomy is really responsible for the cure. I had a letter from this patient recently telling me that he is feeling well and gaining in strength right along.

These three cases are perhaps rather unusual and severe, but surely we must have gradations between this type of case and those in which we find just a few blood cells in the centrifuged specimen. Chronic interstitial nephritis is in many cases admittedly due to infection and toxemia. How many of these cases showing abnormal urinary findings in the fourth decade of life later come to us with all of the findings of a chronic interstitial nephritis? Probably a large number.

The association between infection in the tonsil and thyroid gland enlargement, both toxic and non-toxic, is a disputed one. There is sufficient evidence, however, to show that this is not an unusual association. Every general practitioner must have seen cases of simple goiter that have decreased in size very decidedly after the removal of infected tonsils. (I do not refer to the endemic goiter, prevalent in certain regions.) These cases

are too common for any dispute to arise. As to exophthalmic goitre, many surgeons are seeking out all sources of infection and removing these when found, oftentimes before the operation on the thyroid gland is done. One suggestive case might be related.

CASE VI.—Saw M. P., September 27, 1916. Six years ago complained of some pain in the right side of the abdomen, accompanied by vomiting and tenderness. Some soreness persisted on and off in this region until her appendix was removed one year later. During this time and since she has been very nervous, feels very tired, complains of soreness all over the body, and shakes all over. Appetite is excellent—in fact, she eats ravenously. Bowels move rather freely. Previous history negative, except for childhood diseases and repeated attacks of tonsillitis. Menstruation excessive and painful. Examination: expression of the face slightly anxious. Throat injected, tonsils large, red, crypts contain some cheesy débris, teeth in good condition. Thyroid gland uniformly enlarged. Soft bruit can be heard over the gland. Lungs negative, heart slightly enlarged to the left, apex being 10½ cm. from the mid-sternum line, sharp and thumping, systolic murmur at apex, transmitted upward and to the left. Pulse 150. Face and fingers cyanotic. No jerks except the fine course tremor in the hands and fingers. Temperature 99.4°. The patient was put to bed until the pulse came down to 110. On November 16 the tonsils were removed by Dr. A. L. Steinfeld. Patient improved gradually, so that at the end of two months her pulse was never over 90; she felt well, gained in weight and she was able to go to work for the first time in six years, and has remained well up to this time.

This perhaps is an unusual case, and such a result is not to be expected in every case. Of course, objection might be made that in the absence of metabolism tests this case might have been one of neurocirculatory asthenia. That, of course, is possible. However, it does not detract from the significance of the result. It is interesting that in this same family there were two cases, one the patient's mother, and a nephew, a boy of eight, who had daily drenching sweats, which were very exhausting, and persisted for a period in each case of about six months, before consent to removal of tonsils was given. Both were relieved by tonsillectomy.

Patients showing cardiac symptoms such as myocardial weakness and angina are not infrequently seen. Sir James Mackenzie[4], under the heading of "Toxic Angina," says in part. " . . . The more I see of them the less inclined I am to refer attacks of pain in women to a serious condition of the heart. I have laid down for my own guidance that women who suffer from attacks of angina under fifty years of age with no demonstrable signs of gross disease of the heart, suffer not from primary heart trouble but from some condition which produces general exhaustion, and the heart pain is an expression of the heart exhaustion, and serves as an indication to search elsewhere for the cause of the trouble."

These pains, Sir James Mackenzie finds, occur particularly in women with a hypersensitive nervous system. I have seen within the past year a patient of forty-six who suffered intense angina and a sense of exhaustion, who had distinctly infected tonsils and other signs of tonsillar infection, which I shall mention later. This patient refused tonsillectomy and after seeking counsel elsewhere has had her life limited, for over six months, to practically sitting about the house, because she is caught up by pain on slight exertion. Yet she has absolutely no demonstrable signs of heart lesion nor aortitis.

I have now under treatment a woman of fifty-five, whom I saw two years ago following an attack of tonsillitis, with a myocardial weakness, associated with slight edema and shortness of breath. At the present time she is suffering from another mild myocardial weakness, following another attack of tonsillitis, associated with joint pains. She has been considerably improved by the use of autogenous vaccines. The culture taken from the crypts of the tonsil showed a pure streptococcus. I might cite a great many such cases for they are very common.

Angina pectoris occurring during the period of rest is always suggestive of a focus of infection, and here again the tonsil must be carefully investigated, along with other sources of focal infection.

R. H. Babcock[5] calls attention to the necessity of examining carefully in cases of angina pectoris or apparent myocardial disturbances for some focus of infection in the mouth, throat, or digestive tract, and particularly emphasizes the association between heart weakness and gall-bladder infection. However, as many cases of gall-bladder infection are due primarily to tonsillar infection, the tonsils become important in these cases also. I have on several occasions seen patients with symptoms of extreme exhaustion, so extreme that it was an effort to raise the hand or the arm, they just wanted to be left alone, a peculiar ashen gray color of the face was noted, the lips were slightly cyanosed; this extreme exhaustion would last anywhere from one to three weeks; a temperature up to 99.5° was noted at times. At the end of this period in two cases that I can recall distinctly there occurred a chill, accompanied by rise in temperature to 103° F., with pain, tenderness, and rigidity over the gall-bladder, and associated with this was some soreness of the throat and tenderness in the glands of the neck. As soon as this attack subsided the patients' exhaustion disappeared and they were able to get up and about (Autovaccine?). Rehfuss[6] says of these gall-bladder cases: "These are the types associated with chronic appendical disease and they are the class in which gall-bladder infection occasionally is due to *primary focus of infection elsewhere* (italics mine.)"

It is possible that a large variety of skin conditions are due to foci of infection in various parts of the body. I have seen cases of psoriasis, infectious dermatitis, pompholyx, and other types of skin eruption clear up and remain so after the removal of badly infected tonsils. I do not mean to imply that all these conditions are invariably due to these infections, but that infection plays a part, I am convinced.

In determining whether tonsils are infected or not, certain things must be borne in mind. It is not sufficient to look in the throat to see if the tonsils are very large and inflamed in appearance. It is necessary either to hook the tonsil out of its fossa, or by retracting the anterior pillar to bring the tonsil into view. Then, by pressure, pus may

be expressed from the tonsil. The presence of a red, inflamed, or purplish looking anterior pillar nearly always indicates infected tonsils. Tonsils that have been subject to one or more attacks of peritonsillar abscess are usually infected. Small or submerged tonsils that show no visible crypts from which pus can be expressed are best examined with the finger. Palpation will show hard, shotty, and nobby masses within the substance of the tonsil. Perhaps this method of palpation is, all things considered, the best method for determining the presence of infection within the tonsil. For this method of palpating the tonsils I am indebted to Dr. Frank Smithies of Chicago.

These patients very frequently show, in addition to the other symptoms considered in this paper, occasional painful nodules in various parts of the body, especially over the external occipital protuberance, the breasts, and along the spine. I have seen these on a number of occasions over the sacroiliac region, and producing painful attacks which were attributed to sacroiliac disease. These nodules may show ecchymosis at some time during their presence. In size they vary from that of a pinhead to that of a pea. Their duration is from two weeks to several months. A history of having had these nodules can be elicited in a large number of these cases, and I consider this an important symptom. Another important symptom should be inquired about: nearly always, if asked, the patient will admit frequent stiffness and soreness of neck muscles (sternocleidomastoid) even if the throat does not get sore.

At the present time we are seeing an unusually large number of tonsillar infections, probably as a result of the activation of latent infections by the influenza epidemics which we have had in the past two years. Because of the emphasis recently placed upon teeth as a source of infection, it is not uncommon to see patients who have had their teeth rayed and suspicious teeth extracted, and other visible foci of infection examined without relief, show typically infected tonsils to which no attention has been paid. It is my impression, though of this I am not yet absolutely certain, as it is only recently I have given the matter any thought, that there is some difference in the manifestations of infection due to dental abscesses and those due to tonsillar infection. In a general way I would say that apical abscess is apt to produce trouble in one or two definite places in the body, such as a joint infection, iritis, etc., without making the patient feel bad as a whole. In cases suffering from tonsillar infections we nearly always find that they do not feel well besides suffering from joint pains, headaches, etc. They feel bad, are tired constantly, irritable, and have a number of minor complaints which are very suggestive. This differentiation deserves further study.

The frequency with which tonsils are now being removed in children will bear fruit in the coming generation. At the present time I think a more intensive study of the relationship of tonsillar infection to our overyday practice will result in considerable advance in our knowledge of the cause of a large number of conditions commonly seen in everyday practice.

Note.—Since going to press an article has appeared by L. A. Turley in the first number of the *Annals of Medicine*, showing that the tonsils removed at operation contain more bacteria per c.c. than are found in ordinary sewage. Where else in the body would this state of affairs be tolerated?

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216 MICHIGAN STREET.

OBESITY.

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EVERYBODY knows what obesity is, but very few can give an exact and satisfactory definition of it. A scientific man perhaps considers the collection of fat pathological when it interferes in any manner with the bodily activities of the individual, such as impairing locomotion, causing shortness of breath, palpitation, and disinclination to physical and mental exertion. We must admit that these are common effects, but all fat people do not necessarily show them. Those of us who have seen "Fatty Arbuckle" at the movies (and whó has not?) will give him credit for remarkable nimbleness of body and mind, and he acts as if he enjoyed it. It is hard to find a universally applicable standard of the proper relationship between normal height and weight, although elaborate tables can be found scattered through the books, and life insurance companies allow a variation of about twenty per cent. from these within the limits of health. Several short-cut rules are given for those who have no tables. Brinton thinks that a healthy adult male, 66 inches tall, ought to weigh a little over 140 pounds, and for every inch above and below this height we may respectively add and subtract about five pounds, also adding a little for advancing years. Moritz subtracts 100 from the height expressed in centimeters and takes the balance as a measure of the weight in kilograms. A woman's normal weight is supposed to be a few pounds less.

If any one desires to study the subject of Obesity historically, he can find an immense amount of material awaiting him in the larger libraries. The different degrees of it have been labeled as the *enviable*, the *comical*, and the *pitiable* stages; the first presenting itself as a pleasing rotundity, the second as a jovial embonpoint of the Falstaff type, and the third as a sad, unwieldy, and even disgusting deformity. We must not expect an agreement of opinion on the exact dividing lines. Many of the Hottentot women, for instance, have an immense accumulation of fat in the gluteal region, which is by their friends considered as a mark of great beauty; whereas some of our women with a small fraction of the enlargement make frantic efforts at hip reduction. It is entirely the point of view.

A short time ago the New York comic weekly *Life* had a very funny picture (it does occasionally) of a rotund and pretty young woman in a bathing suit at the beach, looking up and calling out to her husband who was just emerging from the bath-house in a very abbreviated suit, and who was so painfully thin as to be almost a skeleton: "That reminds me, Frank, did you think to buy those curtain poles?" This was apparently to call attention by contrast to her own plump and pleasing personality.

One of Dickens' most striking characters (or at any rate it so seemed to us in the days of our childhood) was his Fat Boy "Joe" in Pickwick, who spent his time in alternate eating and sleeping. He was once known (Dickens tells us) to defer eating to say to Mary, "How nice you do look!" "This was said (the author continues) in an admiring manner and was so far gratifying; but still there was enough of the cannibal in the young gentleman's eyes to render the compliment doubtful."

A well known critic says that Falstaff was the greatest comic character in dramatic writing.

The celebrated Sydney Smith, who was no light weight, said at one time in his memoirs: "The heat was so dreadful here that I found there was nothing left for it but to take off my flesh and sit in my bones."

In the Boston Medical Library is a curious English book about 100 years old, written by Dr. William Wadd, Surgeon Extraordinary to the King, who was himself an enormous man, and who collected a number of cases of corpulency with some pictures. His story of one is interesting. "On returning home after some years' absence I passed a man in the street without knowing him, although I had previously been well acquainted with him. He had from being as corpulent a person as I ever saw become altogether as thin. Upon inquiring what disease had wrought this effect on him, I found he had been in perfect health and continued so; but sheer poverty had laid its hand upon him and by depriving him of his usual good cheer produced the change."

We are thus forcibly reminded of numerous statements made by visitors to Germany during and after the late World War, all agreeing that a great many of the fat, greasy, beer-guzzling Germans formerly seen in the streets had been replaced by men worn thin by short rations.

In Gould and Pyle's "Anomalies and Curiosities of Medicine" (Phila., 1897) are gathered together many cases of extreme corpulency at all ages, showing clearly that "some men are born great, some achieve greatness, and some have greatness thrust upon them." Figure 168 represents Baby Chambers, a girl of 4 years, weight 256 lbs. A girl 5½ years weighed 250 lbs. Susanna Tripp at six weighed 203 lbs., was 3 feet 6 inches tall and 4 feet 2 inches around the waist. Another girl of 9 years weighed 201 lbs. Another girl of 11 years 200 lbs.

The most famous, apparently, of all fat men, was Daniel Lambert, who was born in Leicester, March 13, 1770. He was like other boys till he was 14 years old. I met him so often in all the encyclopedias and treatises I consulted, that finally I felt almost on terms of intimate acquaintance with him. At 39 years he weighed 739 lbs. and measured 9 feet around the body and 3 feet around the leg. Edward Bright, fat man of Essex, weighed 616 lbs.

On the tombstone of James Parsons, fat man of Teddington, who died March 7, 1743, it was written that he had often eaten at a meal a whole shoulder of mutton and a peck of hasty pudding. Another Englishman in Lincoln used to eat 18 lbs. of meat in a day and died at 28, weight 530 lbs. William Campbell, the landlord of the Duke of Wellington in Newcastle on Tyne, was 6 feet 4 inches tall, weighed 728 lbs., was 85 inches around the waist and 35 inches around the calf.

But why continue this list? It is like piling up Ossa on Pelion. It would be more interesting, if less profitable, to leave the realms of fact and soar to the altitudes of the imaginative giants of Greek antiquity or those of Gulliver's travels. But we now must content ourselves with stern realities.

Although obesity may occur at any age, it is oftenest found in the male sex between 40 and 50 years of age, and in the female between 30 and 50, at the time of life when everybody ought to eat less than formerly. It is rather more common in the female than in the male, perhaps on account of her generally quieter and more inactive life. It sometimes appears with the forced rest after a long illness like typhoid fever or pneumonia.

Anders recognized the influence of heredity in 60 per cent. of his 543 cases. Naturally habitual overeating is the big cause of obesity. This might seem to be an utterly unnecessary statement, were it not for the fact that some thin people eat enormously and remain thin, and that some very fat people deny that they are big eaters, and claim on the contrary that they eat very litle, and perhaps they really think so. At this claim we feel like smiling, and we think of the cat with her mouth covered with yellow feathers, while she says, "I have not seen the Canary bird all day." Although it is certainly incontrovertible that the great majority of cases of obesity *are* caused by a too great consumption of fat-forming foods, especially if accompanied by too little exercise, or in other words, that the energy taken in the food has exceeded the energy expended in the form of work, heat, etc., yet we have to admit that sometimes fat people *are* really very small eaters, although it is decidedly exceptional. In such cases we have learned to attribute the anomaly to the influence of the thyroid and perhaps some other glands of internal secretion. Surely thyroid hyperfunction causes loss of weight, while thyroid hypofunction tends to increase weight, as seen in myxedema and cretinism, on which account the dried thyroid is used largely as a medicine for reduction. The desirability of its use will be discussed later.

Now why should we try to remove the excessive flesh from fat folks? The principal argument which appeals to them is an esthetic one. It will improve their looks, and even if we do not like to pose as beauty doctors, it will appeal more or less to us also. Comfort is another desideratum, and the tendency to the development or aggravation of certain symptoms of disease appeals to us. Shortness of breath and palpitation are two of the most trying symptoms, and certain organic and functional diseases of the heart are apt to be produced or in-

tensified. Renal degeneration, arteriosclerosis, apoplexy, gout, rheumatism, gallstones, diabetes, and other troubles are clearly associated. If a patient has bronchitis, asthma, or pneumonia, their course is often affected for the worse. Obesity directly or indirectly shortens life. Fat people often have a great disinclination to mental or physical exertion, probably because a certain form of blood-poisoning results from the efforts of the organism to eliminate some of the extra and unnecessary food. A spontaneous cure is not very likely. The fatter one is, the less he wants to exercise, and the less he can exercise the fatter he gets. It is a vicious circle. When one has organic heart disease, obesity is a very trying and even dangerous complication, and judicious efforts should, if possible, be made for its relief, although it is a much more difficult problem than in uncomplicated obesity; and here prevention is far better than cure; and if the disease is far advanced, or the patient is well along in years, it is best to let his fat alone.

A diabetic should never be reduced in flesh, nor a sufferer from anemic obesity. In any case do not allow a patient to get weak during reduction. If he does, go more slowly or stop altogether. He ought to feel better instead of worse. Do not use a very rigid régime with the very young, and especially do not restrict protein, as this may interfere with proper tissue development of the growing child. Better treat the child before he has got very fat; and with the help of records of food kept by his mother, cut out some of the large amounts of sugars and starches that he undoubtedly gets. In the aged it is generally unwise to impose severe restrictions of diet. The most favorable cases to reduce are people of or under middle life and of good general health, who have not been fleshy very long.

In most cases it is wiser not to lose flesh too rapidly. One or two pounds a week will generally do very well, and even this should be kept up for not more than two or three months at a time, when a period of stationary weight should be allowed before reducing again. Very dangerous symptoms and even death have sometimes followed too violent efforts to lose large amounts of flesh in too short a time. Of course this statement does not apply to such cases as we occasionally read about, where a man said that in one day he had lost 130 pounds—when his wife eloped.

Treatment by Exercise.—Exercise is the most important factor in the treatment of Obesity, next to the regulation of the diet, but it must not be carelessly prescribed offhand in any case without a thorough examination of the heart, kidneys, etc., as dangerous and even fatal results may follow. Most of the causes of death in obesity are due either directly or indirectly to diseases of the heart and arteries, and their condition must be to a great extent our guide in the use of such a powerful agent as exercise. If they are sound, it can be employed freely. If not, the greatest caution is necessary, or it must not be used at all. Naturally young adults bear it better than the old, and they who resume it after a short intermission better than those who have taken no exercise for many years. Many fleshy professional and mercantile people are sedentary, while a street laborer is seldom fat. So the patient's previous habits should be considered as well as the state of his internal organs; and if he has been indolent for years, he should take up physical exercises very gradually and under careful supervision. He can often find competent teachers in a good gymnasium who will help him reduce. Where the abdomen is especially protuberant, many people have reduced it by the well known exercise of lying on the back and slowly rising to the sitting position, or lying on the back and raising the legs. All exercise should be progressive, regular, and adapted to the individual needs of the patient. Walking is one of the best, the distance to be gradually increased.

In spite of the fact that many fat people die from overexertion on account of heart disease, nevertheless exercise has long been used as a *remedial* measure in diseases of the heart. In advanced disease the famous resistance exercises of the Schott Brothers at Bad Nauheim and of other physicians, coupled with the carbonated brine baths, have often been helpful. Before this, in earlier cases, but after the stage of dyspnea had been reached, back in 1854, the big Stokes wrote advising a system of graduated muscular exercise for debility of the heart, which is often "removable by a regular course of gymnastics or by pedestrian exercises, even in mountainous countries, as Switzerland or the Highlands of Scotland."

But the great champion of exercise as a heart-cure was the German Oertel, who first cured himself and then others, as a result of his own experiences, as told by Tait McKenzie in his book on "Exercise" (1915). His motto was "Function makes Structure." His system combined walking and hill climbing with restriction of fluids, the hills being of different degrees of steepness; and he gradually increased the length of time spent and the steepness of the slope, always carefully watching the patient.

At thirty years of age he himself was fat, with dyspnea, cyanosis, edema of the legs, and diminished urine, which obliged him to give up practice. In 1875 he went to the mountains and experimented on himself throughout August. On the first and second days he took short excursions in the morning and afternoon on level ground, and climbed a hill 100 meters high. Breathlessness and palpitation made him stop after twenty steps on a level and ten steps up hill, and he perspired. On the third day he climbed a hill 157 meters high and almost suffocated. His exercise lasted six hours and he lost much weight from perspiration; but that night he had neither irregularity nor palpitation. In the second week he climbed a hill 527 meters high in four hours and stopped and rested about 150 times. No evil effects followed. He thirsted, but he only gargled. After four weeks his exercises were longer but easier. In six weeks he returned to Munich and resumed practice, after losing eight kilograms. His pulse was normal and he could climb two flights of stairs. For eighteen years thereafter he alternated training and rest and got along pretty well. He established a cure at Reichenhall for the treatment of these diseases. He published a map of his grounds, which were extensive and very hilly, with walks painted some red, some purple, some green, and some yellow, to

indicate different degrees of steepness. He had also proper stations, rest benches, and trees painted in colors. In this country a well known sanatorium is said to have established similar walks.

Here again, if we could only see it in time, prevention is better than cure.

Dietetic Treatment.—Since we all agree that obesity is caused in the majority of cases by overeating, it naturally follows that to remedy this condition we must restrict the diet, or in other words, we must prescribe partial starvation for a time.

The fat in our tissues is formed mostly from the carbohydrates (sugars and starches) which we eat, largely from the fats, animal and vegetable, in our food, and to a slight extent, under certain conditions, from the protein; while our muscular tissue is derived only from the protein. Therefore it is obvious that in restricting the diet we must cut out particularly the sugars, starches, and fats. Still, we must not allow this fact to make so much impression on us as to forget that the *quantity* of the food eaten is even more important than its *quality.* A fat person often argues that the amount of the food he eats is really very small. Nevertheless, if he is gaining in weight, he must be consuming too much, and it must be cut down. The most important thing is to reduce the total number of calories, regardless of what class of foods they come from. This is proved by the occasional success of each one of several reduction methods containing different proportions of these classes. Individuals differ likewise.

At the beginning of treatment the patient naturally misses his usual food and acutely feels the hunger which is less obvious later. He can to some extent be consoled by eating largely of such foods as contain little carbohydrate but plenty of cellulose, and are likewise *bulky;* such as fruits, green vegetables, sauerkraut, etc. In this way he lives partly on foods which produce little fat, and yet he has plenty in his stomach to allay the pangs of hunger. If he is faint between meals, he can have a little thin soup, buttermilk, tea, skimmed milk, or fruit. While he is reducing, the patient lives on his own fat, as the saying is, which supplies some of his energy and heat. He would do well to continue under the observation of his physician, instead of trying to run his own case. He should weigh himself once a week, and sometimes every day, at the same hour, if possible, and with bladder and bowels empty. He should, at the beginning of his treatment, at least, keep a careful record of all the food and drink he takes, for the inspection of the doctor.

Many physicians require their patients to weigh accurately each article of food at the table, and make a record of it; but this is very burdensome, and it generally answers all practical purposes for the patient, after a short course in weighing food (in order to accustom his eyes to size and weight), to adopt a frequently-used phraseology, such as, for instance, three tablespoonfuls, two teaspoonfuls, one egg, one roll, one slice of bread, half a grape-fruit, etc., from which can be approximately figured their weight and also their calories, by means of E. A. Locke's very ingenious and praiseworthy "Tables of Food Values" (D. Appleton & Co., N. Y., 1911).

In beginning a reduction it is often pleasing to the patient and therefore good policy to do so *gradually,* in order not to give him too much of a jog all at once. It takes a good deal of courage and perseverance to reduce anyhow.

As far as possible, the normal amount of protein should remain in the diet, or should sometimes be decidedly increased; because it produces so little fat and is protective to the vital tissues, and makes the nccessary restriction of other foodstuffs more endurable. But when the kidneys are not functioning perfectly, it is not wise to strain them by too large a proportion of protein. Also too much of this may cause indigestion and gout in some cases.

Reduction Methods.—Although the subject is a very old one, yet its present study very seldom goes back farther than to 1863, when the since world-renowned Banting first introduced himself to the admiring gaze of that portion of the population which finds itself too amply upholstered. Any article on Obesity which omits mention of Banting is like the play of Hamlet with Hamlet left out. He was 66 years old, 5 feet 5 inches tall, and weighed 202 pounds instead of his proper 142. He was always puffing and blowing and was obliged to go down stairs slowly and backward. He wrote a little book on Corpulence, and explained that his physician, Dr. Wm. Harvey, had cured him by a diet as pleasant as it was effectual, although many fail to find much pleasure in it. He had previously tried in vain violent exercises and Turkish baths. In 38 weeks he lost 37 pounds, and in nine months all his unpleasant symptoms had disappeared under the following diet:

Breakfast: 4 oz. of meat (not pork) or fish, 1 cup of tea without milk or sugar, 1 oz. of dry toast. *Dinner:* 5 oz. of any meat except pork, or any fish except salmon, any vegetable except potato, fruit, 2 or 3 glasses of claret or sherry. *Tea*: 2 oz. of fruit, one rusk, 1 cup of tea. *Supper*: 4 oz. meat or fish, 1 glass of claret. This diet has been criticised as being too nitrogenous. It contains about 172 grams of protein, 250 grams fruit and vegetables, 90 grams of bread, and 1020 c.c. fluids; or about 1200 calories.

Other apostles of dieting followed, among whom one of the most prominent was Ebstein, who differed by allowing an abundance of fat, arguing that it diminished the craving for food and drink, and that therefore the total intake of food was less. The objection to Ebstein's method is that the extra fat may have accomplished its object by more or less upsetting digestion, which is not desirable.

Dancel and others diminished the amount of *fluid,* allowing not more than 6 to 12 ounces at a meal, making it a relatively dry diet, and not much between meals. The sensible view is that only a small amount of fluid should be taken *with* meals, as more at that time increases the desire for food; but that plenty should be taken 2 hours or more after a meal, and up to half an hour before a meal; a good amount being necessary to flush out the kidneys, especially with a relatively increased nitrogenous diet.

Weir Mitchell prescribed *skimmed milk,* at first with other food and then after a week without it. When we find how much skimmed milk will sustain the weight, we diminish the amount by degrees until the patient is losing half a pound a day. Rest and massage are also employed.

Reduction of Calories.—I think that the most widely prevalent feeling today is in favor of a modification of the methods of Von Noorden, who advises that since by general consent an average man needs about 3,000 calories of energy a day for heat and work, we can put our case for reduction into any one of the three following groups, according to what we want to do and how rapidly we want to do it.

First, we can reduce the calories by 1-5, making 2,400. Cut down sugar, fats, and cereals. If exercise is combined, this plan will succeed, but only slowly. *Second,* reduce by 2-5, making 1,800 calories. Cut out more fat and reduce bread. This plan also needs the help of exercise. It is also somewhat slow, but Von Noorden prefers it to the next, because there are no disagreeable consequences and it is safer. *Third,* reduce by 3-5, making about 1,200 calories. This group includes all the classical systems of diet:

	Protein Grams.	Carbohydrates Grams.	Fat Grams.	Calories.
Banting	172	81	8	1,100
Ebstein	102	47	85	1,300
Oertel	170	120	45	1,600
Von Noorden	155	112	28	1,366

Von Noorden gives 8 small meals a day and restricts the fats more than the carbohydrates, but some of the meals are hardly worthy of the name, for one is one egg, one a cup of soup, one a cup of coffee, and one a glass of skimmed milk.

As these are all starvation methods, it is never safe to continue them more than a few weeks at a time, and the patient's heart and kidneys should be carefully watched. Avoid too great a variety of food, as it tempts the appetite.

After the active treatment, the patient should try to eat only enough to hold the weight stationary for a while. If he gains in spite of this, he might have a "fast" day once a week in which he takes only a quart of milk.

If the fat person has also gout, the protein should be reduced and foods rich in purin should be avoided. In edema, fluids and salt should be restricted.

When one studies the composition of foods and calories, the menus can be made up from the tables in different ways and changed more or less from day to day, to secure a little variety.

A man or a woman needs to be a hero to stick to it right along without complaint, and no wonder that many fall by the wayside in discomfiture through lack of courage and persistence, and in disgust give up trying to be thin.

I copy three menus from Da Costa's "Handbook of Treatment," which are said to give daily calorie values of 1,000, 1,500 and 2,000, but which I think come nearer to 1,100, 1,400 and 1,900.

I. (1,100 calories). *Breakfast:* ½ orange, 1 egg, butter 1 ball, 1 roll, ½ cup coffee with ¼ grain saccharin, if wanted, but no milk or cream, ½ glass hot milk.

Lunch or *Supper*: 1 cup tea and lemon (saccharin), 1 slice cold veal, salad made of lettuce, ½ apple, 3 almonds and French dressing, 1 tablespoon of calf's foot jelly.

Dinner: Bouillon 4 oz., celery 3 sticks, lean roast beef 1 slice, 1 onion, spinach 2 tablespoons, ½ egg, cottage cheese; stewed strawberries 1 tablespoonful.

II. (1,400 calories). *Breakfast:* 1 apple, 2 eggs, 1 ball of butter, 1 roll, ½ cup coffee, ½ glass of milk, sugar 1 cube.

Lunch or *Supper*: 1 cup tea and lemon, sugar 1 cube, cold chicken 1 slice, asparagus, French dressing.

Dinner: 6 oysters, 3 sticks celery, mutton chop, squash 2 tablespoonfuls, ½ egg, Swiss cheese 1 slice, ¼ cantaloupe.

III. (1,900 calories). The same as II. with the addition of one roll and butter, 1 potato, and soft custard to the dinner.

From the same source comes a tabulation of the following articles of food, each article being followed by 2 figures, the first representing the weight in grams and the second the calories.

Fruits, raw and stewed without sugar: Apple 150-72. Blackberries 100-59. ¼ cantaloupe, 230-45. Cherries 100-76. Currants 100-59. ¼ Grapefruit 150-69. Grapes 75-56. Huckleberries 100-76. ½ orange 125-48, Peach 125-42. ½ Pear 75-42. Pineapple 2 slices 100-44. Plums 35-29. Raspberries 50-28. Strawberries 100-40. Watermelon 300-39.

Fruits to be avoided by fat people: Bananas, dried fruits, preserves, jams, jellies, marmalade.

Meats (fowl and fish): Lean roast beef 100-111. Beef round (no fat) 100-185. Sweetbread 80-135. Roast chicken 100-180. Lean boiled mutton 75-126. Lean mutton chop 100-135. Lean ham 33-93. Boiled cod 100-98. Boiled haddock 100-108. Boiled halibut 100-121. Eggs 50-80, except scrambled, fried, and omelettes.

Meats to be avoided by fat people: Beef tenderloin, tongue, capon, bacon and pork, turkey, goose, duck, bluefish, mackerel, salmon, eels, sardines, fat meats in general, hashes, sausages, fried meats.

Vegetables: String beans 60-13. Beets 70-29. Beet greens 100-54. Cabbage 100-5. Carrots 100-18. Cauliflower 100-7. Celery raw 50-9. Canned corn 100-101. Green corn 100-100. Cucumbers 50-9. Dandelion greens 100-63. Raw mushrooms 50-23. Onions 100-42. Parsnips 100-10. Baked potato special 100-114. Squash 100-69. Spinach 100-57. Canned tomatoes 70-16. Raw tomatoes 70-16. Radishes 100-23. Turnips 100-4.

Vegetables to be avoided by fat people: Beans, corn, peas, potato, hominy, rice, maccaroni.

Soups and shell fish: Beef soup 120-32. Bouillon 120-13. Consommé 120-16. Canned vegetable soup 120-17. 6 raw clams 100-47. 6 raw oysters 85-44.

Soups to be avoided: Bean, oxtail, green and mock-turtle, pea, tomato; also cream soups, stews, and chowder.

Also prohibited or restricted: all fatty foods, butter, cream, olive oil, pastry, fried food, rich sauces, puddings; sugar and all sweets, candies, cake, starchy foods, thickened sauces and gravies. Desserts, ice cream, alcohol.

Saccharin as a substitute for sugar is now considered by the best authorities to be perfectly harmless, in spite of the theoretical opposition to it.

Medicine.—With the exception of thyroid extract, there is no medicine to be counted on to reduce flesh, in spite of all the specious advertisements in the newspapers. Patients should of course be prescribed for symptomatically for indigestion, headache, pain, or whatever else ails them, but not for the distinct purpose of taking off the flesh.

Thyroid extract certainly will do this in many cases, but in the opinion of some of the best authorities the game is hardly worth the candle, on account of the associated dangers. If it is employed at all, its use should be confined to those cases of obesity which seem to be the direct result of thyroid deficiency, rather than to the general run.

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A BACTERIOLOGICAL STUDY OF RESPIRATORY INFECTIONS AND RESPIRATORY CONTACTS AS ENCOUNTERED IN THE AMERICAN EXPEDITIONARY FORCES, FRANCE.*

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THE work upon which this paper is based was carried out during the months of September, October, November, and December, 1918, while the author was attached as pathologist to U. S. Army Laboratory No. 1, A. E. F., France. The material for study was obtained from the cases coming to autopsy at the neighboring Base and Camp hospitals and from the medical officers, nurses, and attendants in the same hospitals. The series of studies from autopsies embraces seventy-five cases, all of which showed an infection of the respiratory tract in the form of a pneumonia. The autopsies were in all instances performed within a few hours after death, and smears and cultures were made at the time of autopsy.

In this series a special study was made as to the cause of admission to the hospital, the part or parts of the lungs involved, the incidence of complications and the types of microorganisms associated with the lesions.

In table I the seventy-five cases studied at autopsy are tabulated as to the cause of admission to the hospital, the diagnostic terms were taken from the cards that accompanied the body to the morgue.

TABLE I.

	Per Cent
Influenza	40.3
Pneumonia	33.3
Gunshot wounds of extremity	6.6
Acute bronchitis	4.0
Gassed	2.6
Acute tonsillitis	1.3
Diphtheria	1.3
Tuberculosis, pulmonary	1.3

A consideration of the data in table I shows that but 33.3 per cent. of the cases entered the hospital with recognized signs of pneumonia and that 66.6 per cent. of the cases developed recognizable signs of pneumonia while in the hospital. Since these infections occurred at a time when the so called epidemic influenza was prevalent, a rather careful study was made of the available histories, and it was found that 87.9 per cent. of the cases, i.e., those with a diagnosis of influenza, pneumonia, acute bronchitis and acute tonsillitis, showed a symptomatology more or less characteristic of the so called epidemic influenza.

In three of the cases of gun shot wounds of the extremity, a blood culture taken before death showed the presence of microorganisms in the blood stream and subsequent autopsy disclosed an osteomyelitis as the probable point of entrance of the microorganisms. In the other two cases of gun shot wound of the extremity, the pneumonia developed after a rather prolonged stay in the hospital, microorganisms were not found in the blood stream nor was there evidence of an osteomyelitis. These cases were probably terminal pneumonias.

In the two instances where the patient entered the hospital after having been exposed to the fumes of "mustard" gas, there was a severe fibrinopurulent inflammation of the entire upper respiratory tract, a purulent bronchiolitis and a purulent bronchopneumonia.

Table II is taken from the anatomical diagnosis at autopsy, and in it is tabulated the incidence of occurrence of lobar and bronchopneumonia. Only those cases which showed a consolidation of a definite lobar type were put down as lobar pneumonias, the term bronchopneumonia is used to cover those cases where the areas of consolidation were patchy and also those cases where there was an extensive exudation of fluid into the lungs where the areas of consolidation were indefinite or difficult to outline.

TABLE II.

	Per Cent
Lobar pneumonia	8.0
Bronchopneumonia	91.9

The following tables indicate the incidence of involvement of the right lung, the left lung, of both lungs and of the individual lobes of the lungs. Table III shows the incidence of involvement of the right lung, the left lung and the combination of both lungs.

TABLE III.

	Per Cent
Right lung alone involved	14.6
Left lung alone involved	8.0
Both lungs involved	77.3

These figures indicate that in this series of cases, in the majority of instances the lesions were found to involve both lungs and that of the two lungs the right lung was more frequently affected.

Table IV is composed of cases where the right lung was alone involved and shows the incidence of involvement of the various lobes and combinations of the various lobes.

TABLE IV.

	Per Cent
Right lung alone involved:	
Upper lobe alone involved	9.0
Middle lobe alone involved	0.0
Lower lobe alone involved	0.0
Upper and middle lobes involved	18.1
Upper and lower lobes involved	36.3
Middle and lower lobes involved	9.0
Entire lung involved	27.2

Table V gives the incidence of involvement of the lobes of the left lung, where the left lung was alone affected.

TABLE V.

	Per Cent
Left lung alone involved:	
Upper lobe alone involved	0.0
Lower lobe alone involved	66.6
Both lobes involved	33.3

Table VI shows the incidence of involvement in instances where both lungs were affected, note is made of the various combinations and of the frequency with which each combination occurred.

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TABLE VI.

	Per Cent
Upper and lower lobes—left lung; upper, middle and lower lobes—right lung	24.6
Lower lobe—left lung; middle and lower lobes—right lung	18.9
Lower lobe—left lung; upper, middle and lower lobes—right lung	13.7
Lower lobe—left lung; lower lobe—right lung	13.7
Upper and lower lobes—left lung; lower lobe—right lung	8.6
Lower lobe—left lung; upper and lower lobes—right lung	5.1
Upper and lower lobes—left lung; middle and lower lobes—right lung	5.1
Upper and lower lobes—left lung; upper lobe—right lung	3.4
Upper and lower lobes—left lung; upper and lower lobes—right lung	1.7
Upper lobe—left lung; upper and middle lobes—right lung	1.7
Upper lobe—left lung; upper lobe—right lung	1.7
Lower lobe—left lung; lower lobe—right lung	1.7

This table indicates the wide dissemination of the infection throughout both lungs and shows the tendency toward involvement of the lower lobes.

Table VII gives the incidence of occurrence of the following complications:

TABLE VII.

	Per Cent
Pleurisy	72.0
Fibrinous pleurisy	56.6
Serofibrinous pleurisy	33.9
Fibrinopurulent pleurisy	9.4
Empyema of middle ears and sinuses	6.6
Pericarditis, acute	5.3
Peritonitis, acute	5.3
Endocarditis, acute	4.0
Meningitis, acute	4.0

The results of the bacteriological examination of the lesions of the lungs at autopsy are recorded in the following tables. Table VIII shows the frequency with which the various micro organisms alone or in combination were encountered.

TABLE VIII.

	Per Cent
Pneumococcus	84.0
Staphylococcus aureus	57.4
Streptococcus hemolyticus	28.0
Pfeiffer's bacillus	26.6
Staphylococcus albus	9.3
Diphtheria bacillus	6.6
Meningococcus	4.0
Tubercle bacillus	2.6

Table IX indicates the various combinations of micro organisms encountered and the frequency with which these combinations were noted.

TABLE IX.

	Per Cent
Pneumococcus + *Staphylococcus aureus*	25.3
Pneumococcus + Pfeiffer's bacillus + *Staphylococcus aureus*	14.6
Pneumococcus + *Streptococcus hemolyticus* + *Staphylococcus aureus*	10.6
Pneumococcus + *Streptococcus hemolyticus*	9.3
Pfeiffer's bacillus + Pneumococcus	5.3
Pneumococcus + Pfeiffer's bacillus + *Stapyhlococcus albus*	5.3
Pneumococcus alone	5.3
Pneumococcus + Diphtheria bacillus	2.6
Staphylococcus aureus + Diphtheria bacillus	2.6
Pneumococcus + *Staphylococcus albus*	2.6
Streptococcus hemolyticus + *Staphylococcus aureus*	2.6
Tubercle bacillus alone	2.6
Streptococcus hemolyticus alone	2.6
Diphtheria bacillus	1.3
Pfeiffer's bacillus	1.3
Pneumococcus + *Streptococcus hemolyticus* + *Staphylococcus aureus* + Meningococcus	1.3
Pneumococcus + *Streptococcus hemolyticus* + Peiffer's bacillus + *Staphylococcus aureus*	1.3
Pneumococcus + Meningococcus	1.3
Pneumococcus + *Staphylococcus aureus* + Meningococcus	1.3
Pneumococcus + *Streptococcus hemolyticus* + *Staphylococcus albus*	1.3

From a consideration of tables VIII and IX it will be noted that the pneumococcus was the organism most frequently encountered. It is unfortunate that in a number of the cases the type of the pneumococcus was not determined. In twenty of the cases where the organism was typed it was found that type I occurred four times or 19.04 per cent.; type II occurred four times, or 19.04 per cent.; type III occurred once or 4.71 per cent.; type IV occurred twelve times, or 57.14 per cent.

These figures would tend to indicate that in this series of fatal pneumonias, type IV pneumococcus was encountered more frequently than the virulent type I, II and III. The staphylococcus aureus was also frequently encountered, as indicated in the above tables.

The streptococcus hemolyticus and Pfeiffer's bacillus were found in 28.0 per cent. and 26.6 per cent. of the cases, respectively. The streptococcus hemolyticus occurred alone in 2.6 per cent. of the cases, and Pfeiffers' bacillus occurred alone in 1.3 per cent. of the cases.

Bearing in mind the incidence of occurrence of the various microorganisms as noted in the bacteriological examination of the lungs in the fatal cases of pneumonia as recorded in the previous tables, it seemed at least worth while to study the incidence of carriers of the pneumococcus, streptococcus hemolyticus and Pfeiffer's bacillus among the personnel at the various hospitals in which the fatal cases tabulated above were studied. To that end cultures were made from the tonsils and nasopharynx of the medical officers, nurses and attendants in both the medical and surgical wards of these hospitals. Sixty-one cultures were studied, of which twenty-five were from the medical wards and thirty-six were from the surgical wards.

Table X is taken from a study of the cultures obtained from the medical wards.

TABLE X.

		Per Cent
Number of cultures studied	25	
Cultures in which the pneumococcus was found, 19, or	76	
Types of pneumococci encountered:		
Type I	4 cases	21.0
Type II	1 case	5.2
Type III	0 case	0.0
Type IV	14 cases	73.6
Cultures in which the hemolytic streptococcus was found—5, or		20.0
Types of hemolytic streptococci:		
Streptococcus pyogenes	1 case	20.0
Streptococcus anginosus	2 cases	40.0
Streptococcus hemolyticus II	2 cases	40.0
Cultures in which Pfeiffer's bacillus was found, 7 or		28.0

Table XI is taken from a study of the cultures obtained from the surgical wards.

TABLE XI.

	Per Cent
Number of cultures studied	36
Cultures in which the pneumococcus was found, 22 cases, or	61.0

Types of pneumococci encountered:		
Type I.	1 case	4.5
Type II.	0 case	0.0
Type III.	0 case	0.0
Type IV.	21 cases	95.4
Cultures in which hemolytic streptococci were found, 4 cases, or		11.1
Types* of hemolytic streptococci:		
		Per Cent
Streptococcus pyogenes	3 cases	75.0
Streptococcus anginosus	1 case	25.0
Cultures in which Pfeiffer's bacillus were found, 9 cases, or		25.0

Table XII is taken from the combined study of cultures from the medical and surgical wards.

TABLE XII.

Number of cultures studied		61
		Per Cent
Cultures in which the pneumococcus was found, 41 cases, or		67.2
Types of pneumococci encountered:		
Type I.	5 cases	12.1
Type II.	1 case	2.4
Type III.	0 case	0.0
Type IV.	37 cases	85.3
Cultures in which hemolytic streptococci were found, 9 cases, or		14.7
Types* of hemolytic streptococci:		
		Per Cent
Streptococcus pyogenes	4 cases	44.4
Streptococcus anginosus	3 cases	33.3
Streptococcus hemolyticus II.	2 cases	22.2
Cultures in which Pfeiffer's bacillus was found, 16 cases, or		26.2

*Classification of streptococci based upon fermentative sugar reactions.

In a comparison of the results of the examination of cultures from the medical and surgical wards, it is interesting to note that the pneumococcus was encountered in 76 per cent. of the cases in the medical wards, as against 61.1 per cent. in the surgical wards, and that the more virulent types I and II were found more frequently in the medical wards.

Hemolytic streptococci were likewise found more frequently in the medical wards, an incidence of occurrence of 20 per cent. against 11.1 per cent. in the surgical wards. Distribution of Pfeiffer's bacillus seemed rather general, this organism being found in 28 per cent. of the cases in the medical wards and 25 per cent. of the cases in the surgical wards.

From a study of the above cultures, from individuals who were in the epidemic area and who were in more or less constant close contact with fatal cases of pneumonia, it will be noted that the pneumococcus was found in 67.2 per cent. of the cases examined, and that type I pneumococcus occurred in 12.1 per cent. of the cases, type II pneumococcus in 2.4 per cent. of the cases and that type IV pneumococcus occurred in 85.3 per cent. of the cases; in contrast it will be noted that the cultures from the lungs in the fatal cases of pneumonia, that the pneumococcus was encountered in 84 per cent. of the cases, and that of the cases typed, 19.4 per cent. were of type I, 19.4 per cent. were of type II, 4.71 per cent. were of type III, and 57.14 per cent. were of type IV.

It will also be noted that hemolytic streptococci were encountered in 14.7 per cent. of the cultures from contacts, as against 28 per cent. from the cultures in the fatal cases at autopsy.

Pfeiffer's bacillus was encountered in 26.2 per cent. of the contacts and in 26.6 per cent. of the cases of fatal pneumonia.

In conclusion it will be noted that:

1. Of the fatal cases of pneumonia studied in this series, 91.9 per cent. had bronchopneumonia.

2. Of these bronchopneumonias, the lesions were most frequently bilateral, and involvement was most often noted in all of the lobes of both lungs.

3. Of the lobes involved, the lesions were commonly found in the dependent portions.

4. Of the complications, pleurisy was the most common, being noted in 72 per cent. of the cases.

5. Of the organisms encountered, the pneumococcus, *Staphylococcus aureus*, *Streptococcus hemolyticus*, and Pfeiffer's bacillus were most frequently noted.

6. While in both the fatal cases of pneumonia and in the contacts, type IV pneumococcus predominated, the more virulent types I, II, III were noted more frequently in the pneumonia cases than in the contacts.

7. The number of carriers among the contacts was high, and, as might be expected, the incidence of carriers in the medical wards was greater than in the surgical ward.

8. Pfeiffer's bacillus was encountered as often among the carriers as in the fatal cases of pneumonia.

TREATMENT OF ACUTE POLYARTHRITIS.

METHODS OF PRACTICAL VALUE TO THE GENERAL PRACTITIONER AS DEVELOPED AT THE MONTEFIORE HOME AND HOSPITAL.*

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WHENEVER some scientific work carried out at an institution, research laboratory, or hospital is presented before general practitioners, it is done with a different aim than if the same is presented at a meeting of research workers or specialists. To the general practitioner it must serve a double aim. It must review briefly the character of the work, the conclusions, and then dwell especially on how the physician can make use of this scientific advance in his own private practice. With these two phases in view, I will summarize the methods we have used at the Montefiore Home and Hospital on the service of Dr. George R. Elliott and show exactly how to apply these various methods with success in your own private practice.

So much has been written lately about polyarthritis, or what used to be called "arthritis deformans," dwelling on the focus of infection, that when the general practitioner strikes a chronic case or even an acute case, he is at a loss what to do and justly thinks: "What is the use? That cannot be carried out at home; the patient should be admitted at once to a special institution as the Montefiore." As the beds in such institutions are rather limited, he meanwhile feeds his patient on salicylates, till the sufferer, disgusted with the treatment, calls another physician, with the same result.

You are acquainted with the theories that the cause of polyarthritis is probably an infection and

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that there is not any one focus which we can blame more than another. It is therefore your duty when you see the patient so early to look for the source or sources of infection and clear them up if you can. In the very acute cases, this can be done with more success than in the chronic cases that come before the specialists.

We may compare this disease with any other illness of serious or not serious nature. The physician is called in to attend a small child who has fever and is uncomfortable. He goes over carefully the heart, lungs, abdomen, looks into the throat, and peeps into the ear. Finally, he imagines he has found the culpable place, let us say the throat or abdomen. He gives to this the proper attention and the symptoms clear up. Sometimes, however, the symptoms remain stationary, or on the contrary, they have become aggravated. Then he knows that either the diagnosis was wrong or the medicine was not right and he corrects one or both. Sometimes he pays attention to all the tracts which might be responsible. He administers a purgative, attends to the kidneys, gives instruction as to the throat, nose, and ears, reduces the fever, and raises the resistance power. Only if all these fail does he call in a consultant or send the patient to a hospital.

Exactly the same should be done in these cases. Do not be satisfied with stopping at the bad condition of the patient's teeth. Examine the throat; infected tonsils even if not enlarged are more often the cause of infectious arthritis. The intestinal tract often harbors organisms and it is easy to guess whether there is constipation or stasis and guard against that. The genito-urinary tract can easily be examined in the routine. Every physician tests the condition of the patient's kidneys and genital organs, and he should simply go more into details in case of infectious arthritis. The heart and lungs are of course always examined by a good physician. Naturally when he finds indefinite signs in these foci, he may have to resort to a specialist later on, but at his first visit he can do that himself. Remove all sources of infection as soon as possible, even if you are not sure that they are the causes. Do not order your patient to have his teeth extracted but have him attended by his own dentist, and by all means avoid the common mistake that if all teeth are extracted he will be cured of his ailment.

General Treatment.—(*a*) Environment: As long as the patient is guarded against exposure to cold and moisture he may be kept in the city. There is no special advantage in seashore, water spas, or mountains.

(*b*) Combating the Infection: As in all infectious diseases, increase the elimination of all toxins by the natural channels, hence the intestinal tract should be cleansed. In the beginning, give a strong purgative, then laxatives should be given (mineral oil may be used freely). It is probably also advisable to give enemas or high colonic irrigations daily if the temperature is above normal. Diuretics should be given freely. Antipyretics should be avoided.

(*c*) Diet: There is no reason why any kind of meat should be withheld even during the acute stage. On the contrary, the patients need a full nutritious diet to combat the infection. Meats should be used freely. Our rule has been to give the patient any kind of meat, as much as he wants, prepared in whatever form he enjoys, provided it does not constipate him. Give him plenty of milk and fruit (cooked or raw), buttermilk two or three glasses a day (this prevents intestinal fermentation).

(*d*) Medication: All forms of salicylates, even aspirin, should be avoided. They upset the digestion and make the condition worse. Only those medicaments aimed to promote digestion, proper bowel activity, proper circulation, and proper character of the blood should be used. It is therefore advisable to give strychnine, arsenic, iron preparations, and phosphates. The laxative desired can be easily added to these. In chronic cases, cod liver oil can be added. During the acute or subacute stage, hypodermic injections of sodium cacodylate, given every four or five days in ¾ to 1¼ grain doses, have been found of great help in raising the resistance power. Tincture of gelsemium m. V. (0.3 c.c.) *t.i.d.* may be used to relieve temporary severe pain. It has been used freely in our cases with some benefit. If intestinal putrefaction is present, we used guaiacol carbonate, gr. v. (0.3 c.c.) *t.i.d.* None of the lithia or radium waters have been found of any value.

(*e*) Glandular extracts of almost all ductless glands of the body have been used by us with no appreciable benefit. We have abandoned them completely. Only occasionally in women we still use ovarian extract when the disease begins at the menopause, but we have very little faith in that.

(*f*) Vaccine Treatment: A great deal has been written on and many patients abused by vaccine treatment. As shown before, it is very hard to state definitely the bacteria which are the true etiological factors in a given case. Even if the source of "entry" is exactly found it is doubtful whether the organism in the joint is the same as in the "focus," as the organism changes under different environments. It is therefore absolutely wothless to give vaccines; perhaps even harmful. Some have injected non-specific protein antigen with the idea that the proteins of the bacteria are responsible for the cures. Those cases which I have observed following all forms and kinds of vaccine injection have turned out badly, and I have therefore abstained from using them.

If one has the facilities he may try to inject pus from the glands draining the joint into a rabbit. If the animal develops the same arthritis as the patient, a vaccine may be made and used. I have not had enough experience with that.

Local Treatment.—(*a*) Immobilization: As you probably know, the pain in the acute joints is very severe. In these cases, the general practitioner resorts to rubbing with different ointments. In our experience we found this to be entirely wrong. The reverse is advisable. (Use the same principle as in acute pleurisy.) As soon as the patient complains of pain, the joint should be immobilized in a well-padded circular plaster cast. Of course the plaster should not be too tight. The position of the joint should be properly selected; for instance, the knee must be kept in extended position, the ankle at right angle, the elbow flexed, and the wrist slightly hyperextended. The plaster application in many cases

works wonders. I can recall scores of patients in whom nothing could relieve the pain, but when the plaster was applied they found relief immediately or fell into gentle sleep. There is no danger that the joint will become ankylosed. Not the plaster but the rubbing and irritation of the forcible motion, as produced by the application of ointments, favor ankylosis. The plaster should be left on for only eight or ten days and then it should be split into two halves. The plaster is then left on during the night and only part of the day, being removed during the application of other local measures. The duration of the wearing of the plaster is gradually shortened. Of course where the pressure of pus is suspected in the joint and marked fluctuation is present, aspiration should be done.

(*b*) Medicinal Application: Ichthyol or antiphlogistin is absolutely valueless. There is no specific medicine to apply locally. For psychic (and to some extent real) effects we sometimes apply for the night the following: Tincture belladonna 15, tincture of aconite 15, crude oil ad 100.

(*c*) Active Hyperemia or Hot Dry Air is of great benefit. The methods by which active hyperemia can easily be produced in every house are bathing alternately in hot and cold buckets full of water, or applying a compress wrung out in hot water for five minutes and then a cold compress for five minutes. Bathing the limb in hot water with Epsom salt, about a quarter of a pound to a basin of water, is still better. We are not prepared to state the reason of the beneficial effects of Epsom salt, but it has a decidedly good influence, better than plain hot water or sea salt. If the skin is itchy, sodium bicarbonate may be added. The bathing may be done three or four times a day. The baking, or what is called "the superheated dry air method," is of course better, but here we found the greatest abuse as very few employ this method properly and efficiently. It should be used after the plaster bandage has been cut so that it can be opened. The temperature of the machine must be brought up gradually to 250° or 300° F. and the application should be given for three-quarters of an hour. Electrically heated apparatus are the best. At present they can be rented and used easily at the bedside. Do not put the bare limb into the machine but wrap it up at first in blankets (children's blankets are the best). Prolonged and gradual heat is the most efficacious. The baking by "electric light" is not as beneficial as that by the baking apparatus. The heat given by the lamps can be brought up only to 110° and cannot be continued for more than fifteen minutes. The frequency of baking during the acute attack is every day, later on only three times a week. Electric light baths may be used once a week, but the apparatus is expensive and only an institution like ours can afford such a luxury. Steam or hot air boxes have been used in our institution with good effects. The patient should stay there only ten minutes. The temperature should be 110° to 120° F. Diathermia has lately been introduced but we have not had enough experience with that.

(*d*) Bier's Passive Hyperemia, produced by means of a thin elastic bandage, is also of benefit. One must however know how to apply it. The constriction must be very slight, just enough to cause a narrowing of the superficial veins, but not an entire obstruction. The application can easily be taught to the patients, even in cases of feeble old women. This application is painful during the acute attack if it is not applied correctly, and should be used with care. It ameliorates the pain and the spasm. Begin to use it for two or three hours a day, increase gradually, till finally it can be left on for twenty-two hours daily, taking it off for one hour twice a day when the limb is to be raised to allow the return of circulation.

(*e*) Massage: This is of the greatest value if it can be carried out properly. It is that part of the treatment most commonly abused and perhaps also the one responsible for many disabling deformities. (I well remember many cases where members of the family were ordered to massage for four hours a day, and they had to take turns as they got tired. The massage was administered by the strongest men in the family. No massage should be used as long as there is still redness, tenderness, or signs of inflammation. In general we found that in the acute cases it takes from about four to six weeks before massage can be begun. When massage is to be used, it should be given by trained masseuses and not by osteopaths, chiropractics, or members of the family. It requires more skill to give proper massage to an acute joint than to any other ailment. As a matter of fact the first few massages are only of an experimental nature to see whether the patient will tolerate them or not. If he gets worse they must be discontinued. In my personal opinion, no man masseur should be trusted with a case of acute polyarthritis.* We have noticed many times that when a new masseuse was put in charge the patient complained of pain after the massage. Many of our patients improved under our gentle massage when they felt worse while being treated by the inexperienced masseuses. The massage should be given only three or four times a week in the acute cases. For chronic cases five times a week may be permitted. The massage should be given mostly to the muscles and not much to the joint itself. The forms of massage to be used are effleurage and slight friction. The muscles farther away from the joint can be treated by peterissage, *i.e.* kneading. The massage should always be given after the hyperemia, *i.e.*, after the bathing or baking. The duration of the massage should be 10 to 15 minutes on a joint. If several joints are to be treated, half of the time is sufficient. In hospital cases, general massage, and particularly abdominal massage, should be added to improve the disorders of the intestinal tract. It is not necessary to use any lubricant on the joint, ordinary talcum powder is sufficient. In the atrophic form of polyarthritis, massage can be practiced directly upon the joints as well as upon the muscles in the neighborhood without risk of stirring up any active process.

(*f*) Exercises: Active exercises are of great value. As soon as inflammation begins to subside, have the patient himself go through the normal range of motion of the joint two or three times a day and perform each motion about five times. The patient may be assisted only by arranging some pillows so as to help the motion by gravity.

* Prof. Tyrnauer of Carlsbad, the inventor of the baking machines, discussed this paper and remarked that in his clinic only physicians experienced in massage are allowed to massage such cases.

Passive exercises may be used in the chronic cases. At Montefiore we have elaborate and expensive Zander machines. We used them extensively. But of late we have begun to make use of occupational therapy, *i.e.* teaching the patient some trade or working with real tools, and choosing the exercises useful for him in each trade, and thus more interesting than merely mechanical exercises. We found this quite superior to the use of the Zander machines. A patient hates to sit and wiggle a stationary bicycle while he will work conscientiously and intelligently with a sewing machine or a saw, or chop wood.

(*g*) Hydrotherapy has been used from time immemorial and is certainly of actual benefit, but it is not advisable to depend entirely upon these means and send patients away to spas.

(*h*) Electrical treatments of all forms and derivations are valueless and some even harmful.

Prevention of deformities should be the main aim of the general practitioner. Steady the joints in the best position during the acute stage and many patients will be saved from permanent crippledom.

The discussion of correction of deformities and operative means does not lie within the scope of this article and I shall therefore omit it.

Conclusions.—1. The disease has no relation at all to rheumatism and antirheumatics should be avoided.

2. A focus of infection should be looked for in every case of arthritis where tuberculosis, malignancy, or trauma is not self-evident. The finding of one focus does not mean that this is the only one. The source of infection suspected should be removed if possible.

3. A monoarticular arthritis demands the same careful investigation as does a case of polyarthritis, for one can never tell when the former may merge into the latter.

4. Prophylaxis in preventing any systemic infection and keeping the genitourinary and intestinal tracts in good condition is essential. Removal of chronic foci anywhere in the body is imperative as a prevention of progressive ill health.

5. The arrest of infection does not mean that the joint will be cured, unless orthopedic measures are employed.

6. General treatment, such as good hygiene, good food, tonics, and building up of the patient, is essential to success.

7. Acute joints should be put in well-padded plaster casts for rest.

8. When active symptoms subside, local treatment to the joints, in the form of active and passive hyperemia, hydrotherapy, massage, active and passive exercises, should be administered regularly with great care and patience and kept up for a long time.

9. The occurrence of deformities should be prevented by steadying the joints in proper position at the time of the acute infection.

I shall give a few illustrative cases of Infectious Polyarthritis.*

CASE I.—Max G., male, married, age 40, came under observation in March, 1916, with a history of pain and swelling of left foot of two weeks' duration. Pain was not relieved by any medication used. Physical examination showed swelling of the left ankle and right knee. Temperature 100°. Murmur at apex of the heart. Marked pyorrhea alveolaris; enlarged tonsils.

A plaster cast was applied to the ankle and knee. This stopped the pain, but the temperature continued for a few days. Local treatment was applied to the tonsils and the dentist attended to his teeth, removing only one tooth. General treatment in form of diuretics and laxatives. The patient was feeling better, but the temperature continued for two weeks, coming down to normal only after the use of enemas. The plaster casts were removed after twelve days and baking was begun. Massage was begun one week later. The patient was discharged in May (ten weeks from the beginning) entirely cured. The last report from him in September, 1919, was that his joints had never troubled him since, but he has been suffering from marked endocarditis and has not been able to work on account of that.

Comment: What was the infection due to? The pyorrhea alveolaris, the tonsils or the intestinal tract? In view of the marked endocarditis one is bound to attribute this infection to the tonsils though the pyorrhea alveolaris and the intestinal tract played a very considerable rôle. The immediate improvement after the application of the plaster casts was remarkable.

CASE II.—David L., male, age 30, came under observation in April, 1917. Has always enjoyed good health. Denies gonorrhea and syphilis. Disease began five weeks before, with temperature of 101° F. and pain in both shoulders and knees. No redness, no swelling. Diagnosis of "rheumatism" was made by his attending physicians and the patient was saturated with antirheumatics and vaccines. Vigorous massage for four hours daily was also used, but no relief was obtained. On the contrary almost all the joints became involved. Had severe pain at night.

Physical examination shows both shoulders markedly swollen and tender, with limitation of motion in all directions. Marked stiffness of cervical spine. Right wrist markedly swollen. Some swelling of the ankle joints and slight swelling of the knees. Tonsils markedly enlarged. Teeth in good condition.

A plaster cast was applied to the wrist, baking to the other joints, bathing in hot water with Epsom salt, injections of sodium cacodylate, and internally iron, strychnine, and arsenic. I referred patient to a laryngologist, who began with local treatment to the tonsils.

The pain in the wrist stopped immediately. The improvement in the other joints was very slow. In three weeks the patient could use the shoulders much better than before, though he still had limited motion. Pain considerably lessened during the day; no pain at night. Not being satisfied with the improvement, I suggested removal of the tonsils, which was done. One tonsil had many adhesions and bled profusely. The patient improved very rapidly after that, and was discharged entirely cured after three months, but was still going to the laryngologist. At the last report in October, 1919, the patient was enjoying good health.

Comment: The fallacy of the antirheumatics and the value of the plaster cast is clearly shown. The infection was undoubtedly due to the tonsils.

CASE III.—Abraham A., age 28, male, married, came under observation in October, 1917. The previous history was negative. He has two healthy children. The present illness dates back fourteen weeks with pain in all the joints and swelling in several joints. He says he always has fever, though he has not taken the temperature with a thermometer. Had been treated with medication and vaccines but without relief; is getting worse all the time. *Physical* examination showed marked tenderness and swelling of both ankles and the right wrist, slight swelling of both knees. The shoulders and elbows show limited motion in all directions. The spine cannot be flexed freely. The tonsils are markedly enlarged. There is marked pyorrhea alveolaris. The tongue is coated. Temperature 101° F. I applied plaster casts to the right ankle and left

* These cases are taken from private practice as they will illustrate certain phases of interest to the general practitioner.

wrist. Enemas daily. Local application of hot water with Epsom salt. Injections of sodium cacodylate. Some local application to the tonsils. The pain in the joints with the plaster casts diminished markedly. The temperature, however, went up to 104°-105° F. with chills. The patient felt uncomfortable. I then ordered high colonic irrigations, purgatives, and diuretics. For the joints bathing in hot water with Epsom salt *t.i.d.* The plaster was not removed from the joints, but on the contrary another joint put in plaster. Attention was given to the teeth and tonsils. After a few days the temperature came down. The tonsils improved. Pain in the joints was considerably less. I then opened the casts and ordered bakisg. In two weeks I ordered massage, and in three weeks exercises. The tonsils were later removed and a few teeth were extracted. The patient was discharged entirely cured in five months. At the last report in January, 1920, the patient stated that he had never had any trouble since.

Comment: The history of an infection was clearly present in this patient, still he was treated for fourteen weeks for rheumatism. The tonsils, the teeth, and the intestinal tract were undoubtedly responsible for the arthritis. The improvement after the plaster was marked. The massage and the exercises had to be delayed for a long time.

CASE IV.—Mark W. C., male, letter carrier, single. Came under observation in May, 1916. He gave a history of malaria and gonorrhea, but the Wassermann has been negative on repeated examinations. The present illness dates back five weeks with swelling and pain in the ankles, knees, and hands, getting worse in spite of the antirheumatics. Examination shows both ankles, knees, wrists, and shoulders involved. The patient has very bad tonsils, and has been treated for some time for that and for ethmoidal sinusitis. Teeth in good condition. Under baking, massage, and the general treatment previously outlined, the patient improved immensely and was able to return to work after three months, though still in charge of the laryngologist. In a few months he had a recurrence of the attack affecting both knees and hands. Local treatment was resumed. Vaccines were used by the laryngologist. Improved after a few weeks.

During 1917 he had several attacks. The intestinal tract is in bad condition, and he is usually constipated. Attention to this by medication, diet, and exercises relieved the condition somewhat. During 1918 he again had trouble in the hands. The patient was then admitted to a general hospital where every available examination was made; he was kept under observation about four weeks, but no source of infection was found. The only possible cause was considered the tonsils. They were removed. While in general the patient feels fine, he has recurrent attacks of arthritis and cannot follow his occupation of letter carrier.

Comment: This case illustrates clearly how hard it sometimes is to find the focus of infection. The spread of infection has apparently been checked in this patient but a permanent cure has not been obtained.

529 COURTLANDT AVENUE.

THE VALUE OF IMMUNIZING DOSES OF INFLUENZA VACCINE IN THE PROPHYLAXIS AND SPECIFIC TREATMENT OF INFLUENZA.

BY WILLIAM EDWARD FITCH, M.D.,

NEW YORK.

NATURAL science had its beginning in experimentation. The successful research worker is a ceaseless painstaking observer. He theorizes, speculates, and formulates experiments to verify his hypotheses. Experimentation is the basic essence of our scientific knowledge.

All true investigators realize that it is no easy matter to plan and carry out an experiment to a successful termination. Even in the simpler physical sciences the elimination of disconcerting factors is not always a simple matter. In the biological sciences, more particularly in human medicine, conditions are so complex and the multiplicity of factors so great, that the study of any particular factor is often fraught with almost insuperable difficulties. Any one who will take the trouble to review the history of the many attempts during the past two or three decades to bring out and perfect specific serums and vaccines will find recorded countless wrecks of well meant endeavor and patient industry. Notwithstanding the failures of the past which lie wrecked on the rough rocks of fate, we must not for a moment slacken our effort or allow our enthusiasm to abate. The success already attained by our painstaking research workers in the prophylaxis and treatment of several infectious diseases should stimulate us to greater efforts, to fresh trials, and to experiments yet untried.

The success of Biological Therapy during the past few years is beyond question the greatest achievement which adorns the radiant pages in Modern Medicine of to-day. Scientific research has made possible the clearer understanding of the causes and effects of disease, as well as the means used by Nature to enable man and animals to recuperate from and give prophylaxis against disease.

The first step in this direction was the discovery of the important fact that each infectious disease is produced by a definite, specific bacterial infectious agent. It is also a proven fact that bacteria produce disease and cause death (*a*) by propagation within the tissues and fluids of the body producing either a local or a general bacteriemia with constitutional changes; or (*b*) by causing a local infection from which is liberated poisonous toxins—such as diphtheria and tetanus toxin.

The second step in this study was the application of Nature's laws in protecting the body against disease. Researches were undertaken to ascertain the reason why some individuals recover from and resist disease while others succumb and die. It was learned through painstaking research that the protecting immunity was due to certain immune bodies; and that these immune bodies, or antibodies, had the power of neutralizing and destroying the infectious agent. It was also ascertained that when a specific germ gained entrance into the body and set up a focus of infection the body cells were at once stimulated to action to repel the invasion and at once begin the production of a protective substance or antibody, which if produced in sufficient quantity would repel the invasion and stamp out the infection, but if in insufficient quantity the invasion is not repulsed and the infection increases, leading to ultimate death.

The recent pandemic of influenza which swept over this country and the rest of the world has been the subject of serious investigation to a surprising extent, not only because of its widespread prevalence, its alarming character, and grave mortality, but also because of its appearance during the great war, and its study by the medical depart-

ments of the armies of the world, including our own.

The exact etiology of influenza is still subjudice. From the present status of our knowledge of the bacteriology of influenza it is seriously questioned if Pfeiffer's bacillus, the *B. influenzæ* first described and isolated in 1892, has any etiological significance in this condition. Many eminent bacteriologists, including Victor C. Vaughan, Ludwig Hektoen, and other well known authorities, consider it a disease of "unknown origin."

Bloomfield and Harrop of Johns Hopkins University conclude from their studies of the recent pandemic of influenza that it was clinically identical with the epidemic in previous years. They emphasize the point, however, that there is no proof available to show that the Pfeiffer bacillus is the causative agent in uncomplicated influenza. Howard, also of the Johns Hopkins University, agrees with the last mentioned authors and practically all American investigators that the Pfeiffer bacillus is a secondary invader. W. H. Park, director of the Laboratories of the New York City Board of Health, avers that the microorganism causing this disease has not yet been identified.

Two prominent features stand out, sentinel like, indicating the action of a powerful toxin in influenza: (*a*) the consistent leucopenia and (*b*) the rapidity of onset with extreme prostration. Major McConnell, M.C., U.S.A. (*Jour. A.M.A.*, vol. lxxii, p. 1457) reviews the literature of various authorities and states that the blood counts taken early after the initial symptoms exhibit a striking leucopenia as low as 1,800 and averaging from 3,000 to 4,000. Brem, Bolling and Casper (*ibid.* vol. lxxi, p. 2138) in analyzing the pandemic of influenza at Camp Fremont, state that in the influenzal stage leucopenia was practically always present, and the average count was 6,000. Since it is a mooted question as to the exact etiology the search for the toxin has been more or less along empiric lines. Park reviews (*ibid.* vol. lxxi p. 476) his most interesting studies of the etiology of the recent pandemic of influenza and concludes that the organism produces a substance of great toxicity.

The mortality of the recent world-wide pandemic of influenza has taken by far a greater toll of American life than has the great war. The Bureau of the Census showed that for a period of sixty days—from Sept. 8 to Nov. 9 inclusive—in 46 large cities with an estimated population of 23,000,000, there was a mortality of 86,306 deaths from influenza. The total casualties in the American Expeditionary Forces has been unofficially estimated to be 100,000 and the deaths from influenza alone to be from 40,000 to 45,000. Thus in the 46 American cities with a combined population of a little less than one-fifth of the total for the whole country, the mortality due to influenza in a short period of time was nearly double that of the American Expeditionary Forces in France.

Rosenow, of the Mayo Clinic, Rochester, Minn., in a paper in the *J. A. M. A.*, vol. lxxii, No. 1, p. 31, discusses his experiences with the treatment of influenza and emphasizes the value of prophylactic inoculations in the successful treatment of the disease. He cautions that we put aside the much debated question of the specific cause of the initial symptoms, and strongly urges the early immunization of persons against the bacteria of pneumonia, streptococci, staphylococci, and the influenza bacillus—which are conceded to be the cause of death in this disease. Rosenow and his associates made an influenza vaccine containing the following: pneumococci types I, II, III, and pneumococci group IV, strains of hemolytic streptococci, staphylococci, and the influenza bacillus. All of the physicians, nurses, and employees of the several hospitals were first inoculated, and the vaccine was furnished gratis to all physicians within 200 miles of Rochester. Rosenow states that all but two of the 70 physicians to whom he sent vaccine reported that the attacks of influenza if contracted after inoculation were milder and of shorter duration and that convalescence was more rapid than in the uninoculated. In one of the Rochester hospitals in which all of the nurses were inoculated, not a single case developed among the nursing staff, although they continued on duty nursing influenza patients.

Rosenow's initial dose of vaccine for adults was 0.5 c.c. administered subcutaneously. One week later the second dose of 1 c.c. was administered, and the third dose of 1.5 c.c. was given 14 days after the first. The dosage for children ranged from 0.1 to 0.3 c.c. according to age. A moderate reaction was noted. The constitutional symptoms were very mild or altogether absent.

A number of competent clinicians have reported most favorable results from the use of immunizing doses of vaccine in the prophylaxis and specific treatment of influenza. Others report excellent results from the administration of vaccines in minute doses of 20 million organisms during the febrile stage of the disease.

Another notable advance in the specific treatment of this disease has been the injection of the serum from a convalescent patient into the circulation of a patient suffering from the disease, when due to the same organism. McLean and Pepper report very satisfactory results from the administration of convalescent serum to influenza patients.

Eyre and Lowe, writing in the *Lancet*, April 5, 1919, present their combined clinical results among the New Zealand troops from the administration subcutaneously of a vaccine as a prophylactic measure against influenza. The vaccine used was polyvalent containing many strains of pneumococcus, streptococcus, staphylococcus, and the influenza bacillus. Of a total of 21,759 men in the garrison, 16,104 were given two doses at ten-day intervals and 5,700 received only one dose. The total strength of the garrison was 21,759 men, of whom 15 per cent. came down with the disease, but the infective incidence in the fully inoculated was only one-third that in the partially or uninoculated. The mortality in the uninoculated was three times as great as in the inoculated for the severe cases, while the total for all cases infected was nine times as great in the former as in the latter.

In October, 1918, the physician to the Philadelphia Electric Co. administered immunizing doses of influenza vaccine to the 4,000 employees of the company with the brilliant result of only three men contracting influenza. Prof. Solomon Solis Cohen of Philadelphia states that the mixed bacterial vaccines are as valuable and efficient in the treatment and prophylaxis of influenza and its complications

as mercury is in syphilis or quinine in malaria.

William E. Robertson has administered intravenously the mixed vaccine in hundreds of cases of influenza in various stages of the disease and has been rewarded with the most satisfactory results. Thousands of soldiers were successfully inoculated at the various army cantonments, escaping the disease, and many thousand citizens of New York City, Boston, Chicago, Philadelphia and other places received prophylactic immunization and were thereby saved from serious illness, or perhaps death.

There is no danger from administering the prophylactic immunization during an epidemic, or even giving the vaccine to a patient who later turns out to be in the incubation period at the time of injection. This prophylactic immunization is of decided value, not only in reducing the incidence of the disease, but also in diminishing its severity in those who are attacked in spite of its administration.

405 LEXINGTON AVENUE.

THE BLOOD IN INFLUENZA.

BY B. LEMCHEN, M.D.,

CHICAGO, ILL.

PHYSICIAN TO THE CHICAGO STATE HOSPITAL.

THIS paper represents examinations of blood of some of those that were sick with influenza during the months of January and February, 1920, including 14 unselected cases out of 115 patients and employees treated at my service at the Chicago State Hospital.

CASE I.—Mr. M. Total leucocytes, 3,000; polymorphynuclear, 41%; small lymphocytes, 1%; large lymphocytes, 2%; large mononuclear, 37%; esinophiles, 2%; transitionals, 13%; unclassified, 4%.

CASE II.—Mr. T. Total leucocytes, 5,000; polymorphynuclear, 63%; small lymphocytes, 15%; large lymphocytes, 9%; large mononuclear, 2%; transitional, 7%; unclassified, 4%.

CASE III.—Miss L. Total leucocytes, 4,300; polymorphynuclear, 14%; small lymphocytes, 43%; large lymphocytes, 31%; large mononuclear, 3%; transitional, 8%; unclassified, 1%.

CASE IV.—Mrs. B. Total leucocytes, 9,600; polymorphynuclear, 17%; small lymphocytes, 14%; large lymphocytes, 6%; large mononuclear, 32%; esinophiles, 3%; transitional, 6%; unclassified, 22%.

CASE V.—Mr. D. Total leucocytes, 12,000; polymorphynuclear, 77%; small lymphocytes, 9%; large mononuclear, 13%; unclassified, 1%.

CASE VI.—Mr. A. Total leucocytes, 7,200; polymorphynuclear, 77%; small lymphocytes, 17%; large lymphocytes, 1%; large mononuclear, 4%; esinophiles, 1%.

CASE VII.—Miss R. Total leucocytes, 6,000; polymorphynuclear, 48%; small lymphocytes, 25%; large lymphocytes, 13%; large mononuclear, 8%; transitional, 3%; unclassified, 3%.

CASE VIII.—Miss W. Total leucocytes, 6,400; polymorphynuclear, 70%; small lymphocytes, 1%; large lymphocytes, 4%; large mononuclear, 20%; transitional, 3%; unclassified, 2%.

CASE IX.—Mrs. H. Total leucocytes, 11,800; polymorphynuclear, 77%; small lymphocytes, 3%; large lymphocytes, 1%; large mononuclear, 12%; transitional, 5%; unclassified, 2%.

CASE X.—Mr. G. Total leucocytes, 17,800; polymorphynuclear, 78%; small lymphocytes, 10%; large lymphocytes, 2%; large mononuclear, 3%; esinophiles, 1%; transitional, 1%; unclassified, 5%.

CASE XI.—Mrs. D. Total leucocytes, 8,600; polymorphynuclear, 61%; small lymphocytes, 13%; large lymphocytes, 8%; large mononuclear, 2%; esinophiles, 1%; transitional, 5%; unclassified, 10%.

CASE XII.—Mrs. B. Total leucocytes, 6,000; polymorphynuclear, 20%; small lymphocytes, 15%; large lymphocytes, 6%; large mononuclear, 36%; transitional, 6%; unclassified, 17%.

CASE XIII.—Miss D. Total leucocytes, 5,200; polymorphynuclear, 61%; small lymphocytes, 14%; large lymphocytes, 7%; large mononuclear, 15%; esinophiles, 1%; transitional, 2%.

CASE XIV.—Miss G. Total leucocytes, 2,800; polymorphynuclear, 46%; small lymphocytes, 39%; large lymphocytes, 6%; large mononuclear, 7%; transitional, 1%; unclassified, 1%.

In all cases studied there was also a great diminution of blood platelets, with an increase of the coagulability of the blood. In some of the patients the blood would coagulate while I drew the blood and the acetic acid in the pipet, which would take me from one to two minutes, and for making smears I would have to prick the finger again. Case V had in addition a tonsillar abscess. Case IX developed purpura hemorrhagica, case XI otitis-media, case IV and case XII broncho pneumonia. Two cases not in this series have developed empyema. In one I found the streptococcus and in the other the pneumococcus.

Nine out of this series had uncomplicated influenza and all had a persistent leucopenia, with a great decrease in the polymorphonuclear elements, with the platelets and an increase in the viscosity of the plasma.

It soon appeared to me that the virus of influenza early in the disease enters the blood stream, attacks the polymorphonuclear leucocytes with blood platelets, and these, during their destruction, liberate something, probably a ferment that increases the viscosity of the blood, which hastens its coagulability. For the same reason the host inhibits the rapid formation of the polymorphonuclear lucocytes, as in the majority of the infectious diseases, so as not to increase still more the viscosity of the blood, and for this reason we find the persistent leucopenia. That prostration, apparently due to the increase of the viscosity of the blood and the diminution of the defenders, polymorphonuclear leucocytes, in a person suffering from influenza, will predispose him to the so many complications and especially respiratory complication, would surprise no one. To counteract this we must try to diminish the coagulability of the blood. For this reason I pushed fruits that contain citrates. As I believe I received good results, I would like to outline my plan of treatment.

When a patient was received at the hospital department and a diagnosis of influenza was made, and there were no counter indications, I gave him calomel, gr. 1/10, every 15 minutes. Two hours after the last dose of calomel I gave Epsom salts, ℥ i in water. The first day the patient was allowed nothing but water, after small amounts of milk, cooked cereals, soft-boiled eggs, soups, first in small quantities, watched which food best agreed with the patient, then I would increase it. Milk, owing to its large amount of calcium salt, was given as little as possible. From the fruits that contain citrates I first tried lemons in the form of lemonade, but for some reason my patients did not stand lemonade well, as they would vomit soon after taking it. Then I gave orange juice, which was well retained. However, I found that grape fruit sweetened with sugar was better retained than any others and I pushed it. Occasionally I used potassium citrate,

but only occasionally. In a few instances I used also digitalis, aspirin and Dovers powders. In the majority of the cases I relied entirely on the grape fruit.

I treated in all 115 cases and lost 10 cases, which would seem high, but considering the kind of cases, I believe the result was very satisfactory. Several of those that died were in the later stages of general paralysis of the insane, others were of the senile type and difficulty of carrying out treatments among the insane.

Only one of those that died was under 40 years of age and none of the employees died. On the same reasoning it appears to me that when we succeed in isolating the organism that causes influenza, a vaccine of it, together with citrates, ought to prove of value in myologenous leucemia. As pernicious anemia is apparently due to decrease in the viscosity of the blood, a vaccine of the same organism, together with sodium nuclenate, that stimulates the formation of leucocytes, ought to prove of value.

CANCER OF THE OMENTUM.

By J. N. STUDY, M.D.,

CAMBRIDGE CITY, IND.

On February 26, 1919, I visited Caroline J——, age 76 years. In my examination my attention was attracted to an enlargement in the right side of the abdomen extending from the lower border of the liver downward toward the lower part of the abdominal cavity. This enlargement was quite movable, unattended with pain, somewhat flattened on the surface, and rather hard and somewhat oval in shape. There had been some previous noticeable loss of flesh.

I visited the patient at intervals until her death, September 16, 1919. There had been a continued gradual loss of flesh, without pain or other bodily disturbance. The tumor became larger and remained quite movable until her death. Necropsy findings were a growth, flat on the external surface, somewhat ovoid in shape, about six inches long, estimated weight two and one-half pounds, occupying the right side of abdominal cavity and extending over the median line to the left one and one-half inches. This tumor was quite movable and not attached to any organ and was of hard consistency. The gross appearance was cancer of the greater omentum, which section plainly indicated.

For more accurate statistical facts for reporting, the writer throughout his professional career as a general practitioner of medicine for many years, seldom has missed an opportunity to make autopsies in obscure and doubtful cases, some of which have proven to be very interesting. In a particular instance the gross appearance indicated cancer of the lungs, and the specimen was verified as cancer under the microscope by the late Dr. E. G. Janeway of New York.

Through the courtesy of F. L. Hoffman, statistician for the Prudential Life Insurance Company of America and author of "Mortality from Cancer Throughout the World," some statistics concerning the comparative frequency of cancer of the omentum are appended.

Galen's Digestive Pathology.—Galen knew of stricture of the esophagus in different degrees and from different causes, and knew that bones, etc., lodged in this canal could set up abscesses. He knew also of distention and dilatation in pockets and vomiting of blood from trauma and ulcer. Headache was often due to the stomach and in some subjects a little wine was sufficient to cause it. Sour stomach, water brash, salivation, eructation, etc., were symptoms of a common condition—acid stomach with glairy catarrh. Boulimia, abnormal cravings, etc., were well known in his day.—*Journal de Médecine de Paris.*

INDUSTRIAL MORTALITY FROM CANCER (WHITE AND COLORED) BY SEX AND AGE PERIODS
1917–1918

		Age Periods																		
	All Ages	1	2	3	4	Total Under 5	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75 and Over
Males—White																					
1917																					
Cancer Omentum	8	..	..	..	..	..	..	..	..	1	..	..	1	1	..	..	1	2	1	1	..
All Forms	2300	3	3	6	6	18	12	9	20	16	21	32	72	120	201	281	385	428	311	207	167
1918																					
Cancer Omentum	20	..	1	..	..	1	2	..	..	2	..	..	3	1	1	1	2	3	2	2	..
All Forms	2317	4	9	5	4	22	13	12	14	30	39	41	96	112	199	310	373	367	328	186	175
Females—White																					
1917																					
Cancer Omentum	33	..	..	..	..	..	..	..	..	1	1	1	2	7	3	3	4	6	5	..	..
All Forms	4575	2	2	1	2	7	9	5	15	24	43	140	251	397	535	636	737	618	569	331	258
1918																					
Cancer Omentum	47	..	..	..	..	..	..	1	1	..	..	2	4	4	10	5	6	5	2	3	4
All Forms	4747	3	2	4	3	12	16	9	14	27	54	131	241	452	595	607	744	637	553	365	290
Males—Colored																					
1917																					
Cancer Omentum	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
All Forms	5	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	1	..	..	1	..
1918																					
Cancer Omentum	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
All Forms	10	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	2	..	..	4	2
Females—Colored																					
Cancer Omentum	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
All Forms	29	..	..	..	..	..	..	..	..	..	2	1	2	4	5	3	5	..	6	1	..
1918																					
Cancer Omentum	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..
All Forms	30	..	..	..	..	..	..	..	..	..	..	1	1	..	4	6	4	1	5	6	2

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New York, July 17, 1920.

THE HYPERGLYCEMIC REACTION.

ABOUT a year ago we had occasion to call attention in these columns (MEDICAL RECORD, August 23, 1919) to the changes that occur in the glucose content of the blood following the ingestion of glucose or the injection of adrenalin. At that time it was recognized that a definite hyperglycemic reaction occurred in a number of diverse conditions and we took the opportunity to point out the improbability of there being a sound basis for a test then proposed for the detection of malignancy founded upon a reaction of a certain type. During the past year many interesting studies have been carried out in an attempt to determine the nature of this reaction and the factors which control it. There are two which have especially attracted our attention and which deserve comment.

Jacobsen and Edwards have been investigating the influence of protein meals in diabetics and nephritics and report some interesting observations (*Am. Jour. Med. Sci.*, clix, 833, June, 1920). The standard meal used consisted of fifty grams of protein in the form of beefsteak and 200 c.c. of water. The blood was examined before and at varying intervals up to twenty-four hours after the meal. The plasma sugar of normal persons was not appreciably affected by this meal, but in cases of diabetes which were sufficiently severe there was a definite hyperglycemic reaction. The authors are of the opinion that this procedure may be of some value in determining the degree of severity of a case of diabetes. They found also that a similar reaction was apt to occur in cases of nephritis. There has been much discussion as to the nature of the substance which gives rise to high blood sugar values in nephritis. It reacts in a similar manner in all of the methods used and possibly may be glucose, but most of the chemists who have worked on the problem are inclined to think that it is some other substance which reacts like glucose both to copper salts and to picric acid. The question is still being actively investigated.

Rohdenburg and Pohlman have studied another phase of the subject. They injected rats and rabbits with a large number of different substances and studied the sugar content of the blood at fixed periods thereafter (*Am. Jour. Med. Sci.*, clix, 853, June, 1920). They found that one of three types of reaction occurred after the injection of various organic and inorganic preparations and that the reaction was not influenced by the removal from the animal of any of the glands of internal secretion. No reaction type was specific for any of the substances injected. They are of the opinion that a reaction induced by so many different agents must of necessity play a most important part in the physiological and pathological processes of the organism. Indeed, if appears to be one of the manifestations of disturbance of the normal balance which exists between the different members of the endocrine system. But the significance of a reaction that occurs with such frequency can be estimated only with the greatest difficulty if at all. The greatest caution must be used in applying it to the solution of any problem.

These authors found that when the substance injected was typhoid vaccine repeated injections were accompanied by a gradual rise in the blood sugar parallel with the rise in agglutinins or lysins, and that when the agglutination titer had reached its maximum, no further glycemic reaction occurred. This observation is made for the first time and naturally cannot yet be explained. Confirmation must be had of the author's results and much investigation must be carried out before it would be permissible even to speculate on the question. If their observations are confirmed it may be possible, as they suggest, to use this fact to determine when an immunization has reached its highest point, or it may be used to study the reaction of the body to such substances as glycerin, fats, etc., which do not call forth antibody production. The hyperglycemic reaction is, therefore, obviously one of great complexity and can be used at the present time only in the investigation of those conditions in which its variations have been sufficiently studied to permit us to draw reasonably safe conclusions. Beyond the one or two conditions in which these safeguards are present the interpretation of this reaction lies in the realm of pure speculation and reliance upon it is an unsafe procedure.

OBSTETRICS AND THE STATE.

THE most severe indictment of the methods of teachings midwifery in a civilized country was made recently by Dr. Comyus Berkeley, obstetric and gynecological surgeon to the Middlesex Hospital, London, in an address he gave in London and which was published in the Bulletin of the Fellowship of Medicine. He asserts that the present position of midwifery in the United Kingdom, from both the public and the professional point of view, is a disgrace. According to Berkeley the causes that have prevented any improvement in midwifery are threefold: (1) The lack of proper provision for the lying-in woman. (2) The superficial nature of the training of the student in midwifery. (3) The failure of the public to recognize the import-

ance of midwifery. In the *Canadian Medical Association Journal* for April, 1920, is a paper by Dr. K. C. McIlwraith of Toronto dealing with the same subject. From statistics quoted in this paper it appears that the mortality of childbirth is greater in the United States than in Great Britain, as in 1910 the total maternal mortality was 3.69 per 1,000 living births, of which 1.44 were due to sepsis, while in the registration area of the United States in 1910 the total rate was 6.5 per 1,000 living births with sepsis at 2.9, giving a proportion of 44 per cent. New York City probably brought the figures up that year by providing the enormous mortality of 10 per 1,000, with 5.7 or over 50 per cent. of the total due to sepsis. In Ontario during the years from 1909 to 1918 inclusive the figures furnished by the Registrar-General show a total mortality of 5.4 per 1,000 living births with sepsis accounting for 1.88 or a percentage of 35. Dr. Grace L. Meigs gives statistics of fifteen other countries and McIlwraith points out that in twelve countries of which the statistics have been analyzed, for the purpose of ascertaining what percentage of the total death-rate is due to sepsis, it has been shown to vary from 30 to 50 per cent. McIlwraith and other authorities believe that this death rate is nearly all preventible, and he draws attention to the fact that this is only one of the preventible causes.

The writer says that in his opinion the following are some of the causes of puerperal death in Canada: (1) Many years of observation have led him to the conclusion that some, at all events, of the morbidity and mortality in childbirth has resulted from meddlesome midwifery. There is too great a tendency to injudicious, and particularly to premature, use of forceps. Furthermore, an obstetrician is, by virtue of his specialty, a surgeon, and must exercise as much care in this branch of the work as is exercised in any other. Many men doing obstetric work in hospitals fail, McIlwraith is afraid, to realize the value of the precautions by which their work is there surrounded. The aseptic delivery room, sterilized water, solutions, dressings, instruments, and ligatures; the preparation of the patient for delivery, the gloves, gowns, caps, and masks, with which they are supplied, are taken for granted, laughed at, or even refused. McIlwraith thinks it likely that if called upon to reproduce these conditions in a private house, many would not know how, or would not take the trouble. (2) The public is grossly ignorant of the real danger of parturition, and is inclined to regard the effort of the careful obstetrician as mere ostentation. Among the better class of patients a great improvement has taken place, most people now demanding that supervision which they used to reject, but ignorance still persists among the poor. (3) Much obstetric surgery—instrumental deliveries, versions, repairs of the perineum—is undertaken in surroundings that make it unsafe. It is the venue of the case, the writer believes, quite as often as failure of mechanical skill on the physician's part, that leads to disaster. (4) One curious fact comes out in Sir Arthur Newsholme's report, that the mortality increases noticeably the further north we go, being lowest in the southern, higher in the midland, higher still in the northern countries of England, and highest of all in Scotland. Perhaps no great significance attaches to the fact but it is in accord with McIlwraith's observations on the effect of climate.

As for remedying the existing unsatisfactory state of affairs as regards the management of labor, two features stand out: first, that the training of medical students and of midwives must be more thorough in every respect, and second that better facilities must be provided for the great majority of women in labor. In this country the facilities provided for those who can afford to pay are excellent, with regard to both the skill of the obstetrician and the environment. But it is altogether a different matter with those whose means will not permit of their being placed in a lying-in institution. The question in every country is a national one, and in some countries the State is beginning to recognize it as such. In England, for instance, the Ministry of Health, a State bureau, realizes its responsibility in the matter and has given notice that the erection of maternity hospitals is a part of its program. The public is ignorant as to the dangers of midwifery and the profession has been and still is, to some extent, indifferent and lethargic. In no branch of surgery is reform more urgently called for than in that of obstetrics, and it is encouraging to know that the profession and intelligent citizens are becoming aware that such is the case.

SACROCOCCYGEAL INFUNDIBULA AND CONGENITAL PARACOCCYGEAL SINUSES.

THE clinical aspects and symptoms of sacrococcygeal infundibula and congenital paracoccygeal sinuses are not devoid of practical interest, especially in order to avoid mistaking these for other lesions which are met with in this region. A subject possessing one of these congenital defects may be completely unaware of its presence and consults the physician for some other affection, when the defect will be observed during examination. In some instances the physical symptoms will take the form of spontaneous or provoked pain over the coccygeal region. Spontaneous pain is uncommon, the patient being more liable to complain of a pricking sensation or pruritus, indications of an inflammatory process arising in or around the defect. At other times, on the contrary, shooting pain may be complained of, extending to the lumbar region, buttocks, or thighs. The pain occurs when the patient moves or indulges in violent exercise or after long walks.

By questioning, one will learn that the linen is spotted by a serous discharge, or it may be purulent, while inspection will give more definite data as to the extent and importance of the defects. Infundibula and foveolæ are met with in various forms, being circular, oval, or parabolic in shape.

There may be one or several depressions and it is essential to ascertain if these are seated in front of the coccyx, over its tip, over the sacrococcygeal joint, or still higher up in the sacral region. Note should be made of their situation in the middle line or to the sides. Inspection will also allow one to appreciate the difference of color and apparent structure of the skin around the defect, as well as the presence or absence of plication.

The study by simple inspection of a paracoccygeal sinus arising in congenital defects will result in obtaining important clinical data. What will sometimes strike one at first glance is the change observed in the color of the skin: the integuments of the region may offer a hyperemic or ecchymotic redness, but there is neither vascular dilatation, abnormal pigmentation, nor hypertrichosis. However, the usually narrow orifice, round and marked by folds on its surface, is commonly made up of normal skin which dips down into the track of the sinus. There may be numerous orifices, and the adventitious openings are reddish, indurated, and frequently fungous; in a word, they offer the usual appearance of any fistulous openings. The direction of the sinus in relation to the cutaneous surface—perpendicular or oblique, should be noted, as well as the nature of the discharge—serous or sometimes purulent, to which it gives exit. After these points have been examined, palpation should next be done. Some discharge may be expressed, purulent in nature and occasionally streaked with blood, coming from ruptured capillaries in the walls of the sinus. Occasionally there may be an elevation of the temperature, due to secondary infection or retention of the secretion, and when the amount of purulent fluid in the cavity is sufficient, fluctuation may be elicited, while some edema of the region is sometimes manifest. The extent of the mobility should be ascertained; in some cases it is diminished, in others completely absent. Pressure over the parts will cause some pain or discomfort. The regional lymphnodes are to be examined and will occasionally be found enlarged.

These congenital defects may be mistaken for either syphilitic or tuberculous lesions, but such a mistake in diagnosis will not be likely to occur if one recalls the clinical aspect of the condition and especially the fact that sacrococcygeal infundibula and congenital paracoccygeal sinuses are not so uncommon as has been generally supposed. The all-important fact to be remembered is that when these congenital paracoccygeal sinuses are explored with a probe, no denuded bone surface will ever be discovered, and this alone will differentiate them from the sinuses developing later in the region.

Recent Developments of Cardiovasculorenal Pathology in France.

In an issue of the new French journal, *La Médecine*, for March, 1920, i, 6, devoted exclusively to these affections, Ribierre sketches the recent contributions by Frenchmen in this field. By means of simple exploratory technique Josué and Laubry have been able to differentiate between structural and functional murmurs, while Vaquez has made contributions to our knowledge of functional valvular insufficiency. The results show the prevalence of error in some of the old teaching. The same school has introduced certain instruments of precision, such as the sphygmotensionmètre of Vaquez and the Vaquez-Laubry sphygmotensionphone; while the oscillomètre of Pachon is in common use. Pachon is himself a physiologist and the popularisation of his instrument is due largely to the efforts of Aubertin. Orthodiagraphy owes much to the labors of Vaquez and Bordet, Weill, Harvier, and Laubry. Graphics and especially electrocardiography have been pronounced by Vaquez absolutely necessary to establish the status of arrhythmias, and Routier has made the same resource necessary for auriculoventricular dissociation, etc. Josué has initiated auscultation of the venous pulse and viscosimetry of the blood. Coming to the subject of renal pathology the work of Widal, Weill, and Pasteur Vallery-Radot during the past fifteen years on the prognosis of chronic nephritis on the basis of the blood urea, etc., and that of Ambard in connection with the ureosecretory constant, to say nothing of the early work of Widal on chlorine retention and its dietetic treatment, are now common assets of medical practitioners everywhere.

Relations of the Cerebrum to the Sexual Functions.

Dr. Desogus, writing in *La Riforma Medica* for February 28, xxxvi, 9, claims for Professor Ceni the pioneer work on this subject. He originated a course of animal experiment along these lines and was able to point out that the nerve centers exercise a trophic action over the sexual apparatus. Destruction of parts of the anterior lobes of the brain in both higher and lower vertebrates is followed by involutional changes in the gonads. At the same time the sexual instinct is suppressed and the secondary sexual characters recede. But sometimes these changes are only temporary, especially in the older animals, while in the young animal they are apt to be progressive and accompanied by premature senescence. Under favorable conditions the losses which follow the operation are regained to a greater or less degree. Recovery may be very slow and incomplete. During the period of default the ovaries may be seen to be structurally altered and recovery of function coincides with restoration of the normal structure of the glands. There is great variation seen in individuals. These relations are upheld by finds in England on the ovaries of insane women and in Norway by the action of alcohol on the same glands. Similar is the relationship between the nervous centers and testicles. The changes seen in the male gonads in insanity are associated with spermatogenesis, the interstitial tissue increasing at the expense of the secretory apparatus, as is also seen in cryptorchism and after röntgenization and vasectomy. Elaborate work along these lines was published by Todde in 1911. Ceni insists that the connection between the brain and gonads is a direct one and not effected through any intermediary like the ductless glands.

Prognosis in Acute Nephritis.

In acute nephritis, according to Merkler, writing in *La Médecine* for March, 1920, i, 6, the prognosis does not depend on any one factor to the exclusion of others. Generally speaking the older the subject the worse the prognosis, for in the child repair is more readily effected by Nature. The virulence of the original disease which preceded the nephritis is a factor to be reckoned with. Thus in an unrecognized scarlatina the renal lesion may be slight although absence of the needed treatment is a factor which works in the opposite direction. A kidney already the seat of a lesion offers less resistance to an infection than an intact kidney. The coexistence of lesions of other emunctory organs aggravates the prognosis for obvious reasons. There is such a factor as hereditary renal weakness which has the same consequences, so that the family history may be useful. Albuminuria which does not diminish under rational treatment of the disease is unwelcome in prognosis and the same is true under analogous circumstances of edema and chloruremia and anuria. Depressive and inhibitory nervous symptoms foretell coma unless relieved, while motor excitement on the contrary, unless severe, is much less to be feared. Progressive digestive disorders are unfavorable, but respiratory symptoms such as renal asthma are less menacing. Hypertension is not the factor that one would suppose in prognosis save when rupture of a vessel is inevitable. Marked azotemia in acute cases is dangerous only when there is no tendency to recession in a short time.

Alleged Syphilitic Autosuperinfection.

The following case is reported in *La Medicina Ibera* (March 6, 1920, x, 122), by Fernandes de la Portilla of the San Juan de Dios Hospital, Madrid: A man, aged 23, entered the service of Dr. Sainz de Aja with a chancre cicatrix and secondary syphilis, the infection going back to ten months before admission. He received intensive treatment in the form of grey oil injections and for several months remained free from all evidences of the disease. A second chancre then appeared close to the first, both having been preputial, and this was followed by adenopathy, the provisional diagnosis being reinfection, with the possibility of superinfection. It was impossible to prove that the disease had been cured by the mere injection of grey oil not over four times in succession and the diagnosis of superinfection was substituted. The question narrowed down to auto- or heteroinfection and as coitus was vigorously denied and no evidence of exposure could be found the case was thenceforth regarded as one of autosuperinfection. The original chancre was doubtless not sterilized by the slight amount of treatment, although the spirochetes were perhaps brought to a state of latency and at a later period they appear to have become free at the periphery of the scar of the first sore and to have produced a second sore. The limit heretofore established for superinfection is much shorter than that in evidence in this case, and we dare say that in the judgment of the most expert syphilographers the lesion would be called a pseudochancre, of which there are numerous types. There is no mention of the Wassermann or microscopic control.

News of the Week.

Pan-Hellenic Congress of Hygiene and Demography.—Simultaneously with the celebration of the centenary of Greek independence, the first Pan-Hellenic Congress of Hygiene and Demography will be held at Athens April 25 to 30, 1921, under the presidency of Professor Phocos. Six sections will be represented: Public health, individual hygiene, military and naval hygiene, demography, infantile hygiene, and prophylactic hygiene. An international exhibition of hygiene and medical industry will be opened at the same time as the congress and will continue until June 25th. Further information concerning the congress and exhibition may be obtained from Dr. P. Rondopoulo, 14, Rue Nikiforon, Athens.

Far East Medical Education.—In the third installment of the report of the Rockefeller Foundation President George E. Vincent outlines the work last year of the China Medical Board, which seeks to aid the agencies which represent Western medicine in China to make steady progress toward higher standards and more efficient service. The chief agency, according to the report, by which it is hoped to further these aims is the Peking Union Medical College, recently opened and being completed. It is to have laboratories for anatomy, philology, and chemistry; a pathology building; a 250-bed hospital; a large out-patient department; quarters for resident physicians, nurses and internes; faculty residences; and its own light, heat and power plants. Three of the teaching buildings were occupied in October, 1919, and it is expected that the entire plant will be completed by January 1, 1921.

Bubonic Plague in Texas.—Eight cases of bubonic plague have been reported at Beaumont, Texas, by the State Health Officer. Three of the cases were fatal. Three cases with two deaths have been reported at Galveston. The State is waging a vigorous crusade against rats.

Commission of Medical Education Meets.—The first meeting of the Commission of Medical Education in Virginia was held June 28 at the capitol in Richmond. Dr. Wilbur C. Hall of Loudoun was elected chairman and Dr. Theodore Huff of Charlottesville was made secretary. The commission will make a thorough investigation of the present status and future possibilities of medical education in Virginia, especially as these relate to a merger of the Medical College of Virginia with the medical department of the University of Virginia. It was resolved that the press should be barred from the sessions.

Victory for Alabama Medical Association.—The Supreme Court of Alabama recently confirmed the decision of the Montgomery Circuit Court whereby the Alabama Medical Association will continue to name the State board of health and will continue to be the chief authority for the enforcement of all State laws relating to health.

Medical Internes Wanted.—The United States Civil Service Commission announces an open competitive examination, to be held October 1, for medical interne. Vacancies in Saint Elizabeth's Hospital, Washington, D. C., at $1200 a year and maintenance, and vacancies in positions requiring similar qualifications, at this or higher or lower

salaries, will be filled from this examination. Appointees whose services are satisfactory may be allowed the temporary increase granted by Congress of $20 a month. The positions are tenable for one year. During the year, however, a postgraduate course in mental and neurological diagnostic methods is given, an examination is held, and promotions to the next grade, junior assistant physician, are made. Beyond this there is regular advancement for employees whose services are satisfactory. Saint Elizabeth's Hospital has over 3,000 patients and about 800 employees to care for. In addition to the general medical practice offered, the scientific opportunities in neurology and psychiatry are unsurpassed. Both men and women, if qualified, may enter this examination. Applicants should apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C., or to the secretary of the local United States Civil Service Board.

Bacteriologists Wanted.—The United States Civil Service Commission announces open competition examinations, to be held October 1, for bacteriologist and junior bacteriologist. Vacancies in the Public Health Service throughout the United States are to be filled from these examinations. The register of eligibles resulting from the bacteriologist examination will be used for filling vacancies in the positions of bacteriologist at $130 to $180 a month and associate bacteriologist at $90 to $130 a month. The register of eligibles resulting from the junior bacteriologist examination will be used for filling vacancies in the positions of assistant bacteriologist at $70 to $90 a month; junior bacteriologist at $70 a month; and junior bacteriologist, part time, at $30 to $50 a month. Appointees will be allowed subsistence, and one room or $15 to $20 a month in lieu of quarters, according to grade and station. Appointees whose services are satisfactory may be allowed the temporary increase granted by Congress of $20 a month. The entrance salary within the range stated will depend upon the qualifications of the appointee and the duty to which assignment is made. Applicants should apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C., or to the Secretary of the local United States Civil Service Board.

New York State Civil Service Examinations.—Examinations will be held by the New York State Civil Service Commission, July 31, for the following positions: Assistant Medical Examiner, State Industrial Commission, salary $2000; Physician and Assistant Physician, State institutions, salary, $1,500 to $1,800 and maintenance; Physician (psychiatrist), Syracuse State School for Mental Defectives, salary $2,000 and maintenance. Request for further information should be made to the State Civil Commission, Albany, N. Y.

The British Medical Association, which has just held its annual session in Cambridge, will meet next year at Newcastle-on-Tyne and in 1922 in Glasgow. Dr. David Drummond, Vice-Chancellor and Professor of the Principles and Practice of Medicine at the University of Durham, has been elected president of the Association for 1921-22.

Crime May Bar Bay State Physicians from Practice.—The Attorney General of Massachusetts has recently ruled that a physician who is convicted of any crime may be barred from practice in that State, even though such crime is committed outside the practice of his profession.

Classes for Crippled Children.—The sum of $258,245 was requested for the classes for crippled children in the New York City public schools for 1921. This was reduced to $44,000, which was provided. The number of classes was reduced from the thirty-six requested to nine. Provision was made for five additional classes for children with speech defects in the elementary schools and for three additional classes in the high schools. A class in each of the training schools for teachers, for the instruction of prospective teachers for correction of speech defects, was allowed.

Chicago Doctors Form Union.—A movement has been started, according to Dr. Thomas P. Foley, chairman of the contract practice committee of the Chicago Medical Society, to organize a union among the members of that body which will correspond to the lawyer's association and other such organizations of professional men. It is said not to be aimed at the public, but rather at industrial and other corporation employers of physicians to force them to increase salary scales for regularly employed physicians and surgeons.

Funeral of General Gorgas.—The funeral of Major-General William C. Gorgas, who died in London, July 4, was held in St. Paul's Cathedral at noon on July 9, with military honors. The pallbearers included the Military and Naval Attachés of the American Embassy; the President of the Royal College of Surgeons, Viscount Astor, Major General Sir Richard H. Charles, Sergeant Surgeon to the King; Brig. Gen. John H. Finney, Lieut. Col. Sir James Fowler of the Colonial Office and Director General of the British Naval Medical Department; Dr. Charles Mayo and other eminent physicians and surgeons. Among those who attended the service at the cathedral were Lieut. Gen. Sir Thomas H. Goodwin, Honorary Surgeon to King George, who represented the King; representatives of Dowager Queen Alexandra; John W. Davis, the American Ambassador, and Mrs. Davis; Sir Christopher Addison, British Minister of Health, representing the Government; delegates from the Army Council; Viscount and Lady Brice; Colonel de Page, representing Belgium, and representatives of Panama, Cuba, Peru, Canada, Argentina, South Africa, New Zealand, Australia, and Serbia.

Medical Society Elections.—The MAINE MEDICAL ASSOCIATION, at its sixty-ninth annual session held in Augusta the latter part of June elected the following officers for the ensuing year: *President,* Dr. Theodore E. Hardy, Waterville; *First Vice-President,* Dr. G. R. Campbell, Augusta, *Second Vice-President,* Dr. James McFaden, Milo; *Secretary-Treasurer,* Dr. B. L. Bryant, Bangor.

THE MONTGOMERY COUNTY (Ohio) MEDICAL SOCIETY, at a recent meeting held at Dayton, elected the following officers: *President,* Dr. A. E. Shepherd; *First Vice-President,* Dr. A. B. Brower; *Second Vice-President,* Dr. E. E. Shepherd; *Third Vice-President,* Dr. W. B. Bryant; *Secretary,* Dr. Robert C. Austin; *Treasurer,* Dr. F. D. Crowl.

Obituary Notes.—Dr. J. D. SOURWINE was found dead in bed at his home at Brazil, Ind., June 26. He was sixty-eight years of age, and was graduated from the Central College of Physicians and Surgeons, Ind., in 1896, specializing in gynecology. He was a member of the American Medical Association. Dr. Sourwine was one of the promoters of an electric line connecting Brazil and Harmony, said to be the first interurban line built in the United States.

Dr. JOHN H. CURTIS, formerly of Chicago, died in New Britain, Conn., June 26. He had been superintendent of the New Britain department of health since February. Dr. Curtis. who was fifty-six years of age, was graduated from New York University Medical College in 1886.

Dr. F. S. WARREN of Biddeford, Me., died suddenly of apoplexy June 28, at the age of sixty-nine. He was graduated from the Medical School of Maine, at Portland, in 1872.

Dr. FINLEY ELLINGWOOD of Chicago, died at Pasadena, Calif., June 29, at the age of sixty-nine. He was graduated from Bennett Medical College, Chicago, in 1878, and was active in Eclectic medical circles.

Dr. E. C. OGLESBEE of Cedarville, Ohio, died at Mt. Carmel, June 30, following an operation. He was sixty-two years of age, and was graduated from Hahnemann Medical College and Hospital, Chicago, in 1885.

COLONEL WILLIAM WINBORNE GRAY, M. C., U. S. Army, retired, died July 3, at his home in Forest Hills, Long Island. He was born in Tennessee in 1850, was graduated from Bellevue Medical College in 1875, and entered the army as assistant surgeon in 1878. He was buried at Arlington National Cemetery, Washington, D. C.

Dr. FANNY DONOVAN CONKLIN of Stapleton, Staten Island, died July 4, at the age of seventy-five. She was graduated from the Woman's Medical College of the New York Infirmary for women and children in 1876.

Dr. FRANK B. BROWN of Boston and Dorchester, Mass., died suddenly July 4, at the age of fifty-seven. He was graduated from Bowdoin Medical College in 1887.

Dr. WILLIAM AUSTIN TOMES of Brooklyn, N. Y., died June 28, at the age of fifty-five. He was graduated from the College of Physicians and Surgeons, New York City, in 1891. He was a member of the Lenox Hill Hospital Association, having served as interne in 1891-1892.

Dr. WALTER HENRY HOLDRIDGE of New York City died July 3 at the age of thirty-nine. He was graduated from the College of Physicians and Surgeons in 1903, and was a member of the American Medical Association and local organizations.

Correspondence.

THE BUREAU OF INTERNAL REVENUE AND THE PRACTICE OF MEDICINE.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—It would be instructive to learn under what section or clause of the Harrison Anti-Narcotic Act the Bureau of Internal Revenue, which is charged with the administration of this act, is empowered to lend or to withhold its endorsement of public clinics for the treatment or cure of drug addicts. This question is prompted by the generally published statement of Prohibition Commissioner John F. Kramer, who gives as his reason for this action that, "The net result of such public clinics appear to have demonstrated conclusively that the cure of drug addiction through such means is a failure and that hereafter no similar institution should have the endorsement of this bureau."

As far as any recorded evidence on the subject is available the cure of drug addiction by institutional treatment is equally a failure, although this method has been urged upon the Federal Government to the exclusion of all other in the findings of the Special Narcotic Drug Committee of the American Medical Association. In this State the same recommendation was embodied in the Cotillo Drug Bill. This was rejected by the Legislature on the ground that it made institutional treatment compulsory, to the sole advantage of these institutions. The first step toward the establishment of a drug clinic was made under the law compelling the Department of Health of this city to supply in an emergency a sufficient quantity of the drug of his addiction to an addict. This law was drawn after the evidence given before the Legislature of the unspeakable degradation under which the drug needed was obtained by an addict in vile resorts in the city during one of the periods when physicians refused to prescribe for addicts on account of the danger of so doing. This law was never observed by the Department of Health. Where application was made in keeping with its provisions the drug was refused unless the applicant consented to a commitment to a city institution.

The Drug Clinic became a necessity wherever Federal or State laws were suddenly and strictly enforced, with the result of shutting off the supply of drugs to those who, it is no exaggeration to say, could not live without them.

This was shown under the rulings laid down by the Commissioner of Internal Revenue when the Harrison Law was first enforced rigorously throughout the country. Under these rulings the prescribing of opium by the physician was surrounded by so many dangers that many refused to prescribe it not only in cases of addiction but for any purpose whatever. Under these conditions the mortality from withdrawal conditions and from suicide became so great that physicians were requested, and even urged, by revenue officials to take care of these cases until these rulings were reversed, as they were in time. The decision since made by the U. S. Supreme Court that morphine could be prescribed in the case of an addict only for immediate use and in no sense to make the addict comfortable, led to another period of disaster among the victims of this condition. This was ended, according to the accounts in the newspapers by the pleadings directly addressed to the Government of innumerable sufferers from chronic and incurable disease as well as of the aged and incurable victims of drug addiction itself.

The report of the Narcotic Dispensary of the Louisiana State Board of Health cannot have been seen by Prohibition Commissioner Kramer

before making his pronouncement on the failure of the drug clinic as a means of cure for the drug habit. This clinic is acknowledged to have been the most successful and best conducted of any of those established throughout the country. Among its objects, as given in this report, are the following: "To relieve suffering until such time as scientific treatment can be had. The basis of operation is legitimate. Supply versus illegitimate trafficking. To prevent victims from being victimized by profiteering ghouls. No 'registration' to compromise addicts or to subject them to possible blackmail. This dispensary does not attempt to cure addicts." This report was issued April 15, 1920, by the Louisiana State Board of Healtth, Merrick W. Swords, M.D., Director of Narcotic Clinic.

Clinic.

JOHN P. DAVIN, M.D.
117 WEST SEVENTY-SIXTH STREET,
NEW YORK.

BENJAMIN RUSH FOR THE HALL OF FAME.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—You were good enough to publish my letter in reference to the election of the names of Morton, McDowell, and Sims to the Hall of Fame in your esteemed issue of June 26. In my letter I stated that the election would take place July 1. I have since learned that the electors have until October 1 to make their decision, which gives all those who are interested time and opportunity to send their endorsement of all or of any one of the candidates mentioned to the electors or to the Senate of the New York University.

Since the publication of my last letter I have received a number of requests to include in the list of America's immortals the great Benjamin Rush, whom Roswell Park in his History of Medicine calls "the most conspicuous medical character of the century." American internists will always hold Rush in grateful admiration as an acute observer of disease. His descriptions of clinical phenomena are to-day as classic and authentic as when published, and of course I am glad to include the founder of Rush Medical College among those of our profession who should have a place in the Hall of Fame.

S. ADOLPHUS KNOPF, M.D.

OUR LONDON LETTER

(From Our Own Correspondent.)

LONDON, June 18, 1920.

The Rockefeller Foundation's Offer to University College Hospital Medical School.—It has just been announced that the Rockefeller Foundation has offered the sum of £1,205,000 (over $6,000,000) to University College Medical School and to University College, London, in the interests of medical teaching and research. At a meeting of the staff and students held in University College on June 11, the Provost, Sir Gregory Foster, gave full details of this offer. Sir Gregory, quoting from a report which is to be presented to the United States Senate, stated that he had visited New York with the Professor of Anatomy, Dr. Elliot Smith, and Drs. Blacker and Elliott, representing the Medical School, at the invitation of the Rockefeller Foundation. This Foundation had been established by Mr. John D. Rockefeller "to promote the well being of mankind throughout the world." It had made the promotion of medical education and research its special field. In pursuance of this last policy the Foundation shortly after the end of the war, conceived the idea of assisting the development of medical education and research in London. They had before them the report of Mr. Abraham Flexner, Director of the Rockefeller Home Education, New York, on "Medical Education in Europe" issued in 1912, and Sir George Newman's "Some Notes on Medical Education in England" issued in 1918. In both of these works the development of medical teaching by the foundation of clinical units was advocated in hospitals and medical schools. The knowledge gained from these two publications was supplemented by a report by Dr. Wickliffe Rose, a member of the Rockefeller Foundation, and Dr. Pearce, medical expert advisor to the Foundation, who visited London in the latter part of last year and made themselves thoroughly acquainted with the conditions prevailing in London and with the several centers of medical education. Their report was received by the Rockefeller Foundation Board of Trustees at the end of February. The Board of Trustees was greatly interested and directed its executive committee to consider in detail the University College Hospital Medical School projects and the plans for tthe improvement of anatomy which, incidentally involved an extension of physiology at the college. The scheme as a whole was summarized by the Rockefeller Executive Committee as follows: (1) An institute of anatomy, (2) increase of clinical facilities, (3) clinical laboratories planned, (4) increased maintenance costs, (5) closely unified administration. In New York the University College Hospital delegation met the members of the executive committee of the Foundation, both informally and in conference. They expressed the view that to help the scheme of development would be in full accord with the high purpose of their founder, and they would deem it a privilege to aid them. They disclaimed any idea of desiring to dictate methods or lay down conditions. Their desire was to help to carry out the schemes of development, and they therefore assumed that any funds they might offer would not be used to relieve existing expenditure, but to supplement it for the greater good of medical education and research. The executive committee were able to state that the Rockefeller Foundation offered to give to University College Hospital Medical School the sum of £400,000 "towards a building and equipment programme, substantially as submitted by the authorities of the school, and the further sum of £435,000 toward the support of clinical facilities and teaching in substantial conformity at the outset with the proposed plan," making a total of £835,000 for the Medical School. To "the University of London in behalf of University College the sum of £190,000 toward a building and equipment programme, substantially as submitted by the authorities of the College, and the further sum of £180,000 toward the endowment of laboratory teaching in substantial conformity at the outset with the proposed plan, "making a grand

total of £1,205,000, or nearly six million dollars.

Sir Gregory Foster said that it would be difficult to convey the delightful way with which the Rockefeller Trustees approached the matter, initiated it, and carried it out. In conclusion the speaker said that he believed that the gift was the greatest single gift that had ever been made for educational purposes in Great Britain. Professor Elliot Smith moved a resolution, expressing on behalf of the staff and students of the University of London, University College, appreciation of the munificent and spontaneous gift. The resolution added that, by endowing the work of the Department, the Rockefeller Foundation would ensure that the requisite facilities for anatomical teaching and research, in close conjunction with those in physiology and pharmacology, would be provided in accordance with the scientific requirements of the time. He pointed out that the general scheme of anatomical teaching in Great Britain was in a curious position. There was, for instance, no equipment for allowing students to study, in the anatomy department, such parts of the body as could be seen only by the artificial aid of a lens or lenses. There were no facilities for showing sections of embryos, or for allowing students to study this essential part of their work. Nor were there any facilities for the study of the experimental factors which determined the form of the body. It was now hoped to bring back to anatomy the parts of the subject such as histology and embryology which had been taken away from it. It had been the settled policy of University College to restore anatomy to the position which it should occupy, not only in the medical curriculum, but also in the field of medical research. Professor J. P. Hill, Vice-Dean of the Faculty of Medical Science, in seconding, expressed regret at the unavoidable absence through illness of the Dean, Professor Starling.

The American Hospital in London.—The plans for the American Hospital in London to which reference has been made on several occasions in previous letters, are far advanced. Mr. Taft is president of the hospital in America and Lord Reading in Great Britain. Lord Bryce is the British vice-president. The establishment of an American hospital in London is another bond to unite British and American medicine. It may be mentioned that during next month a great dinner organized in connection with the hospital is to be given to Dr. Charles Mayo of Rochester, Minn. This dinner will be attended by all the leaders of American medicine, and it is understood that Mr. Balfour will be one of the speakers.

Gift to the University of Cambridge.—Sir William Dunn died some two or three years ago, leaving an estate of more than £2,000,000 ($10,000,000) appointing the directors of the Commercial Union Assurance Co. as trustees for its disposal. The trustees have just allocated the sum of £165,000 ($825,000) to be expended in the building and maintenance of a department of biochemistry on a site provided by the University and for the endowment of a chair and a readership.

Statistics of Maternity Institutions and of Children's Homes and Hospitals.—It is now fully realized that in order to rear a healthy race, midwifery in Great Britain must be placed upon a proper basis and that young children must be thoroughly well cared for. An amazing amount of ignorance prevails among almost all classes as to the dangers of parturition and with regard to the feeding and care of young children, which state of ignorance can be successfully combated only by the educative measures carried out in a practical manner. The Ministry of Health is making the first move in this direction by demanding certain information from all institutions receiving resident children under five years of age. The details required include the number of cases admitted, average duration of stay, reasons for admission, condition on discharge, number of cases of infectious disease and number of deaths, with date and cause. Immediate information of all deaths from epidemic diarrhea is to be given. With respect to maternity homes and hospitals the information is to include the number of cases admitted, the average duration of stay, the number of cases delivered by midwives and by medical men respectively. The cases for which medical assistance was sought by the midwife are to be classified according to the reasons for appealing for assistance and the period at which this was required. The number of cases of puerperal sepsis, of a rise of temperature above 100.4° F. for twenty-four hours with rise of pulse rate, ophthalmia neonatorum, of "inflammation of the eyes, however slight," of artificial feeding, and of maternal and fetal deaths, have all to be recorded, with details of causes, results of treatment, and in fatal cases of post mortem findings. The Minister of Health also requires immediate and detailed information of every case of maternal mortality occurring in the institution, or due to illness contracted in the institution, and every case of notified puerperal fever.

The Health of the Nation.—Miss Olga Nethersole, the well known actress and the founder and organizer of the People's League of Health, and Dr. Eric Pritchard, the pioneer in Great Britain of an organized system for rearing young children in a rational manner, have just returned from Brussels, where as delegates of the League, they have been attending the conference of the Royal Institute of Hygiene. The impression gained by the British delegates was that, on the whole health conditions are better in Belgium than in Great Britain. One reason given for the superior conditions in Belgium is that the Belgian people are more abstemious and the incidence of venereal disease is lower by far. Moreover, the housing question is not such a serious factor in their infant mortality or general death rate as in Great Britain because there are fewer slums in the larger towns, and also because a large proportion of the population is engaged in agriculture and other outdoor occupations.

Purulent Conjunctivitis in Great Britain.—At the annual Congress of the Ophthalmological Society of the United Kingdom, held recently in London, one of the subjects discussed was that of purulent conjunctivitis. According to Dr. Macrony, an inspector of midwives in London, the incidence rate of the condition per thousand births in London varied between 10.37 in 1919 and 7.25

in 1915. In the practice of midwives the incidence per thousand was 6.5 in 1916, 6.5 in 1917, 10.75 in 1918, 11 in 1919. The later increase might be due to the greater care in notification. In 1914, out of 557 cases of inflammation of the eyes in the practice of midwives, six showed damage to the cornea; in 1919 out of 840 births in midwives' practice, fifteen had corneal damage. Mr. Sydney Stephenson pointed out that the infection was easily prevented. Credè's method of prophylaxis was the greatest step. In a series of 24,724 births up to 1895, in which Credè's method was carried out the disease occurred in only 0.655 per cent. Not every case of the disease, however, was due to the gonococcus. He reminded the meeting of the simple cleansing of the eyelids at birth practised by Samuel Haig of Camberwell, in 1879, with the result that he never had a case of purulent conjunctivitis in his practice.

Mr. J. B. Lawford criticized the recent omission from the regulations of the Central Midwives Board of all reference to Credè's method or to any substitute for it. Therefore, whether anything in that way should be applied was left to the discretion of the midwife, a very undesirable state of affairs. Mr. E. Treacher Collins proposed the following resolution: "The Ophthalmological Society of the United Kingdom wishes to urge on the Metropolitan Asylums Board, now that so large a number of cases of purulent conjunctivitis are aggregated in one institution, the Metropolitan Asylums Board Special Hospital for purulent conjunctivitis in infancy, that facilities should be afforded at it for the teaching of medical students, midwives and district nurses as to the natural history and treatment of the disease."

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 1, 1920, clxxxiii, 1.

1. The Shattuck Lecture—Epidemiology and Etiology of Influenza. Allan J. McLaughlin.
2. Pneumonia in a Woman With an Habitual High Blood Pressure. M. J. Konikow.

1. Epidemiology and Etiology of Influenza.—Allan J. McLaughlin, Assistant Surgeon-General U. S. Public Health Service, reviews the subject of influenza at length, giving various tables and charts showing incidence, mortality, etc. From this study he concludes that influenza is a disease of great antiquity and that the cause of the world-wide pandemics and interpandemic outbreaks is the same. With a strong predilection for the winter months, influenza occurs every year. In retrospect one can detect in the mortality statistics outbreaks reaching epidemic proportions in 22 out of the 30 years since 1889. In 1918-19 the attack varied from 15 to 40 per cent. and seemed to be highest in the age group five to nine—declining in each successive age group except 25 to 34, which exceeded the rate for the group 15 to 24. The incidence in 1918-19 was greater in females than males and the disparity was most noticeable in the ages from 25 to 40, indicating, according to Frost, that the females from 15 to 45 were either more susceptible or more intimately exposed to infection than males of corresponding age. Case fatality in the 1918-19 epidemic was about 2 per cent. and was slightly higher in females under 15 and very much higher in females over 60 than in males of corresponding ages. From 15 to 60 the case fatality was much higher in males. There was great variation in 40 large cities in explosiveness of the epidemic and in the severity as measured by the excess death rates for the entire epidemic period. There seemed to be some correlation between explosiveness and the severity as measured by excess death rates—the greatest mortality being usually, but not always, in cities with a high explosive index. There was little consistency in the explosiveness of the two epidemics, 1918-19 and 1920, upon comparing the indices in the various cities. There seemed to be some correlation between explosiveness and the general death rate and the rates for the four principal causes of death—pneumonia, tuberculosis, heart disease, and nephritis. There seemed to be considerable correlation between the total excess death rates for the epidemic periods and the general death rate and the death rates for pneumonia, tuberculosis, heart disease, and nephritis. All evidence points to an immunity of a relatively short duration—probably of months rather than years. The etiologic cause is unknown. There is not sufficient evidence to warrant the view that *B. influenzæ* is anything more than a secondary invader. The claims for a filterable virus are strong, but much additional work will be necessary to make certain many things which are now only possibilities.

New York Medical Journal.

July 3, 1920, cxii, 1.

1. The Diagnosis and Treatment of Gall-bladder Affections. Max Einhorn.
2. Gastric Superacidity. William Van V. Hayes.
3. The Diagnosis of Gastric Disease. M. B. Kunstler.
4. Weight, Diet and Efficiency. Robert Hugh Rose.
5. Ulcer of the Esophagus. Samuel Weiss.
6. Primary Sarcoma of the Stomach. Seymour Basch.
7. Infections of the Gastrointestinal Tract and Their Relation to Arteriosclerosis. N. Philip Norman.
8. An Operation for the Radical Cure of Inguinal Hernia. George Woolsey.
9. Choledochitis, Cholecystitis and Cholelithiasis. B. B. Vincent Lyon.

1. The Diagnosis and Treatment of Gall-bladder Affections.—Max Einhorn considers diseases of the gall bladder as coming within the three categories of: (1) Acute cholecystitis, without and with jaundice; (2) chronic or recurrent cholecystitis, without and with stones; (3) empyema of the gall bladder, usually with ulcerations; (4) malignant diseases of the gall bladder. The diagnosis is based on the symptoms in conjunction with the objective findings. It is important to recognize in a general way the organ affected and then, if possible, to make a more detailed statement with regard to the special disease present. The diagnosis is comparatively easy when the affections of the gall bladder run a typical course, but extremely difficult when they appear, as they frequently do, in disguised forms. It is principally in these latter conditions that one must utilize all the more refined methods in order to come to a correct conclusion. In addition to a consideration of the subjective symptoms and a physical examination the writer makes use of the *x*-ray apparatus, and employs the duodenal tube and the duodenal bucket and string. The direct examination of the bile, obtained from the duodenum, in the fasting condition of the patient, is of great importance. The more detailed diagnosis will always have to be made by a combination of all the findings, subjective and objective. Thus, turbid bile, fever, extensive leucocytosis, high polynuclear count, considerable tenderness in the right hypochondrium, in conjunction with muscular rigidity on the right side, will point toward empyema or ulceration of the gall bladder nearing perforation. Severe colicky pains in the right hypochondrium, with or without a slight rise of temperature, followed a few hours later by perfect remissions and freedom from pain, will speak for a biliary calculus. Turbid bile will substantiate the diagnosis. The same symptom complex, with jaundice and absence of bile in the duodenum, will indicate a stone in the choledochus or common duct. Intractable jaundice, cachexia, frequent distress, but no sharp colicky pains, preceding the icterus, no bile in the duodenum or presence at times of clear bile, indicate a malignant disease involving the choledochus, or the hepatic ducts. The treatment of gall-bladder diseases is divided into that of the acute conditions and that covering chronic states. In both groups medical as well as surgical therapy have their special fields. Acute cholecystitis of great toxicity, giv-

ing rise to empyema, ulceration or a perforation of the gall bladder, requires immediate surgical intervention. The indications for surgical treatment in chronic cholecystitis, with or without stones, are given as follows: (1) Comparatively severe recurrent attacks of cholecystitis, whether accompanied by fevor or not, require surgical aid. (2) Mild attacks of recurrent cholecystitis accompanied by a moderate leucocytosis (especially with an increase of the polynuclear cells) likewise require operation. (3) Chronic jaundice due to obstruction is best handled by operative measures. (4) Gall-bladder affections in which there is sufficient reason to suspect a malignant disease should be operated upon as soon as possible. Contraindications to operative procedure are found in severe heart or kidney lesions, diabetes mellitus, general debility and old age.

Journal of the American Medical Association.

July 3, 1920, lxxv, 1.

1. A Valuable Method of Employing Arsphenamin in Syphilis. Oliver S. Ormsby.
2. Penetration of the Intestine by Endameba Histolytica. Kenneth M. Lynch.
3. Pneumoperitoneal Roentgen-Ray Diagnosis. Arthur Stein and William H. Stewart.
4. Squamous Cell Carcinoma of the Kidney: Report of a Case Occurring in a Horseshoe Kidney Complicated by a Calculous Pyonephrosis. Alexander Primrose.
5. Syphilis of the Kidney. Loyd Thompson.
6. Cure of Pancreatic Fistula by the Roentgen Ray. Robert M. Culler.
7. Types and Treatment of Pellagra. Stewart R. Roberts.
8. A Study of Malnutrition of School Children. Maud A. Brown.
9. Therapeutic Agents in Chronic Nervous Diseases. W. A. Jones.
10. Botulism from Canned Beets: Report of Cases at Florence, Arizona. W. G. Randell.

3. Pneumoperitoneal Roentgen-Ray Diagnosis.—Arthur Stein and William H. Stewart. See MEDICAL RECORD, May 29, p. 938.

4. Squamous Cell Carcinoma of the Kidney: Report of a Case Occurring in a Horseshoe Kidney Complicated by a Calculous Pyonephrosis.—Alexander Primrose. See MEDICAL RECORD, May 29, p. 935.

5. Syphilis of the Kidney.—Loyd Thompson. See MEDICAL RECORD, May 8, p. 813.

7. Types and Treatment of Pellagra.—Stewart R. Roberts. See MEDICAL RECORD, May 8, p. 804.

8. A Study of Malnutrition in School Children.—Maud A. Brown reports a piece of experimental health work carried on in the grade schools of Kansas City, Mo., in the spring of 1919. Following the influenza vacation, the children of fifty-five grade schools were weighed and measured by the classroom-weight-chart method of the Child Health Organization. The percentage of underweight, when computed, indicated that the general estimates as to the prevalence of malnutrition among school children in the country over were applicable, without exaggeration, to the children of Kansas City. The school was selected that showed the highest percentage of children who were more than 10 per cent. under weight by the standard table of Dr. Wood, with the idea of seeing what would be the effect of an intensive health service for these so-called "malnourished" children. The school selected showed 41 per cent. of its children more than 10 per cent. underweight. The physical condition of the children as revealed by examination by a physician, was recorded, and the social status of the children was ascertained by the nurse in visiting the homes. "Protective feeding," the necessary dental work, removal of diseased or enlarged tonsils and adenoids, and instruction in "health habits" formed important parts of the regime to which the children were subjected, and which the writer details and charts. The children were divided into two groups, 112 being those who signified their desire to undergo the experiment by returning the permits for school feeding, cards for which had been sent their parents, and 109, identical in respect to physical condition as nearly as could be determined, who were considered a "control group." Fourteen of the children failed to make normal gains for the period. Definite reasons for the failure to gain were found in all but one, a boy, who became thinner and stronger the more he ate, and who, being in tip-top health, was pronounced one of the "naturally thin" children. A careful study of the results forces the conclusion that the two factors chiefly responsible for the interesting showing are the work of the nurse in securing home cooperation, and the selection of food with reference to supplying the dietary deficiencies of the home on the "protective feeding" plan. One of the most interesting observations was that the children cheerfully stored away from 1,000 to 1,800 calories in addition to their customary three meals. The mothers reported that they were eating more at home also. This suggested the probability that the amount of feed needed by growing children has been underestimated. No correlation has been found between the rate of growth of these children and any of the social conditions. The time was too short to show the favorable results of the other elements of the health service. Doubtless, a few weeks longer would show a decided advantage in favor of those pupils who had defects of teeth and tonsils corrected and adenoids removed. The writer points out two facts of paramount significance: (1) These children, in spite of adverse conditions and handicaps unremoved, were so desperately in need of food that they made a gain of 278 per cent. (normal gain, 100 per cent.) or 302 per cent. gain over the control group; (2) this school, which ranked lowest (fifty-fifth) in the spring, ranked third in September, the difference, beyond reasonable doubt, brought about by nine and one-half weeks of intensive health service.

9. Therapeutic Agents in Chronic Nervous Diseases.—W. A. Jones, in summarizing this subject, holds to the view that for the majority of patients who consult the neurologist and psychiatrist isolation from their former surroundings, confinement in a well-ordered hospital, and the prohibition of visitors should be rigidly adhered to. Nervous and mental patients do better when they have been regulated by correction of their physical disabilities and forced to follow a definite mental disciplinary line of treatment. This includes all that may be said of enforced rest, not for weeks, necessarily, but perhaps for months. The establishment of order by discipline applies equally well to the physical as to the mental attitude of the patient, and this can be done successfully only by one who is trained for this work. Baths of simple type—warm tub, cool spray or Scottish douche—are of more value than many drugs. Exercise of the graduated type during the convalescent period is of tremendous value, provided it is carried over many days and weeks with but moderate increase in the time given to such exercise. Sufficient examination should be made from time to time to assure the physician, as well as the patient, that nothing important is overlooked. The ordinary routine visits must be suspended at intervals to make this impression lasting. One person should be responsible for the patient, and only minor details should be left to subordinates. The patient should be left alone, and without a special nurse, as soon as possible; otherwise he becomes dependent on the nurse not only for his physical but for his mental habits. Massage is not absolutely essential either to the patient's comfort or to his improvement. The coddling of patients should be eliminated. Occupation, unless it is carried on by a trained and skilled worker, is of very little value, and means only the use of time which might be employed in a more profitable manner. Many patients require a firm, guiding hand. Others require the influence of a strong and dominating will, together with mechanical or drug restraint, and confinement in a suitable room. The writer holds that if this method of treatment is begun early in selected cases, the recovery is much more rapid and satisfactory.

The Lancet.

June 12, 1920, i, 24.

1. Goulstonian Lectures on the Principles of Medical Science as Applied to Military Aviation. Lecture III. J. L. Birley.
2. Researches on the Treatment of Benign Tertian Fever. Hugh W. Acton.
3. Exfoliative Dermatitis Occurring During Arsenical Treatment. (With a Note on Toxic Jaundice.) E. G. French.
4. Agglutination Experiments with Trench Fever Rickettsia. J. C. G. Ledingham.
5. The Value of Posture in the After-Treatment of "Stiff-Shoulder." Charles Mackay.
6. Residential Ante-Natal and Post-Natal Treatment at the London Lock Hospital for Women. G. W. Rundle.
7. Notes on Psychoanalysis and Psychotherapy. Part II. Sir James Crichton-Browne.

2. Researches on the Treatment of Benign Tertian Fever.—Hugh W. Acton records studies made by his associates and himself in the Malarial Research Laboratory, British Malarial Depot, Dagshai, Simla Hills, India. Hitherto the treatment of malaria was summed up in one word, "quinine," and the only points at dispute were the methods of administration and the length of time this alkaloid should be taken. The other alkaloids of cinchona bark have been used by numerous observers, but as far as the writer is aware have never been accurately tested. The universal belief that quinine is equally a specific for all types of malarial fever will have to be abandoned before any material advance can be made in the treatment of these fevers. Malarial fever, in Acton's opinion, should be regarded not as one disease, but as a group of three different fevers, due, as is already known, to three distinct parasites, and two at least of these require different alkaloids of cinchona bark for their treatment. Many of the previous workers on the action of the cinchona alkaloids were compelled to work under unfavorable conditions. The writer and his associates were fortunate in treating British troops under their immediate command, where every detail could be followed in the treatment. Every one of the recorded cases remained for two months or longer under observation after completion of treatment. The conditions required to test a particular cure for malarial fevers are summed up briefly as: (1) The population under investigation should be sufficiently large and homogeneous. At least 100 men should be treated, and the parasites must be of the same species and found microscopically in every case. (2) Reinfections must be excluded during treatment and observation. (3) Eight weeks should be the minimum period of observation required after treatment. An additional 6 per cent. of the relapses observed in this period gives the correction for what could happen if the cases were observed longer. (4) The experiment should be repeated if necessary to eliminate the errors due to chance distribution. The notable absence of the malignant tertian parasite among the cases studied was explained as due to the specific action of quinine, for all the cases had undergone a course of treatment with this alkaloid before arrival at the depot. Out of 992 parasitic findings, only 14 individuals were found to harbor the malignant tertian parasite. There were 978 showing benign tertian infection. The specific action of quinine on the malignant tertian parasite explains how this parasite disappears from the blood of malarial patients who have returned home from the tropics, as such individuals have been well drugged with quinine. The second important point that became apparent upon analysis of their results was the low cure-rate of quinine in benign tertian infections. Out of 663 cases of this infection treated with quinine there were 32.4 per cent. of cures; nearly 70 per cent. of the cases relapsed in spite of treatment. After noting this low cure-rate of quinine in benign tertian infections it was considered that by giving short courses of treatment a larger number of effective men could be obtained in a shorter space of time than by giving the long courses of four months quinine treatment. The group selected for this study consisted of 475 men who had been treated by quinine for malaria and sent up to Dagshai, where they were placed on an iron tonic. Out of these, 277 relapsed, and benign tertian parasites were found in every one of these relapses. Out of these 277, 204 could be observed for the full two months after a further course of treatment, and of these 145 relapsed. Ninety-five could be followed for the full period after a second course of treatment at Dagshai, and 76 relapsed; 45 of these could be followed after the third course, and 32 relapsed. Ten of the 32 relapses could be followed after the fourth course, and 8 relapsed. The actual cure-rate for these four courses at Dagshai work out at 28.9 per cent., 20 per cent., 28.28 per cent., and 20 per cent., respectively, or an average of 24.4 per cent. for each course of treatment. The maintenance of the cure-rate about a constant of 25 per cent. from the first to the fourth course of treatment is a very important fact, as it indicates that neither does the parasite become more and more quinine resistant, nor does the host's resistance alter; otherwise the cure-percentage should diminish with each subsequent course. Clinically one cannot say whether a given case will be cured with one or many courses; it seems immaterial whether the patient is undergoing his first or fourth course, for with each course he stands an equal chance of cure. Discussing the rate of parasitic destruction, the writer calls attention to the fact that the asexual malignant tertian parasite forms 8 to 12 merozoites every 48 hours and is most influenced by quinine. The asexual benign tertian parasite forms 16 to 24 merozoites every 48 hours and is less easily destroyed by quinine. On the other hand, the quartan parasite has the lowest rate of multiplication, 8 to 12 merozoites every 72 hours, and is the most refractory to quinine. This difference in the multiplication rate is not sufficient to explain the difference in cure-rates by quinine, although it undoubtedly plays a part. Cinchona febrifuge (a preparation containing the total alkaloids extracted from cinchona bark, made at the Government factories in India and issued in the form of 3½ grain tablets) was found to be better than quinine in benign tertian infections. Fourteen alkaloids have been isolated from the various species of cinchona bark. These are described, and the factors on which their parasiticidal action depends discussed. The levorotary alkaloids, quinine and hydroquinine, have a specific action on the malignant tertian parasite, while the dextrorotary alkaloid quinidine (hydroquinidine has not been tested as yet) is more powerful than quinine in its action on the benign tertian parasite. The corresponding levorotary isomeride cinchoindine behaves very similarly in its action on the benign tertian parasite. Both these isomerides are much less toxic to man than quinine. It is therefore concluded, from the chemical study of these alkaloids, that: (1) The methoxycinchonines—viz., the quinine series—are less toxic than the cinchonine series; (2) the hydroalkaloids are more stable; (3) the levorotary alkaloid quinine is a specific for the malignant tertian parasite, while the dextrorotary alkaloid quinidine is the best alkaloid tested so far for the benign tertian parasite. The exact action of these alkaloids on the malarial parasite cannot be determined without much more chemical and experimental work than has been given to the subject.

Gazette des Hopitaux.

April 24, 1920. xciii, 38.

Venous States of the Menopause.—Poulain quotes Vinay's definition of the menopause as the interval between perfect regularity of the menses and their total suppression. This is in a way defective, for the definite and permanent suppression of the discharge is not coterminous with the suppression of the clinical phenomena of the menopause. In the artificial menopause the woman's troubles only begin with the complete suppression of menstruation. The behavior of the woman's organs after the suppression of this function varies with her constitution and inheritance. If of a nervous or hysterical makeup, she is apt to be more nervous, and some one of the neuroses may spring into existence for the first time. This holds good for other predispositions, such as the tendency to cardiovascular troubles, varicose veins and the like. A study of the woman's past menstruation is often illuminating as in the case of a young girl who, when her courses stopped for any reason, developed varices of the legs. The anatomical connection between the circulations of the uterus and lower extremities is of course well known. Fiessinger has published a monograph on the subject of the cardiopathies of the menopause, these being either reflex in nature, or due to hysteria and neurasthenia. The connection between these phenomena and the venous states discussed by the author is rather fugacious. On the other hand, there is an intimate connection between venous states and the hot flushes and analogous vasomotor behavior of women at the climacteric. The stasis in the venous circulation of the limbs is closely related to the stasis in the uterus and pelvis, from Nature's attempt to initiate a menstrual molimen after the function is abolished. The symptomatology of the venous stasis of the legs and pelvis is a rich one, including cramps in the calves, cold feet, various dermatoses, edema, and of course all of the phenomena associated with varices themselves. The gouty subject appears to suffer especially in these cases.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON MEDICINE.

Stated Meeting, Held January 20, 1920.

DR. CARY EGGLESTON IN THE CHAIR.

A Discussion of Rare Cases of Anatomical Diagnosis.—Dr. NELLIS B. FOSTER presented these cases which, he said, bore no relation to one another, but served to illustrate some of rare conditions that one met from time to time.

CASE 1.—This patient came into the hospital giving a history of attacks said to be indigestion which had been recurring from time to time for a number of years. None of these attacks had been serious; one of the recent ones had been diagnosed as mild or chronic appendicitis. That was all the history that they were able to secure. Just before admission to the hospital the abdominal pain had become worse and vomiting had begun. This continued until the end and was associated with all the symptoms of intestinal obstruction. In this case the diagnosis could have been made out, and, in fact, one of the staff suggested the correct diagnosis, but means were not used to establish it. The second day after admission the man died in collapse. The autopsy revealed a diaphragmatic hernia and all the intestines in the thoracic cavity. In commenting on this case, Dr. Foster said that diaphragmatic hernia was not as rare as it was supposed to be, but its diagnosis was not often made prior to operation for obstruction, the acute attacks being often diagnosed as appendicitis. It culminated with a severe attack that might or might not be due to intestinal obstruction. The typical signs of pneumothorax might be present. The diagnosis could be established only by the *x*-ray and the bismuth meal, when it would be found that some portion of the intestinal canal was in the thoracic cavity. Dr. Janeway, years ago, showed a case with this condition.

CASE II.—This patient, Dr. Foster said, was supposed to have a very common condition until the diagnosis was made post-mortem. He was a young man, 23 years of age, complaining of precordial pain, hoarseness, dyspnea ,and dysphagia. At the time of his admission to the hospital these symptoms were not severe in degree and the rapidity with which he became worse was astonishing. His whole time in the hospital was seventeen days. At first the signs did not confirm the symptoms of aneurysm of the aorta; it was not until after a week or ten days that the signs of pulsation in the chest appeared. The terminal picture was hemorrhage from which he died. It was thought that he had an aneurysm of the aorta. Instead of this, however, an exceedingly rare condition was found, namely, a dissecting type of aneurysm of the pulmonary artery, with rupture into the esophagus. This was a rare condition and he did not know how the diagnosis could have been made.

CASES III AND IV.—Dr. Foster said that he had gone through the literature rather carefully and had discussed these cases with genitourinary surgeons in New York, and he felt that they presented an unusual condition. The first man reported sick with a specific urethritis and was treated locally until he developed abdominal pain and fever; these symptoms were associated with constipation. Physical examination at the time he came into the hospital did not show anything in particular. Fever was not unusual with posterior urethritis and therefore it was supposed to be due to the urethritis. After a brief stay in the hosiptal he developed diarrhea and burning urination, and later became stuporous; the fever continued and there was ptosis of the right eyelid and dropping of the right corner of the mouth. Dr. Foster stated that he first saw the patient at this time. The right pupil was larger than the left; there was weakness of the left arm particularly, and of the left leg to some extent. There was no perceptible change in sensation. There was some weakness in the extrinsic muscles of the right eye. A few purpuric spots were observed on the body. Examination of the cerebrospinal fluid showed nothing in particular that would excite suspicion. It was thought that the man had a Neisserian infection, septicemia and cerebral emboli. He became gradually worse, lapsed into stupor, had convulsive seizures, and died at the end of forty-eight hours. At autopsy there was discovered a posterior urethritis, prostatitis, thrombosis of the periprostatic veins, and vegetative endocarditis; there were multiple abscesses through the liver and kidney. A pure culture of the streptococcus was obtained from the blood. What occurred in this case was what happened not infrequently following ill-advised or inappropriate treatment of urethritis, namely, there was an extension of the inflammation, and the continuity of all the tissues was broken, giving a portal of entry for general infection.

The fourth patient was admitted to the hospital on account of a bubo and urethritis. The bubo was incised, after which the patient had slight fever. On the third day following the incision there was a sharp rise in the temperature. The patient complained of pain in the left side, and examination revealed signs of fluid in the left chest. Aspiration showed a thin pus. Dr. Foster stated that he advised against operation at this time, but his advice was not considered sound. Operation was performed and death followed. At autopsy an abscess was found near the surface of the left lung which had ruptured into the pleural cavity, giving rise to an empyema. There was septicemia taking origin in the prostate as in the first case. The pus had also entered the pericardium. These were not uncommon pictures for the genitourinary surgeon to see following inappropriate treatment of urethritis, giving rise to posterior urethral abscess and then to a general septicemia.

CASE V.—This patient was admitted to the hospital suffering from a sense of compression in the chest and dyspnea. Two weeks previously he had received an injury which he regarded as slight. In the course of a few days the dyspnea and distress in his chest developed. Examination revealed fluid in the left chest, bulging, flatness, and the breath sounds were very distant or absent. The heart seemed to be pulled to the right. The chest fluid showed an increased cell count; there was a high leucocyte count, and a high temperature. The patient was kept under observation for four months, during which time the temperature ranged between 97° and 102° F., with periods of remission. Aspiration was done repeatedly in order to keep the patient comfortable by relieving his dyspnea. After a few aspirations it was recognized that they were not dealing with a simple effusion of tuberculous origin. The picture was suggestive of neoplasm. The necessity of these aspirations was evident from the fact that he was aspirated thirty-four times during this period and 42,000 c.c. of fluid removed. The fluid was never blood-tinged, and this was interesting, because it was usually said to be blood-tinged in the presence of neoplasm. In his personal experience blood-tinged fluid occurred as often with tuberculosis of certain types as with neoplasm. Necropsy showed a sarcoma of the pericardium extending to the pleura.

CASE VI.—This patient, a woman 42 years of age, was seen first in the eye service on account of failing vision. She gave a history, for the past two months, of bleeding gums, which was quite obstinate and difficult to control. A week before admission her sight had begun to fail in both eyes about equally; she could see light but could not count fingers. Retinal examination showed a bilateral optic neuritis. The patient's mouth was so sore that the exact state of her gums could not be determined. It was thought that she had scurvy, but that seemed to be ruled out by the fact that she was well-to-do and her diet had not been of a character to produce scurvy. Finally, in lieu of a more definite diagnosis, her condition was diagnosed as purpura. She was transferred to the medical service of the hospital and attempts were made to control the hemorrhage by means of various styptics, etc. It was not easily controlled, however, and the amount of blood lost could not be readily estimated. On one occasion it was estimated that she lost one-half a pint of blood. The hemoglobin went down to where it could not be read with any accuracy. In order to do any-

thing for the woman it was imperative to stop the hemorrhage so it was finally decided to extract her teeth. The first attempt to extract a tooth nearly resulted fatally. All the blood tests had been made and the clotting time found to be normal. Finally the hemorrhage stopped but he did not feel that the measures employed had been responsible for its control. The patient had thirteen teeth extracted. This was done by giving a blood transfusion three days in succession before each extraction. A strange thing then happened; the patient recovered her eyesight and was finally able to read. While her eyesight became practically normal retinal examination showed that there was still a degree of optic neuritis. She was finally discharged from the hospital after being there for many months. After being home for four months she came back to the hospital, complaining of shortness of breath. Examination showed fluid in the chest. Following this discovery, Dr. Foster was hastily summoned. He found the woman suffering from dyspnea. She was aspirated and a slightly blood-tinged fluid obtained. This gave her a certain amount of relief and she seemed not at all in a serious condition. Early the following morning she was *in extremis*, suffering severely from dyspnea. The fluid had re-accumulated suggesting that they were dealing with something of a neoplastic nature, using that word in a very generic sense. The patient was tapped again and the fluid obtained was almost pure blood. The red blood cells numbered approximately one million per c.c. The diagnosis at autopsy was chloroma. In this condition the symptoms were pretty definite in a general way. There were two types of chloroma, one causing exophthalmos and the other impairment of the vision even to blindness, and the only other symptoms being a certain degree of anemia. In such a case the tumors might not be visible, and in fact, in the cases he had seen, Dr. Foster said, they had not been visible. The tumors were usually found in the bones of the skull or jaw. Chloroma was somewhat allied to sarcoma. The tumors were widely scattered; if in the skull they gave rise to eye symptoms; if in the thorax to symptoms referable to the lungs.

Dr. L. T. LEWALD said, with reference to the first case, that diaphragmatic hernia, he believed, as Dr. Foster had stated, was just beginning to be recognized as much more common than had been thought to be the case. Personally, he had seen four cases, one in a very young child. He was inclined to believe the condition was a congenital one, although a number of cases had recently been reported as though they were due to traumatism, especially among men who had been in the service. He had seen no case in our own service, but some were reported in the French literature. These might have been congenital and not recognizd until they had entered the service and later had received some traumatism. In one of the cases the diaphragmatic hernia was caused by a bullet having passed through the diaphragm. But in some of the other cases it was supposed to have resulted from some traumatism caused by an explosion or pressure without the entrance of any foreign body into the body of the subject. Such cases he regarded as of congenital origin. In the case of the child there was a hernia of the stomach into the chest cavity. A diagnosis of pyloric stenosis was made, as the child had vomiting attacks and the *x*-ray showed that the child had gastric retention. It was thought that an operation was necessary and Dr. Downes, instead of attempting to deliver the stomach into the abdomen, performed a gastroenterostomy, and closed the diaphragm around this. The stomach remained in the chest cavity and emptied itself through the gastroenterostomy opening. In another case of diaphragmatic hernia, under the care of Dr. Mathews, the stomach and part of the large intestine were in the chest cavity. A repair of the diaphragm was successfully made and a year after the operation the case remained cured. One other case had come to his notice. This was in a very elderly woman, who had always suffered from attacks of indigestion and pains in the chest. *She* believed her stomach was at fault, and always felt it in her chest, while her doctors rather scouted the idea. On *x*-ray examination, however, the stomach *was* found to be entirely in the chest cavity. She declined any operative interference. With reference to Dr. Foster's last case, chloroma was a very interesting and rare condition. He had seen two cases of chloroma which gave the same symptoms that Dr. Foster's case gave, but differed in that they presented typical tumors of the scalp and skull. The *x*-ray showed these characteristic bone lesions, consisting in a peculiar infiltration beneath the periosteum, and changes in the medullary portion of the bone and a separation of the sutures of the skull. He felt that the diagnosis of chloroma could be made by careful *x*-ray examination of the bones.

Dr. E. LIBMAN said that in the past ten years he had seen several cases of chloroma without bone lesions visible during the lifetime of the patient. Help could be obtained in the diagnosis of such cases by the so-called "chloroma cells," which were first described by Butterfield and himself. It was not necessary to describe these cells; they were described in a paper by Butterfield, published in the "Folia Hematologica" in 1909. To be of any value in diagnosis, these cells must be present in abundance. Even when they were found in abundance, they were not specific for chloroma, as they were also found abundantly in an occasional case of new growth, and in the forms of leukemia which were characterized by aggressive tumor formations, and which were occasionally termed "leucosarcomatosis." If then such cells were found abundantly in a case of leukemia, one diagnosed that the patient was suffering from leucosarcomatosis, and a diagnosis of chloroma only if there were typical bone tumors or if the typical green coloration was found at the post mortem table. As regarded the diagnosis of mediastinal neoplasms, he had during the last two years been aided greatly by looking for the presence of fixation of the larynx. In all the cases of mediastinal neoplasm which he had seen during the last two years the larynx could not be moved upward. He did not know how often this might occur with aneurysms. The symptom was of course to be sharply differentiated from the tugging which was generally known as the Oliver Cardarelli symptom. One must be careful in the use of this sign, because there were people, particularly people with short necks and rigid tissus, in whom the larynx was normally quite fixed. After some experience one learned when to disregard the fixation as of no value in diagnosis.

Dr. MAURICE FISHBERG stated that he had had five cases of eventration of the diaphragm. In one case both the stomach and the splenic flexure were detected in the left chest. Many cases of eventration of the diaphragm were reported as due to traumatism. He thought, however, that they found eventration of the diaphragm quite often if they looked for it carefully. Large tuberculous lesions might pull the diaphragm to one side, and a diagnosis of this condition could be made by physical examination of the chest, and nine times out of ten without the aid of the *x*-ray, or the ingestion of bismuth. Dr. Fishberg cited a case in which the signs were those of pneumothorax, but in which after giving bismuth the bismuth was found in the upper left side of the chest. He thought if Dr. Foster had borne in mind the possibility of eventration of the diaphragm he would have made the diagnosis. Of tumors of the mediastinum 30 or 40 per cent. had a sanguineous fluid, but one must not jump at the conclusion if he got sanguineous fluid that he necessarily had a tumor of the chest. If the first puncture yielded a sanguineous fluid there was probably a tumor present, but if there was no sanguineous fluid on the first puncture and then one got it at the third or fourth puncture it was probable that the sanguineous fluid was the result of traumatism inflicted during the punctures.

Dr. FOSTER, in closing, said that what one meant by chloroma was simply a tumor with greenish color, one in which a cross section showed a greenish mass. No two pathologists agreed on each point in the morphology of these tumors; for them as clinicians the point was that chloromas and leucemic tumors might or might not be associated with blood findings characteristic of these conditions, and if there was nothing characteristic in the blood and the tumors were not found, a case might be taken for secondary anemia.

Ultimate Results in the Treatment of Chronic Nephrosis with the High Protein Diet.—Dr. ALBERT A. EPSTEIN read this paper. He said that since the publication of the paper on the "Nature and Treatment of

Chronic Parenchymatous Nephritis" in 1917 he had had the unusual opportunity of observing and treating 28 cases of the type described. As pointed out in previous publications, these cases were characterized by the usual clinical manifestations and more particularly by changes in the blood chemistry, namely, reduction in the amount of protein in the serum, percentage increase in the globulins of the serum, and varying degrees of increase (from moderate to very high) of the cholesterol content of the blood. The degree of chemical change in the blood, as just mentioned, was proportionate to the severity and the duration of the albuminuria. Certain cases which belonged in this group of nephropathies which presented no other symptoms than an intense albuminuria, revealed the chemical changes of the character described above, so that, chemical analysis of the blood showing these changes constituted the most important guide, both in the diagnosis and treatment of the condition. For the reasons stated in the previous communications, these patients were invariably put on a relatively high protein diet which was at the same time poor in carbohydrates and fats. From the experience thus far gained this mode of procedure in the treatment of the condition yielded exceptionally good results. This was confirmed by the experiences of other men who had recently put their cases on record. (Sir C. Allbutt, *Brit. Med. Jour.*, Oct. 12, 1918; D. McKay, *Indian Med. Gazette*, August, 1919; MacLean and DeWesselow, *Quarterly Jour. of Med.*, July, 1919.) The treatment must be persisted in; and the best guide as to its beneficial effect was the progressive reduction in the cholesterol content of the blood, irrespective of whether the edema was present or not. The effect of the treatment was not only efficient in reducing subcutaneous and serous effusions but eventually led to the cessation of the albuminuria and a complete recovery of the patient. As an instance of the need of perseverance, one case had been encountered in this group which required three years of the high protein diet to effect a cure. There was reason to believe that the high protein diet was indicated in most instances where a protracted albuminuria of severer proportions was present, no matter what the ultimate cause of the albuminuria might be.

Dr. FENTON B. TURCK expressed the opinion that this paper was of great importance because it opened up the subject of cell necrosis. The disease of the kidney was but a part of a general condition, just as in the eclampsia of pregnancy where one found an autolysis of the maternal tissues as the etiological factor in the kidney manifestations. In all conditions in which there was broken down or autolyzed tissue there resulted a nephrosis, and the cause was the autolysis of the tissues themselves. This had been shown in animals in which as a result of starvation autolysis of the tissues occurred and edema resulted. It was also shown that water was produced more rapidly when there was a partial starvation or deficiency feeding. Some years ago experiments were carried out by the speaker in which partial starvation was produced by the feeding of beef extractives. They had administered beef extracts and colon bacilli and as a result produced in the animals partial starvation and nephrosis with a kidney edema, and even ulcer of the stomach and duodenum. By the injection of autolyzed tissue one could produce the same condition as though the extracts of beef were administered. By removing the extractives and fats from beef there would remain 45 to 50 per cent. protein against 22 to 25 per cent. in normal meat. He had used this clinically in kidney disease for the last fifteen or twenty years and had found it one of the most effective methods of treating kidney disease. He had published in 1905 or 1906 a number of cases in which this method was used in the treatment of kidney disease, which was undoubtedly brought about by the autolysis of tissue. Recently he had been injecting autolyzed human tissue, injected into the horse, to produce a serum used in conjunction with extract-free meat in treating kidney disease, and with surprisingly good results. The meat was prepared by soaking it in cold water, and then under steam pressure removing the extractives; this hydrolyzed it and rendered it the best type of protein feeding. The antibodies produced by injecting a horse with autolyzed human tissue were very effective in producing detoxication and prevented further autolysis. Of course in these kidney conditions there might be a complicating infection but they were primarily due to autolyzed tissue.

Dr. ADOLPH I. RINGER said he could not possibly conceive that this theoretical explanation of chronic nephrosis was correct. These cases so far as the etiology was concerned invariably gave a history of infection at one time or another. In tracing the beginning of a disease one could not say definitely that it was due to a certain infection, since there were very few individuals who had not had an infection at one time or another during their lives. So while it might be very difficult to prove that the condition was due to infection most all of these patients gave a history of one or more infections. It was also known that the incidence of nephrosis was more frequent in women than in men, and especially during pregnancy when there was a certain amount of toxemia and a greater possibility of infection. In regard to the occurrence of nephrosis in animals in which there was no edema, Dr. Ringer said he had worked with rabbits that were completely nephrectomized without having had edema result, and the reason was because there was a large amount of fluid lost through expiration, and as a result the edema was not so well demonstrated in animals as in people. The reason for the edema in human beings was because they were not able to eliminate the chlorides. As to hypertension and the reason why one did not find hypertension in the cases Dr. Epstein described, might be found in this fact that the nitrogenous material was elminated well. He could conceive that the blood pressure might remain entirely normal and yet this peculiar condition might be present. As to the diet, Dr. Ringer stated that he had had five or six patients who had been treated with the high protein diet, some for a short and some for a longer period, and after the diet were in about the same condition as before. He was inclined to think it was the low chlorides in the diet that were responsible for the result. In every instance when there was an increase in the chlorides in the diet there was a certain amount of decrease in water elimination. He did not use diuretics for the reason that the chlorides in the blood possessed the best diuretic qualities, and if the kidney failed to respond to salt in the blood it would not respond to the effects of diuretics. In cases in which there was no diminution in the edema this seemed to be due to nothing except that the individual could not excrete chlorides. Cut the chlorides down and the edema would disappear.

Dr. MOSENTHAL said there were many points in Dr. Epstein's paper worthy of careful consideration and that would be of great benefit in the treatment of nephrosis. First, in regard to the interpretation of the term nephrosis. This term had come to be used during the last decade and was being accepted tacitly. From what he had heard to-night they were associating nephrosis with hypertension. Nephrosis was only a type of nephritis showing changes a little different from those of an ordinary nephritis. In acute nephritis there was a different type of nephrosis, and in pregnancy with nephrosis one might have hypertension. The theories and practice of Dr. Epstein had helped them to a better understanding of the condition and had enabled them to get better results in the treatment of nephritis. If one did not entirely agree with the theories, the practical results led one to believe that there was something to be said for them. There was no question but that a few cases of diabetes suffered with edema; the two conditions could coexist and the presence of one did not preclude the existence of the other. In the treatment of cases of nephrosis they were going to obtain something from the high protein feeding that could not be obtained in any other way. His experience was that if these patients were kept on a high protein diet the edema disappeared sooner or later, and it disappeared in one of two ways. It might disappear slowly over a long period of time, as an oliguria, or it might disappear in a short time, its disappearance being manifested as a polyuria. That fact meant something and something very definite. That something, he believed was that there must be a chemical recovery throughout the body at the time the polyuria took place which was responsible for the physical and mechanical changes, which would have to

be looked for in the capillary blood vessels since they had become permeable to materials to which they were not permeable before. In other words nephrosis was a constitutional disease. At present he believed the edema was associated with salt retention and that changes in the blood vessels were responsible for the salt retention. The condition would therefore be corrected by a salt-free and high protein diet. In the speaker's opinion there was only one way of treating the anemia that was present in these cases and that was by a high protein diet. It had been demonstrated that the high protein diet did not increase the albuminuria and did not increase the blood pressure. In a number of cases the albuminuria continued in spite of high protein diet but the patient was put in a much better physical condition.

Dr. LIBMAN said that he could not be quite sure that he agreed with Dr. Epstein's nomenclature, because the condition described by Dr. Epstein was not sharply defined. The acute cases of glomerular nephritis with edema, for instance, could not be due to this mechanism. Just how many cases were due to this mechanism, he could not say, but he thought that they were quite infrequent. Some cases of kidney disease with edema were relieved by the use of the Karrell diet, and the mechanism described by Dr. Epstein could not explain such cases. Other cases could be relieved by diuretics. Dr. Libman cited one case where no method had been of service except the use of oil of juniper. It was important that a definite pathological basis or a definite physico-chemical basis should be described for the cases which might be benefited by the method which Dr. Epstein was employing. The relationship of the ductless glands to the kidney were of great interest. It was well known that there might be albuminuria and renal changes in cases of thyroid disease. It would have been a good plan if Dr. Epstein had stopped the high protein feeding in the cases in which the thyroid therapy was added. Dr. Libman cited one case in which all the usual methods of treatment had been employed, and unusual diuretics had also been tried, but no result had been obtained until Dr. Epstein administered the high protein diet. The result was a brilliant one. It was evident that there were cases in which remarkable results could be obtained, and until one can tell definitely which cases belonged in the group that could be improved by the method, the method should be tried in all cases in which the ordinary methods did not give results. It was evident from Dr. Epstein's studies that the high protein feeding had done no harm in the cases in which good results had not been obtained.

Dr. JESSE G. M. BULLOWA said it was important to recognize another element in edema besides the salt and water, namely some emulsiostatic substance which might come from an infected focus. In some cases after the removal of the focus there was a disappearance of nephritic phenomena. The disappearance of edema occurred critically. Strange as it might sound, in the Karrell diet there was an actual concentration of salt in the tissue due to the withholding of water. The emulsion state was broken by a concentration of ions and it mattered very little whether they were salt or albumen ions. Soap makers realized this when they clotted out the soap or broke the emulsion state with salt. The emulsion phenomena applied to the cells as well as to body fluids when accomplished in the kidney and other body cells and the improvement might be thus explained. It was important for the section to remember that this method of treating nephritical edema was not new. In 1904 there was a discussion on the diet of nephritics at the International Medical Congress at which Friedrich Müller and Fernand Widal contributed. Widal there recommended in the discussion of his achloride diet the inclusion of 500 grams of beef, the amount used by Dr. Epstein.

Dr. EPSTEIN, in closing, said that he could not answer all the statements Dr. Ringer had made because it would require a complete review of the subject. Chronic parenchymatous nephritis was recognized as a clinical entity, in most instances, without a traceable origin. It seemed to him to be an error to regard this condition as a result of an infection. It seemed furthermore erroneous to regard infections as exclusively localizable in their effects, for the reason that infections might produce a generalized systemic injury which might manifest themselves in a perversion of metabolism. The frequent untoward effects of infections in diabetes might be cited as an example. The criticism of Dr. Mosenthal in regard to the term used (chronic nephrosis) was perhaps in place, but at the present time we had no term which was applicable to this condition, which must be differentiated from chronic diffuse nephritis. In the type of case presented under the heading of "chronic nephrosis" definite chemical changes are found in the blood, to which was also ascribed the retention of water in the body. These changes were not observed in any other form of renal disease, and were undoubtedly of some definite significance, whether the present interpretation of the findings be correct or not. The retention of water in the body occurs in conditions in which the kidney was not involved. Starvation edema was the best example of such conditions, and it was known that such edema subsided promptly when proper and sufficient dietetic measures are instituted. Dr. Epstein drew attention to the fact that cases of "chronic nephrosis," even in the most extreme forms, were capable of complete recovery, and it seemed to him that the high protein diet was the only logical treatment available at the present time. Experience seemed to bear out this claim. To assume as Dr. Mosenthal did, that chronic nephrosis was more or less a self-terminated condition, dependent on the vagaries of the walls of the capillary blood vessels, was not in keeping with the data which we possessed in regard to the exchange of fluids between the blood stream and the body tissues. To explain the various phenomena affecting the water exchange in the body on the basis of a changed permeability in the walls of the capillary vessels was assuming a premise for which we possessed no scientific proof. In reply to Dr. Bullowa's statement that Widal made use of large quantities of beef in connection with his achloride diet, Dr. Epstein expressed his surprise that Widal should have attributed the improvement which he observed in his cases to the low chloride content of the diet, rather than to the high protein feeding.

The Intravenous Use of Drugs in Oil.—Dr. H. R. MILLER gave a lantern slide demonstration showing the experiment they had made from which it was possible to say that: (1) Normal dogs could receive intravenously amounts of olive oil in doses of 1 to 15 c.c. at a single injection, the total amount of oil representing 60 to 80 c.c. in four to five weeks. (2) Drugs such as adrenalin or crystalline strophanthin, when given in oil intravenously, exhibited (as compared with aqueous administration of the same drugs) a gradual effect, a less intense action and a markedly increased duration of action. It would seem to be feasible to employ these drugs in oil so as to avoid the striking, exaggerated, and sometimes erratic results obtained from aqueous administration in human beings. (3) Subcutaneous inoculation of adrenalin in oil caused a very prolonged effect measured by the pupil dilatation phenomenon described by Meltzer. The subcutaneous use would seem to be indicated for bronchial asthma and urticaria. (4) It seemed to be of advantage, when using drugs in oil intravenously, to use small amounts of oil inasmuch as the effect of the drug appeared to be diminished when it was introduced with largely increased amounts of oil.

Dr. BULLOWA stated that he had had the opportunity to confirm the observations of Dr. Miller though with another drug. A case of diabetes insipidus had received for two years injections of pituitary substance once or twice daily. Various pituitary preparations had been used. A dessicated extract of pituitary substance was dissolved in olive oil and found to have a much longer effect than when given in any other form. He had used the aqueous pituitary extract as an emulsion with oil and found the effect lasted no longer than when it was used without oil.

Dr. MILLER, in closing, pointed out that aside from all theoretical speculation it was absolutely safe to use olive oil as a therapeutic measure. It would be possible to carry out studies along metabolic lines by flooding the system with oil. Clinically it might be of value to use oil as a vehicle for certain drugs to avoid an abrupt and overwhelming effect in patients suffering from damaged cardiac condition and in acute disease. Possibly it might also be useful in bronchial asthma.

SECTION ON SURGERY.

Stated Meeting, Held February 6, 1920.

DR. SEWARD ERDMANN, IN THE CHAIR.

Compound Fracture of the Femur.—Dr. JAMES N. WORCESTER presented this patient, a policeman 29 years of age, admitted to the hospital April 26, 1919, and discharged June 20. Just before admission he attempted to jump on a moving automobile, slipped under the machine, and the wheel ran over his left leg. The fracture sustained was compounded on the outer side and the leg was bleeding profusely. The joint was full of blood, and the skin badly lacerated over the anterior and under sides of the knee. There was 2¼ inches shortening. The wound was thoroughly cleansed with soap, water, and ether. It was iodinized and a Thomas splint with glue traction applied. No improvement followed this procedure, so on May 2 a Steinmann pin was inserted in the tibia, with the patient under anesthesia, and an attempt made to reduce the fracture with heavy traction. The patient improved somewhat. Forty-five pounds traction for twenty-four hours was then applied under anesthesia but no further improvement. The point of compounding was badly infected superficially and the whole skin area about the knee very dirty. The Steinmann pin was removed on the twenty-second day on account of infection. Eight days later incision was made at the points of entry and exit and following this the infection rapidly subsided. By the time the skin was in proper condition for any operative interference the fracture was consolidated. From the time of the insertion of the pin active and passive motion of the knee joint instituted and, as the patient was very anxious to help, this was really done. At present the function of the knee was entirely normal; the patient walked and ran. There was one and one-half inches shortening which was entirely taken up by raising the heel. The sinus from the pin had persisted until within a few weeks and was now entirely healed. The patient had solid union at eight weeks and walked at twelve weeks.

Fracture of the Femur.—Dr. E. M. ARMSTRONG presented this patient, who was admitted to the hospital on September 17, 1919, after having fallen from a roof a distance of twenty feet and striking on a spike fence. The spike had penetrated the posterior portion of the thigh at the junction of the middle and upper one-third, with a transverse skin wound, on the posterior and inner aspects of the thigh. The boy was operated on one or two hours later. There was a transverse laceration of the adductors, the biceps, and semitendinosus muscles. In the beginning it was a little difficult to know what to do to make the wound clean because of the deep laceration. A superficial debridement was done with excision of lacerated muscle and ice-tong traction applied, which rotated the lower fragment outward. The wound healed deeply, leaving the skin wide apart and with a gaping granulating area. This was skin-grafted. The *x*-ray plates taken ten or twelve weeks afterwards, showed a slight angulation and slight anterior bowing but there was no shortening.

The Management of Fractures of the Femur.—Dr. JOHN J. MOOREHEAD made this presentation, which he illustrated with lantern slides. He said that the treatment of fractures of the largest bone in the body imposed upon the surgeon in civil life the largest responsibility, demanded the maximum of initial and subsequent care; indeed, fracture of the femur was the high mark in major surgery in the field of fractures, a field in which deformity and disability were supposed to be inevitable. Practically speaking, fractures of the femur could be classified as they occurred at the articular ends and in the shaft, thus giving three zones of incidence. Irrespective of zonal distribution, however, there were certain important considerations determining the method of procedure. First of these principles was the recognition that a fracture was a lacerated wound of bone and periosteum, and that there were always associated lesions of the overlying muscles and vascular and neural vessels. They recognized that the deformity following bony cleavage was due to disturbance of muscular compensation and that a bone was "set" only by "setting" the muscles which no longer maintained their accustomed status as to origin and insertion. Fractures of the femur were further classified into those in which there was displacement of fragments and those in which there was little or no displacement of fragments. Early reduction meant easier and more accurate reduction, and with this in view, preliminary traction was a great aid, irrespective of the treatment imposed later. Lacerated bone, like any other laceration, healed by primary union when the edges were well coapted, thus leading to a minimum of callus; noncoaptation meant secondary union and maximum of callus. They recognized that a compound fracture could be converted into a simple one by mechanical sterilization that aimed to expose the fracture site to vision by the exsection of all bruised or otherwise damaged tissue. This débridement and primary suture they reserved for selected cases; it was not practised in badly comminuted cases nor when the injury was more than twenty-four hours old. The safest procedure in converting any compound into a simple fracture was to resort to primosecondary or delayed suture in which all the steps except suture were taken and the actual suturing was performed between the third and sixth day, when they were assured clinically and bacteriologically of the asepsis of the wound. They recognized that the introduction of nonabsorbable material to act as an internal splint was occasionally necessary, but this should be the last resort even in selected cases. They recognized the danger of applying encircling plaster of Paris casts or other splintage combining the demerits of pressure, hiding of the part, and rendering joint motion and massage impossible. For this reason fracture of the neck of the femur was the only displaced variety of fracture subjected to this type of encasement. The choice of operative or nonoperative methods for purposes of reduction depended upon: (1) The physique of the patient; (2) the site, duration, and extent of the fracture; (3) the surroundings of the patient (home or hosptial), and (4) the experience of the surgeon. In the aged, the infirm, or the diseased, the treatment should be directed more to the general than to the local condition, and he would not impose any added burden by apparatus or forced restraint. For all nondisplaced fractures their method of choice was a plaster of Paris spica for the neck of the femur variety, and molded plaster of Paris antero-postero splints in all others. For displaced fractures the method of choice was immediate preliminary traction in a Thomas splint or adhesive plaster straps with weights until permanent reduction could be made under anesthesia with or without a traction table, at which time a splint plaster of Paris spica was applied. The earlier the reduction the easier and more satisfactory. However, experience had taught that in some cases the primary attempt at reduction was wholly unsatisfactory or was incomplete; hence their rule was to make two attempts before resorting to skeletal traction or open operation. There were certain fractures in which no external method of correction had given satisfactory results, and for want of a better name, these were called "irreducibles," and in these skeletal traction had become the sole resort, preferably by the transfixion method. The use of Buck's extension and allied apparatus had been practically completely superseded by other forms of external traction in which the Thomas, Hodgen, or Blake-Keller splint was used. Apparatus of this kind was very efficient in the majority of cases when properly applied and watched, but had the disadvantage of requiring constant supervision and frequent adjustment, and it was not by any means the method of choice for the occasional user. For very greatly overlapped, for long standing, and for most of the supracondyloid group, the essayist did not believe any method wholly satisfactory unless traction was applied to the skeleton itself and for this purpose there was the choice as between open operative correction or resorting to transfixion, the calipers or the stirrup. The calipers had the disadvantage of slipping, even though penetrating the thickness of the cortex of the bone; this probability was the greater if penetration was just into the margin of the cortex.

as so strongly advocated and employed by Pearson. A further difficulty was that one or both ends of the calipers would extrude if the weights were released for an instant. Because of these difficulties incident to traction by straps or the tongs, preference was given to transfixion in that irreducible group in which operation was the only choice. Open operation was never done unless as a part of the conversion of a compound into a simple fracture. Direct exposure and correction of a fractured femur in a muscular subject, especially if plating or wiring was added, was a hazardous procedure, particularly if the surgeon was unfamiliar with an ultra-aseptic technique in which all hand contact was prohibited. Dr. Moorehead described the technique of transfixion through the condyles for the low supracondylar type of fracture or through the supracondylar ridge of the fracture was higher up. If the condyles were involved, or if there was a wound in their proximity, transfixion could be made through the tibia just below the level of the tubercle. Dr. Moorehead stated that the method was first used by him at the Harlem Hospital in 1913 in a series of some 14 cases. To date there had been one infection of the deeper parts, involving the periosteum and cortex, but this speedily cleared up. There had been no fatalities. The merits of the method were: (1) It required no very great skill, no special instruments, no prolonged anesthesia. (2) It was adaptable for home treatment, or where there were no especially trained assistants. (3) The nursing care was minimized because the patient had considerable freedom, and was virtually in a semi-seated position. (4) The introduction of the transfixer at a distance from the actual site of the fracture did not retraumatize an already damaged area. (5) The safety and certainty of the method made a happy choice by comparison with open operation. (6) It was relatively painless, despite the semblance to a barbarous custom. (7) It permitted inspection of the entire limb and joint freedom. (8) It combined reduction and splintage, and once introduced, required only ordinary supervision. Its demerits were danger of infection of the bone and damage to the popliteal vessels and joint bursae. These were elements to be considered, but with ordinary care could be avoided. The Finchetto stirrup, or the Chutro modification of it, the writer had not found as efficient as the transfixion. Management of fracture of the femur in children less than five years of age was either by the overhead slinging up method of both extremities or by a plaster of Paris spica. Beyond this age the treatment was the same as for similar cases in adults. Any method of treatment of fractures of the femur that did not combine reduction with early massage and motion failed to give the maximum service. Fractures had been too much slighted by the surgeon, and for that reason the fracture field was being encroached upon by orthopedists, who by their training were better fitted for the after care than for the initial care of this kind of traumatic surgery. Dr. Moorehead also emphasized the great need for standardization and uniformity in fracture work.

Dr. REGINALD H. SAYRE stated that if there was anything that had struck every one as to the effect of the war on surgery it was the marvellous change in the treatment of fractures. He thought the older men would agree that prior to the war fractures were not treated as intelligently or as well as they were forty years ago, in spite of their having a great many advantages which their elders did not possess. It had been very interesting to him to see how fractures became very vitally interesting when the war came on. When they had classes of surgeons from the army to teach they found that they could not allow the treatment of fractures to go along in the haphazard way it had been doing: these surgeons had to be shown some kind of results. As they knew, the results in fractures, as shown by Walker's report, were anything but desirable. It had come to be the custom for the visiting surgeon to leave fractures for the junior to treat. The visiting surgeon was too busy removing gallbladders, performing abdominal operations, and operating on brain tumors, so that the man who slipped on the ice and broke a bone had rather a hard time of it. He agreed with what Dr. Moorehead had said. One remark reminded him of a hot argument his father and Dr. Hamilton had had at Ann Arbor, a number of years ago, when his father took the stand that Dr. Moorehead had taken, while Dr. Hamilton held that it was the rule to have deformity and shortening following fracture of the femur. His father said that there should be a copy of Dr. Hamilton's book containing this statement in every court house, in order to protect physicians against malpractice suits, but Dr. Hamilton should write another book for the patient's benefit, showing that it was not necessary to have such results if the physician took the bother to look after him.

Dr. JOHN B. WALKER said that if the majority of cases could be shown with the same favorable results as were obtained in the two cases shown this evening they might feel well satisfied with their methods of treating fractures of the femur, but the trouble was, as Dr. Sayre had said, that the average man had not been interested in fractures. Dr. Walker had been interested in studying and following up the results of these fractures during the war, and while there were a number of results equivalent to those obtained by Pearson in the British army, the best series of cases in the A. E. F. were by Dr. Bulkley and Dr. Blake. Similar results could have been obtained by other surgeons had they given the same attention to the subject as Dr. Bulkley and Dr. Blake.

Dr. WHITE said the discussion this evening was hardly complete without something more being said in reference to open reduction methods and methods of treating irreducible cases by surgical interference. He thought the great difficulty they had in uniting and fixing fragments came from the fact that while introducing screws, plates, etc., the fragments were likely to slip and become separated. He had devised forceps for holding the fragments in place while they were being screwed or plated. One of these was for use in fractures of the femur and the other for fractures of the humerus. They were so constructed that they were out of the way while one was doing the work. These forceps he demonstrated by means of lantern slides.

Dr. H. H. M. LYLE said the paper was clear, concise, and contained a great deal of information. The battle mortality from fractures of the femur was difficult to follow; he thought, however, it was something over 30 per cent. The deaths among the men returned to England with this injury was something over 39 per cent, so there was no question but that lacerated fractures were a very serious proposition. Accidents had happened in using the Pearson calipers from loosening of the arms of the calipers. That could be avoided by adjusting an elastic band on the calipers so that they could not spring apart. Another point was that iodine should never be applied so that it came in contact with the Steinmann pin, because it eroded the pin, making it difficult to remove it without causing injury In removing the pin he always used a local anesthetic. He had seen bad results from the use of the stirrup, such as gangrene of the os calcis, and necrosis of the tendo Achilles.

Dr. KENNETH BULKLEY congratulated Dr. Moorehead in that he had covered the ground very thoroughly and had given a very excellent exposition of the subject, and Dr. Armstrong and Dr. Worcester were to be congratulated on their excellent functional results. Their cases had been treated by the methods advocated by the school which Dr. Lyle had just mentioned, whose chief aim was function. There were a number of points in the paer to which attention might be directed. The first was the question of reduction and immobilization. We had all been taught that in fracture of the femur the first thing was to reduce the fracture and the second was to immobilize it. At the present time we never attempted reduction and never immobilized the fracture. We now tried to overcome angulation and overriding by gradual traction, heavy at first and lightened later. The Hawley table never should be used except in fractures around the neck of the femur. It was difficult to try to pull out a markedly overriding fracture in a few minutes, and it was dangerous. Traction above the knee was useless. Below the knee it could be used only with the knee extended.

This latter was the type of traction the English used in the early part of the war, and while the results anatomically were good, functionally they were very, very bad. He had seen a good many men treated in that way who had a relaxed knee joint and loss of flexion, the flexion being reduced to 10° or 15°. In moving the knee, it was not a question of the amount of motion at first; the important point was that there should be a little motion at first and later the degree of motion could easily be increased. The boy that was presented this evening did not at first have the full motion that he now had. The amount of motion might be greatly increased if the double knee splint is used. So far as open reduction was concerned, he thought it was now almost never necessary. There was only one indication for open reduction, and that was if after a sufficient amount of traction there was no over-riding and there was a displacement equal to the thickness of the bone. This was pathognomonic of muscle interposition. As for the army ice-tongs, they had too sharp points. A second difficulty was that they were not made so that the two arms of the tongs were parallel. The two points must be absolutely parallel when in place. The distance between the points when the arms were parallel should be about 7 cm., such an interpoint distance fitting most adult femurs.

Dr. BYRON C. DARLING said he thought that the *x*-ray man ought to cooperate more in the treatment of fractures because he saw the end results. "The end results were as a routine nowhere near what they ought to be. From the *x*-ray point of view fractures are divided into two groups, namely, those that need reduction and those that did not need reduction. Those that did not need reduction showed good results, while those that needed reduction did not often show improvement of alignment and reposition, especially overriding fractures of the long bones, except when they have a man like Dr. Moorehead to look after them. The problem was that of traction and not anything else. The Steinmann nail gives strong traction. Other methods also gave it, but not without compounding the wound, and not without cutting through the skin, introducing the serious element of possible infection. Every hospital treating fractures should have connected with the *x*-ray department a fracture room equipped with fracture tables that would allow fluoroscopy, and a plate or print without disturbing the reposition of the fracture. This checked up the position before splints or casts were applied, finishing the task as far as possible at one operation, not allowing, as too often happened in the routine, days or weeks to elapse between attempts at reduction while callus was forming and tissue repair was taking place. The earlier the fracture was replaced the better and easier. Anatomical reposition, which hastened union and insured function, was the goal; but one should never open operation or introduce nails or ice tongs, except as bloodless methods failed. However, weeks and months should not be lost by waiting for the unlikely, but if one must interfere by such methods, it should be done at the earliest possible moment. To accomplish this result there must be a combination between the *x*-ray man and the surgeon. The fracture should be reduced within the first twenty-four hours, and kept there. The subject of fractures was, of course, in for a thorough review. Dr. Moorehead's results were good and others have obtained good results, but they had accomplished this after hard work and good judgment. The introduction of metals was as a rule bad. Once in a while a bone tolerated a foreign body, such as a plate or nail, but as a rule they become loose foreign bodies. The ambulatory splint that would hold the traction when it was once obtained and would allow the patient to get up had been advocated, but he had not seen surgeons make enough use of them. The idea of an ambulatory splint and massage to the muscle and joints was most attractive."

Dr. WORCESTER said that on the line on which Dr. Moorehead had spoken so nicely, and which was a plea for using suspension and the Gatch bed, a suspension could be rigged up with the Balkan frame that was very effective. He thought that active motion which was the important part could be much better carried on by some form of suspension. Another point he wished to mention was with reference to making two attempts at skeletal traction. At Bellevue they were using skeletal traction immediately, and he could not see the need of two attempts. They used the Steinmann pin as a last resort because they found that they got bad infections from it. In using the calipers they had had no difficulty with the tongs slipping.

Dr. WILLIAM H. STEWART said that he was particularly interested in diagnosis by means of the *x*-ray. He had made some interesting observations by this method in cases of fracture of the femur while they were under treatment which seemed to show that it was very difficult to reduce a fracture in the middle or lower third of the femur and maintain the reduction. Before Dr. Moorehead went to France he had been treating these cases by means of traction on a drill passed through the lower fragment well below the line of fracture; by this means the reduction had been good, and it was maintained. Never saw but one case showing any serious irritation from the drill, and that one showed marked periosteal production along the shaft. Since Dr. Moorehead's return he had been treating his cases with various means of extension without skeletal traction, and his results were not nearly so good, most of the cases showing overlapping and angulation. From his experience fractures of the middle third of the femur which could not be reduced and maintained by simple traction should be treated by the open method. Disturbance of Nélaton's line could not always be relied upon as indicating a fracture; the speaker had also observed impacted fractures of the neck of the femur which did not show any disturbance of this line.

Dr. MOOREHEAD, in closing the discussion, said he was glad Dr. Lyle's views coincided with his, for he apreciated the value of Dr. Lyle's great experience. As to the iodine dressings, he found so much sloughing without antiseptics that he had tried a dilute dressing consisting of 1 dram of iodine to 1 pint of water, and with this there was not so much sloughing. Dr. Bulkley had advised against the use of the Hawley table, but he thought the Hawley table ought to be used as a method of gradual traction. One should not apply the traction in such a way as to produce a sudden reduction, but should take thirty to forty minutes to effect the reduction. In using the Hawley table as many minutes should be taken for the reduction as it took days by more gradual traction. Dr. Worcester asked why two attempts at reduction were made. The reason was that he shunned to do anything in an operative way if it could be avoided, so they made the two attempts before resorting to even transfixion or calipers. As to what Dr. Stewart had said of this type of treatment, his cases lately had been fracture of the femur in children and his idea was as to what methods were applicable to fractures in children. He found that he got the best results by the overhead slinging up method of both extremities or by a plaster of Paris spica, when the children were under five years of age. In the group of irreducibles, only open reduction or direct skeletal traction would bring about the desired result.

Complete Bone Surgery Outfit.—Dr. C. H. MASLAND of Philadelphia gave a demonstration of the many ways in which these electromotor-driven instruments could be used to advantage in bone surgery. Bone grafts, inlays, and pegs could be cut to a nicety. Dr. Masland expressed the opinion that bone would be used much more extensively instead of metal plates and other foreign bodies in the surgery of the future.

Radium Therapy in Uterine Cancer.—Barnaud cites a series of thirty-two cases treated by hysterectomy, of which eleven survive after an interval of from five to ten years, free from relapse. He therefore does not think that radium therapy should supplant operative treatment. The technique of the former is not yet complete, but the immediate results of radium are pronounced. Fully operable cancers should be extirpated and here secondary radium may be tried, but is not to be regarded as indispensable. The resource should be reserved for the inoperable case and the relapse.—*Journal de médecine et de chirurgie pratiques.*

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

CONNECTICUT STATE MEDICAL EXAMINING BOARD.

November, 1919.

(*Continued from page* 42.)

HYGIENE AND MEDICAL CHEMISTRY.

1. Upon what factors is the self-purification of water in streams dependent?
2. In what way, and to what extent, may ice be a source of danger to health?
3. What should be the duties of a medical inspector of schools?
4. What measures should be advocated to reduce the prevalence of infection in sleeping cars?
5. What would be your advice in the prophylaxis of influenza?
6. What are opsonins? What does the term "opsonic index" mean?
7. Discuss the prophylaxis of rabies.
8. Describe some of the proper means for sewage disposal in rural communities.
9. Give a brief description of Ehrlich's side chain theory of immunity.
10. What does the term "phagocytosis" mean, and what is its relationship to immunity?

MATERIA MEDICA AND THERAPEUTICS.

1. Write a prescription containing any two drugs (except sodium bicarbonate) commonly considered of value in flatulence. (Do not abbreviate.)
2. Write a prescription for an ointment to be used in a case of simple scabies. (Do not abbreviate.)
3. State the average adult dose, method of administration and indications for the use of any two of the following drugs: Liquor potassii arsenitis; tinctura aconiti; physostigminæ salicylas.
4. Describe the action of large doses of aconite on the heart and circulatory system.
5. Describe the physical and chemical properties of quinine sulphate.
6. Describe the treatment of epilepsy (Grand Mal) in a girl 14 years of age who for the past 4 years has had occasional convulsions with increasing frequency and severity without apparent cause. Convulsions now occur on an average of one each week. No history of trauma. Physical examination including Wassermann test is essentially negative.

7 and 8. Outline your treatment of the following case. A married woman of 46 consults you because of occipital headaches, nervousness, insomnia, and weakness from which she has suffered for three years. Prior to this she has always enjoyed fairly good health and has had no serious illness except occasional attacks of tonsilitis. She has never had "rheumatism." She has had no children and no miscarriages. Menopause at age of forty. Her husband is and always has been well. Her father died at age of 55 of heart disease, her mother at age of 48 of pneumonia. No brothers and sisters. On examination you find that she is well developed and nourished but rather pale. There are several unfilled cavities in the teeth and evidence of slight Riggs' disease. The tonsils are not enlarged, but ragged and congested. No enlargement of the thyroid gland. The arteries are palpable but apparently not tortuous or calcareous. There is slight hypertrophy of the heart and accentuation of the aortic second sound. Rate and rhythm normal. Blood pressure S. 190, D. 110. No edema of the extremities. Eye grounds, reflexes and other physical signs negative. Urine 60 ounces in 24 hours; night specimen 32 ounces, specific gravity 1,012; day specimen 28 ounces, specific gravity 1,015. No albumen or sugar in either specimen. Microscopic examination seven or eight hyaline casts (centrifuge). Wassermann negative.

9 and 10. A well-to-do merchant, 47 years of age, 5 feet 7 inches, weighing 180 pounds, consults you because of polyuria. Except for this symptom which he has noticed for six months he has always been well and has been temperate in his habits. His physical examination is negative. You find 2 per cent. of sugar (no acetone or diacetic acid) in his urine on three successive days during which time he has been on his usual diet which has been that of an average man. After twenty-four hours of absolute starvation he becomes sugar free. Outline the further treatment of the above case.

PRACTICE, PATHOLOGY, AND DIAGNOSIS.

1 and 2. (1) Premature contraction; (2) Antigen; (3) Non-proteid nitrogen; (4) Xanthin. Briefly define any three of the above and discuss their practical application to the practice of medicine.

3. Describe the symptoms, signs, course, and treatment of subdeltoid bursitis.
4. What confirmatory symptoms and signs would you look for in a child of seven that you suspected had hereditary syphilis?
5. Describe the gross and microscopic appearance of scirrhous carcinoma of the breast.
6. Discuss the etiology, diagnosis, and course of erythema nodosum.
7. What symptoms and signs would you watch for in a suspected case of acute endocarditis?
8. Describe the symptoms and signs of acute frontal sinusitis.
9. Miss B., 38 years of age, has suffered all her life from periodic headaches occurring every two or four weeks, more especially at the time of menstruation. Except for these attacks she had never been sick and seemed to be vigorous in every respect. Yesterday she seemed as well as usual but went to bed with what was thought to be one of her usual headaches. About midnight her sister, who slept in the same room with her, found her unconscious and in a convulsion. From that time till 8 o'clock A.M. the next morning, when you are called to see her, she had had six general tonic-clonic convulsions (five of them accompanied by complete loss of consciousness) each lasting about a minute and followed by profound relaxation and deep breathing. You find her conscious, but very drowsy and heavy. Physical examination of the chest and abdomen is negative. The reflexes are all somewhat exaggerated especially on the left side and at times Babinski's reaction could be elicited on the left. The pupils were moderately dilated (the left larger than the right) and responded rather sluggishly to light. When conscious she complained of headache and although she had been somewhat nauseated had not vomited. The urine drawn by catheter showed specific gravity 1,014; no sugar and a moderate number of hyaline casts; some with granules or cells adherent. Blood pressure 140-80. Eye grounds not examined. Leucocyte count 16,000 cells, 81 per cent. of which were polynuclears. Temperature 101.3 F.; pulse 100 between convulsions, becoming rapid and feeble during and after them. Bowels were moved by enema and showed nothing of importance. Discuss the diagnosis based on the data as given and state how you would proceed in treating the case.
10. Discuss the diagnosis and treatment of the following case: Miss C., aged 40, is a native of Connecticut. Seven months ago she had a mild attack of influenza followed a month later by jaundice which has persisted and grown more intense. Accompanying the jaundice there has been slight discomfort in the right hypochondrium, but no vomiting, though at times she has been somewhat nauseated. The last half year she has been gradually growing weaker; her appetite has been fair, although she could not eat fats. She has lost 25 or 30 pounds in weight. The bowels have moved on an average of three or four times a day. The stools are well formed and clay-colored. The urine has been dark brown. She has been keeping house for her brother till three days ago. At times she has been extremely tired and has had to go to bed during the day. For the last three months her legs have been badly swollen. Her father died of unknown cause; her mother of typhoid fever. Three brothers and one sister are living and well. No history of rheumatism, tuberculosis, cancer, diabetes or mental disease in the family. Her habits are good, she does not use alcohol. Menstruation has always been regular. Aside from the diseases of childhood she has always been well. Physical examination shows her to be well developed but poorly nourished. The skin is extremely jaundiced having an olive green hue. Pupils equal, regular and

react to light and accommodation. Reflexes normal. The tongue is coated, many of the teeth are decayed. There is no general adenopathy, no enlargement of the thyroid. The pulsation of the carotids is plainly visible. There are numerous fine crackling râles at the right base; otherwise the lungs are negative. The heart is not enlarged; a soft systolic murmur is heard in the fifth interspace halfway between the sternum and the nipple. It is not transmitted. The P_2 is not accentuated, the sounds regular and of good quality. The abdomen is distended. There is no spasm, tenderness or rigidity. The liver is increased in size, extending 6 cm. below the costal margin. It is soft, does not feel nodular, but there is a mass which feels like a distended gall bladder at its lower edge, extending in the right nipple line to the level of the umbilicus. Spleen and kidneys not palpable. There is marked edema of both legs and thighs which are swollen to almost twice their normal size with considerable discoloration below the knees. Pelvic and rectal examinations negative. Temperature and pulse normal. Urine acid, bile tinged, specific gravity 1,014; alb. V. S. T., sugar none. Several hyaline casts. Gastric analysis practically negative. Hemoglobin 85 per cent. R.B.C. 3,820,000. W.B.C. 8,800. Smear and differential count show evidence of secondary anemia only. Wassermann negative.

ANSWERS.

HYGIENE AND MEDICAL CHEMISTRY.

1. *Factors in the purification of waters in streams.*—(1) *Chemical*, the oxidation of nitrogenous organic matter, resulting in its reduction or mineralization; (2) *Biological*, the death of microorganisms through symbiosis, time, and various means; (3) *Physical*, such as dilution, sedimentation, sunlight, etc.—(Rosenau's *Preventive Medicine and Hygiene.*)

2. *Ice as a source of danger to health.* "There should be a system of sanitary inspection of the sources of supply. Ice should not be cut from water known to be contaminated with pathogenic germs, such as the typhoid or tubercle bacilli. If sewage pollution is extensive, there may be frozen into the ice solid pieces containing noxious bacteria. Artificial ice should be made only from water that is suitable for drinking purposes. Ice as a vehicle of disease, however, is far less a menace to the public health than water or milk. Freezing destroys a large majority of the bacteria present, experiments having proved that the majority of typhoid bacilli perish within a short time, and after three weeks of freezing less than one per cent. remain alive. Storage still further eliminates the number of bacteria that survive the freezing process. Houston has shown that simple storage of water in reservoirs reduces the number of bacteria, including fecal bacteria and those of typhoid and cholera. After three months the danger of ice cut from even markedly polluted water is trivial. It is far better, however, to refuse all ice from polluted sources. . . . In transportation ice is less liable to contamination than water or milk, because impurities in the container are not absorbed, and are readily washed off. The great danger of infection from ice lies in unsanitary handling—in the cutting, delivery, and serving. The harvesting of ice is often anything but a cleanly process. The ice-dealer may easily infect the ice with his filthy broom and dirty hands. Finally the ice is often dropped into drinking water by hands dirty and apt to be infected with the discharges from nose, mouth, bladder or bowel of the person handling the same."—(Pyle's *Personal Hygiene.*)

3. *Duties of a medical inspector of schools.* "The object of a medical inspection of schools is not primarily the treatment of diseases, but rather their prevention. One of the principal objects is the early recognition of physical defects such as errors of refraction, imperfect hearing, malformations of the body from abnormal positions, adenoids, enlarged tonsils, and other obstructions of breathing, and sources of inflammation, etc. An important object of the medical inspection of school children is to determine their fitness to enter school and to recognize mental and nervous disorders; also the early recognition of the communicable diseases, and measures to prevent their spread; the supervision of vaccination, and disinfection; the teaching of personal hygiene to pupils and teachers, and the sanitation and cleanliness of the school buildings and its surroundings; the adjustment of the seat and desk, and the medical supervision of the mental and physical work of the child."—(Rosenau's *Preventive Medicine and Hygiene.*)

4. "Before attempting to fumigate the interior of a sleeping car or a passenger coach with one of the disinfectants it is important to close the sashes and all the ventilator openings for the Pintsch gas flames. Much gas will be lost through the open hopper of the water-closet unless that is tamponed. Some cars have a system of ventilating ducts of fresh air entering under the seat or somewhere near the bottom of the car. This must be closed. Formaldehyde gas and hydrocyanic acid gas are practically the only gases which may be used for the treatment of the sleeping car. As these gases lack the power of penetration, all the berths must be opened and all the bedding and other fabric should be removed for steaming or other treatment. Hydrocyanic acid is especially serviceable for the destruction of bedbugs and vermin which frequently infest sleeping cars. After the bedding, hangings, carpets, and other fabrics have been removed from the car, the toilet-room should be given special attention. The drinking glasses, the wash basins and slabs of the washstands, the brushes and combs, the seat of the water-closet, and other objects liable to infection should be washed or immersed in one of the standard germicidal solutions."—(Rosenau's *Preventive Medicine and Hygiene.*)

5. *Prophylaxis in influenza.* Isolation is important; during epidemics people should avoid crowded places, such as theaters, churches, mass meetings, packed cars. People with catarrhal symptoms should be avoided. The laws against spitting should be enforced; and the public should be educated as to the danger of using common drinking cups, roller towels, handkerchiefs, spoons and other implements that come in contact with the mouth.

6. *Opsonins* are substances which act upon bacteria and other cells in such a way that they are more readily ingested by phagocytes.

The *opsonic index* is the ratio of the number of bacteria ingested by a given number of phagocytes in a patient's blood as compared with the number ingested by the same number of phagocytes in normal blood.

7. *Prophylaxis of rabies.* The muzzling of dogs should be strictly enforced; stray dogs should be destroyed; when a person is bitten, the wound should be treated by the actual cautery or by nitric acid; silver nitrate is useless; the Pasteur treatment should be begun early. When a person has been bitten the dog should be kept under observation, or killed under proper control, and a post-mortem made so as to determine whether or not it had rabies.

8. *Sewage disposal in rural communities.* The first requisite is a "protected privy, that is, one where the fecal matter is received in a tight vault so constructed that the contents cannot be reached by flies, insects, rats, hens, or pigs, yet so ventilated as to prevent disagreeable odors, and give opportunity for evaporation of liquids. This necessitates the liberal use of screens around the vault and on the windows and doors, and the use of a self-closing cover for the seat. . . . Privies that are not provided with water-tight vaults, but are so arranged that the fecal matter falls upon the soil, may be safe, so far as water pollution is concerned, if the soil is of proper character and if the privy is sufficiently removed from the house well; but are undesirable for other reasons. No arbitrary rules as to the necessary minimum distance of a privy from a well can be laid down, as everything depends upon the character of the soil, the slope of the ground, the elevation of the natural ground water, and the draught of water from the well. . . Cesspools are holes dug in the ground to receive not only fecal matter, but also, perhaps, sink wastes and water-closet discharges. They are often lined with loose stones to prevent caving, but this permits the liquids to leach into the soil. When the soil is sandy there is no objection to this method of disposal. . . Leaching cesspools, however, should not be located near wells used for drinking

water supplies. . . Ordinarily leaching cesspools should not be constructed in clay soils or in limestone regions, for they are liable to seriously pollute the ground water and are almost sure to overflow. If cesspools are necessary under such conditions they should be made water-tight and treated as septic tanks and the effluent taken care of by subsurface irrigation or some form of land treatment. . . The disposal of the contents is one of the most troublesome questions connected with cesspools. The common method is to spread it upon the land as a topdressing. The work is apt to be done in the winter, and not infrequently when the ground is frozen. Thus opportunity is given for fecal bacteria of human origin to be washed into a well or some public water supply. If spread on the ground during the summer, flies have access to it. If used for fertilizer for crops eaten raw, as celery or lettuce, opportunity is offered for transmission of infection by such foods. The only proper method of disposal for cesspool sludge is by burial or disinfection. In laborers' camps, and in army camps, disposal of fecal matter by cremation is practised with advantage." (From Rosenau's *Preventive Medicine and Hygiene.*)

9. *Ehrlich's side chain theory of immunity.* "This receives its name from its analogy to the benzole ring in chemistry with the accompanying lateral chains. For convenience terms are used that can be applied to formed bodies, although they cannot be demonstrated as such in body juices. In this theory it is claimed that immunity depends upon the presence or absence of 'receptors,' the equivalent of the chemical lateral chains. The normal or fixed receptor is that body attached to the cell by means of which the cell is acted upon by various substances, nutritive or otherwise. Each receptor is supposed to be so formed as to unite with a certain body of a definite character. When the action of the bacteria upon the tissue cells is considered, it is supposed that the poisonous products consist of two portions, the 'haptophorous' and the 'toxophorous' groups. The combination is thought to take place as follows: The haptophoric group unites with a certain definite receptor, and by so doing interferes with the normal function of the cell. At the same time the toxophoric group is able then to act directly upon the cell. If this group is very powerful the cell is destroyed, and if a sufficient number are involved the individual may die. When such a union occurs the receptors are of no further use. It has been found in such cases that in order to get back to the normal the cell will be so stimulated that new receptors similar to the ones destroyed will be formed. As a rule, a great excess of receptors will result, and many of these will be cast forth into the circulation, becoming free receptors. These cast-off receptors are what constitute an antitoxin, and on coming in contact with the toxin molecule, unite with the haptophorous portion and consequently render it harmless. It being attached to a free receptor, it is no longer able to combine with a fixed receptor. In bacteriolysis and hemolysis, or cytolysis in general, conditions in which the destruction of actual cells is concerned, the destruction is brought about in a more complicated manner. Two other bodies than the cells are involved. One of these, known as the complement, is normally present in all serum. It is destroyed by a temperature of 55° C. for one-half hour, and is termed, therefore, thermolabile. The other, the immune-body, or amboceptor, occurs in serum only as the result of the injection into the individual of the definite antigen. In other words, the amboceptor is specific in that it can combine only with that substance which gave rise to its formation. As it can resist heat up to 80° C., it is termed thermostabile. In order that the cell be destroyed the complement unites with the specific amboceptor, which in turn joins with the fixed receptor, and the destructive action then occurs. In active acquired immunity against foreign cells the invaded animal forms large amounts of amboceptor, which, being free within the blood, unite with and destroy the invading cells. If the supply is sufficient, the individual will recover. In passive acquired immunity large numbers of amboceptors in the serum from the immunized animal are directly introduced into the patient, and in this way effect a cure."—(McConnell's *Manual of Pathology.*)

10. *Phagocytosis.* "There are certain cells in the body that have the power of ameboid movement, by means of which they are able to surround and take up bacteria and destroy them. These cells are known as phagocytes. Metchnikoff believes that immunity is the result of the positive and negative chemotaxis (power of attraction) existing between the phagocytic cells and the microorganisms. He divides such cells into two classes: (1) *Microphages*, represented by polymorphonuclear leucocytes; and (2) *Macrophages*, large mononuclear leucocytes, endothelial cells lining serous membranes, and fixed mononuclear cells of the spleen follicles and lymph sinuses. The most active are the microphages, as they have the power of independent motion. When the bacteria gain entrance into the body, the phagocytes are attracted, and they attempt to ingest and destroy the invaders. If the immunity of the animal is marked, many of the organisms will be bound within the cells; if the immunity is slight, few cells will contain bacteria. At one time it was claimed that phagocytes could take up only dead bacteria, but it has been demonstrated that the leucocytes can take up living organisms. As a rule the bacteria are ultimately destroyed, but on the other hand, the phagocyte may be the one to perish, and in this way permit a wide distribution of the invaders. Experiments have shown that the bacteria must be acted upon by a substance in the blood known as an *opsonin*, before the phagocyte is able to digest them."—(McConnell's *Manual of Pathology.*)

MATERIA MEDICA AND THERAPEUTICS

1. *Prescription for flatulence:*
   ℞. Spiritus chloroformi
   Tincturæ cardamomi compositæ aa ʒ iv.
   Misce, et signa:—Take twenty drops in hot water every two hours.
2. *Prescription for ointment in case of scabies:*
   ℞. Unguenti sulphuris ʒ ij
   Signa:—Apply as directed.
3. LIQUOR POTASSII ARSENITIS. *Average adult dose*, three minims. The drug should be *administered* in water, beginning with a full dose, say six minims, and this dose is steadily reduced; it should be taken very soon after meals. *Indications:* Pernicious anemia, leukemia, chlorosis, chronic malaria, certain obscure bone and joint diseases, malnutrition.

TINCTURA ACONITI. *Average adult dose*, five minims. *Administration:* It is best given in a little water every two or three hours; or minim doses may be given every hour until it takes effect. *Indications:* Nervous excitement, chronic nephritis, uremia, eclampsia, to reduce fever.

PHYSOSTIGMINÆ SALICYLAS. *Average adult dose* is 1/60 grain. It is best *administered* in pills. *Indications:* Epilepsy, tetanus, chorea; hypodermically, as a purgative; and locally, to reduce intraocular pressure.

4. *Action of large doses of aconite on the heart and circulatory system.* "If the therapeutic dosage is exceeded, the primary slowing of the heart rate turns rather suddenly into quickening, accompanied by arhythmia, which finally becomes extreme. Toxic doses greatly increase the force and especially the rate of the heart, at the same time rendering it extremely arhythmic. The beats may occur in groups, as with digitalis. The heart finally goes quite suddenly into delirium cordis, and stops. During the earlier stages of this action the blood pressure is extremely variable, according to the varying force of the heart, and the successive stimulation and depression of the vasomotor center. Toward the later stages the pressure drops severely. The cardiac effects are due partly to stimulation and depression of the vagus and accelerator mechanisms, but mainly to direct action on the cardiac muscle; the excitability of the latter is greatly increased, somewhat as with digitalis."—(Sollmann's *Manual of Pharmacology.*)

5. *Properties of quinine sulphate.* It is a light, white substance, occurring in silky, flexible crystals or as monoclinic needles; it is odorless, but has a persistent and very bitter taste. It is soluble in about 700 parts of water and in about 100 parts of alcohol. It is more soluble in acidulated water. On exposure to the light it becomes discolored. A saturated aqueous solution is neutral or slightly alkaline to litmus, and when

acidulated with dilute sulphuric acid it develops a blue fluorescence.

6. *Treatment of epilepsy.* "In all cases, upon the development of fits the most painstaking care must be exercised to discover any possible source of irritation, since in the early stages removal of local irritations may lead to mitigation if not cure of the disease. The best possible hygienic conditions must be secured. The child should not be forced to keep up in studies with others better endowed. Excellent results have been achieved at epileptic colonies where the patients are taught some interesting and useful manual occupation. The diet should be light, nutritious, and nonstimulating; recent studies suggest the wisdom of reducing foods containing purin bodies (meat, fish, tea, coffee, etc.), and some observers believe in the desirability of reducing the sodium chloride intake. The bowels should be opened regularly and thoroughly; colonic flushings seem sometimes to be of service (lessening intestinal autointoxication?). The epileptic seizure requires no special treatment, aside from care to prevent the patient's injuring himself; a mouth gag or similar contrivance between the teeth to prevent his biting his tongue (usually impossible, on account of the brevity of the attack); and loosening the clothing to facilitate breathing. On the whole the best medicinal treatment still seems to consist of the use of the bromides, despite some opinions to the contrary. Any of the bromides may be given, although perhaps the mixed bromides secure the best results." (Kelly's *Practice of Medicine.*)

7 and 8. The condition is one of arteriosclerosis, with chronic interstitial nephritis. The teeth and pyorrhea should be attended to by a competent dentist. Free and continued elimination is indicated, and the patient should receive small daily doses of magnesium sulphate, and Basham's mixture and strychnine sulphate 1/40 grain, thrice daily. Outdoor exercise, such as walking about a mile, should be indulged in daily; the patient must wear warm clothing and avoid chills. Rest is also essential, and the patient should sleep about eight or nine hours in each twenty-four hours. The diet should be mainly of vegetables, fruits, cereals, milk, etc.; this should be continued for about a month, and its effect on the blood pressure then noted. Two or three times every week the patient should receive a warm bath (about 102° F.) before retiring for the night; this should be followed by brush friction.

9 and 10. The diet must be carefully regulated, and explicit written directions must be given to the patient. The carbohydrates must be limited, the diet consisting of proteins and fat; the tolerance for carbohydrates must be built up and increased, and a sufficient number of calories must be supplied. With many patients the gradual withdrawal of carbohydrates is tolerated better than their sudden restriction. The percentage of sugar in the urine when the patient is on a general diet is first to be calculated, then the amount on a sugar-free diet, and then the quantity of carbohydrates which can be given without glycosuria appearing. Recently the *starvation diet* of Allen and Joslin has been recommended, but the details of this method are too lengthy for insertion here. Care must be taken lest a diet which is too exclusively nitrogenous should throw an excessive strain upon the liver and kidneys. As a general rule, diabetics *must not take:* Liver, sugars, sweets or starches of any kind, wheaten bread or biscuits, corn bread, oatmeal, barley, rice, rye bread, arrowroot, sago, macaroni, tapioca, vermicelli, potatoes, parsnips, beets, turnips, peas, carrots, melons, fruits, puddings, pastry, pies, ices, honey, jams, sweet or sparkling wines, cordials, cider, porter, lager, chestnuts, peanuts. In every case the diet list must be prepared for the individual patient, The general health must also be attended to. The patient should lead a quiet life, free from worry, take gentle exercise, bathe daily in warm water, and only take drugs when indicated. The most commonly used drugs are codeine, morphine, strychnine, arsenic, and cod liver oil. For the extreme thirst citrate of potassium or lemon juice with water may be given.

PRACTICE, PATHOLOGY AND DIAGNOSIS.

1. and 2. *Premature contractions* "are defined as responses of the heart to new and isolated impulses formed in the musculature; they are contractions which occur before the anticipated time and which consequently disturb the rhythmic movements of the heart. Premature contractions are of two chief kinds: some arise in the ventricle, others in the auricle. Arising in the auricle, they spring, not from the pace-maker, but as a rule from some extraneous point. The premature auricular contraction is followed by a similar beat in the ventricle which, therefore, repeats the auricular irregularity. The premature ventricular contraction, on the other hand, does not disturb the sequence of auricular contractions; the disturbance is confined to the ventricle. . . . Premature contractions are seen in early life as accompaniments of infectious diseases (diphtheria especially); in later years they may be associated with almost any disease, infectious or otherwise; they are occasional phenomena in a large proportion, if not the majority of healthy adults. When numerous, their incidence is greatest in heart disease." (From Osler and McCrae's *Modern Medicine.*)

Antigen "is any substance which, when injected into a suitable animal, has the power of generating an antibody. Practically all pathogenic bacteria and pathogenic protozoa act as antigens; many albuminous bodies, such as the venoms, the enzymes, and bland proteins, may also act as antigens. As the reaction is specific, it is possible to determine whether a particular microorganism is the true cause of a disease or not. Thus, Bordet was enabled to satisfy himself that the bacillus which he isolated during the early stages of whooping-cough was the true cause of that disease, as it gave the reaction of fixation with a specific antibody. On the other hand, if the antigen is known, the diagnosis may be made through the reaction of fixation, as in the case of syphilis and the Wassermann reaction." (Rosenau's *Preventive Medicine and Hygiene.*)

Non-proteid nitrogen is the nitrogen contained in organic substances of a less complex structure than proteid; it includes urea, uric acid, creatinin, etc. The determination of the non-protein nitrogen in the blood is used in the diagnosis and prognosis of uremia, nephritis and allied conditions. An increase in the non-proteid nitrogen in the blood would indicate an impending uremic attack and the advisability of giving a diet low in proteids.

Xanthin is, chemically, dioxypurin; and as uric acid is trioxypurin, xanthin may be considered as uric acid less one atom of oxygen. There is a very small amount of it found normally in the urine; it is sometimes found as the base of renal or vesical calculi. If it occurs in excess, there is probably excessive formation of purin bodies within the body, or else lack of an oxidizing enzyme which would convert it into uric acid.

3. *Subdeltoid bursitis.* "Pain is a constant symptom and is especially annoying at night, the patient being unable to get into a comfortable position. Local tenderness may be elicited over the anatomical limits of the bursa and is usually most marked over the great tuberosity, just external to the bicipital groove. Demonstrable effusion is not uncommon but is disguised by the overlying tissues. If left to himself, the patient tends to maintain the limb in the sling position and resists movements in the direction of abduction and rotation. In the treatment of this affection the arm should be maintained at a right angle to the body, the upper arm being rotated inward. When pain permits of it, movements of the arm and massage are persevered with. In neglected cases, when adhesions have formed and the shoulder is fixed, it may be necessary to break down the adhesions under an anesthetic." (Thomson and Miles' *Manual of Surgery.*)

4. *In a child aged seven years, suspected of hereditary syphilis,* there would probably be found Hutchinson's teeth (notched upper central incisors); interstitial keratitis may be present, also deafness. Osteoperiostitis, arthritis, and dactylitis are suggestive of the condition. Gummata may appear, and the palate and nose may be necrosed or ulcerated. A Wassermann test should be made by a competent laboratory worker.

5. *Scirrhous carcinoma of the breast.* "This is usually met with in women between the ages of thirty-five and fifty, and it often begins while the patient is still menstruating regularly. It sometimes occurs in patients below thirty. The most common site is the upper and outer quadrant of the breast, but it may occur in

any part of the gland. Sometimes there is more than one nodule in the breast. In its early stages the condition is quite painless, and the existence of the tumor is usually discovered accidentally. In some cases indrawing of the nipple or dimpling of the skin over the breast first attracts attention. It is often noticed that there is a difference in the level of the two nipples, that of the affected breast being at a higher level than the other (Watson Cheyne). As the disease progresses the patient experiences a dull, aching pain, with occasional sharp twinges shooting through toward the shoulder, up into the neck, or down the inner side of the arm. On palpation, a more or less circumscribed and fairly well-defined tumor of stony hardness may be felt in the substance of the breast. Not being encapsulated, it cannot be moved apart from the breast. When firmly pressed against the chest wall with the flat of the hand the tumor becomes more evident, and its stony hardness is fully appreciated. The skin over the growth may for a long time remain free, but, as the disease progresses, it becomes tacked down, and is later dimpled by contraction of the suspensory ligaments of Cooper. When the skin becomes invaded by the tumor it assumes a characteristically coarse and indurated appearance, aptly compared to that of the skin of an orange or to pig's skin. When the tumor is near the center of the breast, it causes retraction of the nipple by dragging on the large ducts. It cannot be too strongly emphasized that the presence of all or any of these symptoms is not necessary for the diagnosis of cancer, and that when there is any doubt the patient should be given the benefit of an exploratory operation. In this variety of mammary cancer, the connective-tissue elements predominate while the masses of epithelial cells are comparatively few in number and small in size. Toward the center of the tumor the epithelial clusters are compressed by contraction of the newly formed fibrous tissue, and undergo fatty degeneration. Toward the periphery the stroma is less dense and the epithelial masses are larger and more numerous. They fill the smaller acini, and, after bursting through the basement membrane, invade the lymph spaces of the stroma. The tissues immediately surrounding the tumor are usually infiltrated with leucocytes. On a section being made through the tumor there is a characteristic creaking sensation as the knife divides the tissue, and the cut surfaces become slightly concave owing to contraction of the dense fibrous tissue in the center of the growth. Toward the center, the section presents a grayish-white, striated appearance, closely resembling that of an unripe pear, and scattered over it there are usually several yellow spots due to fatty degeneration of the epithelial elements. Toward the periphery the tissue is softer, of a bluish or pinkish color, and shows numerous minute hemorrhagic points." (Thomson and Miles' *Manual of Surgery.*)

6. *Erythema nodosum* "is largely observed in youth and early adult life. It is uncommon after the age of thirty. It is met with two to five times as frequently in females as in males. Rheumatism, gastrointestinal disorders, and general nutritive disturbances are not infrequently associated. The disease is usually ushered in with fever, articular pains, malaise, and coated tongue. Soon roundish or oval node-like swellings, varying in size from a hazelnut to an egg, develop over the region of the tibiæ. In some cases the forearms, trunk, and, more rarely, the face are involved. The nodes are rosy red in color, tense and shining, like erysipelas, and exquisitely tender to the touch. At first hard, they later soften, but never suppurate. Their duration is from a week to ten days, during which time they undergo all the color gradations observed in common contusions. In number they vary from about five to twenty. The distribution, tenderness, symmetry, course, and color changes of the lesions enable one to differentiate the affection from bruise, abscess, gumma, and erythema induratum." (Schamberg's *Diseases of the Skin.*)

7. "Occurring, as it does, in the course of some other disease, the subjective symptoms of *acute simple endocarditis* are usually masked by the manifestations of the primary condition, until disturbances of the circulation direct attention to the heart. Increase of temperature, precordial distress, cough, slight dyspnea, and more or less persistent vomiting may be present. The action of the heart is increased and often tumultuous. The carotids throb and there are noises in the ear. As the inflammation progresses, the cardiac action and pulse become less frequent, and venous stasis and more or less pulmonary congestion occur. The attack lasts from one to three weeks. *Auscultation* reveals a change in the character of the sounds (prolongation) and sometimes the development of a murmur corresponding to the affected valve."

In acute malignant endocarditis. "the septic intoxication is manifested by headache, restlessness, delirium of varying degrees, dry coated tongue, sordes on the lips and on the gums, nausea, vomiting, constipation or diarrhea, leukocytosis, irregular fever, rigors, and sweats. The heart's action is rapid, irregular, and weak, and the pulse is compressible. The spleen is enlarged and albuminuria is present. Paroxysmal dyspnea and cyanosis are common symptoms. The patient frequently experiences a sense of impending danger, great anxiety, and terror. The occurrence of embolism is marked by additional symptoms referable to the organ affected. If the brain, rapidly developing palsies with disorder of consciousness; if the kidneys, deep-seated lumbar pains with hematuria or disordered urinary flow; if the spleen, pain and tenderness of the splenic region with increase of temperature record. *Auscultation* reveals the replacement of the normal, booming, muscular, first sound by a feeble, irregular cardiac pulsation. Generally a murmur may be detected, but it is subject to great variations, and may be absent." (Hughes' *Practice of Medicine.*)

8. *Acute frontal sinusitis.* "The symptoms are frontal headache, sometimes severe pain, with nausea and vomiting. Redness and swelling over the sinus and edema of the eyelids. . . When a transilluminator is placed beneath the brow, the light is transmitted better by a large normal sinus than by one containing pus or a tumor. However, the size and shape of the frontal sinus varies so greatly in different individuals that a much more satisfactory result can be obtained by an *x*-ray photograph than by transillumination." (Gleason's *Diseases of Nose, Throat and Ear.*)

9. The case might be diagnosed as one of *uremia*, but this is improbable. *Nocturnal epilepsy* with *status lymphaticus* is also improbable, because the patient's sister had been in the habit of sleeping in the same room with her for some years, and had never known of any similar attack, nocturnal or diurnal. The absence of any previous cardiovascular or renal disease, the normal condition of the heart and blood-pressure, the absence of any history or present evidence of syphilis, make *apoplexy* and *vascular crises* somewhat improbable. *Cerebral tumor and abscess* are possibilities, and cannot be absolutely excluded, but a higher blood-pressure might have been expected; and fundus examination in this event would have shown a choked disc. The leucocytosis gives no help. Lumbar puncture, with examination of the cerebrospinal fluid, is suggested as an aid in making the diagnosis; the presence of the diplococcus of *epidemic meningitis* would settle the diagnosis as one of that disease. Injection of Flexner's antimeningitic serum is indicated. (From Cabot's *Differential Diagnosis*, Vol. 1, where the case (No. 266) is fully discussed.)

10. The case is probably one of carcinoma of the head of the pancreas or of the ductus communis choledochus. The edema in legs and thighs is due to pressure on the inferior vena cava.

The treatment is hopeless. Morphine may make the patient more comfortable.

(*To be concluded.*)

Uncle-Niece Marriages.—This subject has been agitated by the Eugenic Society of Sao Paulo. Coelho quotes authorities and cites cases which make against such unions. Nevertheless there is some opinion which sanctions such unions and the author has sent out a questionnaire which seeks to ascertain the views of medical men pro and con. Two leading medical men received these questions and one replied that he was opposed because a consanguine union doubles any family taint. The inference is that there is a movement on foot to remove this inhibition.—*Brazil Medico.*

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THE EVOLUTION OF A CHILDREN'S CLINIC.

CREATING A POST-GRADUATE TEACHING DEPARTMENT IN A MODERN GENERAL HOSPITAL.

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THIS paper supplements one published in the *Archives of Pediatrics* for February, 1920, entitled "A Model Pediatric Service for the Modern General Hospital." It sets forth, in a mixture of history and prophecy, the evolution of a Pediatric Dispensary in its progress from the average *toward* (not *to*) the ideal. The fact that a real pediatric seminar, in little, is being built up for the benefit of the men who serve it, is one of the interesting end-products of an attempt to cope with the increasingly difficult and puzzling problem of the dispensary today. Whether or not the individual hospital should thus attempt to become a teaching center for the men who give their time to it, is a fair question for discussion. The dispensary whose hegira is described here, is the outdoor service appertaining to the Pediatric Department discussed in the former paper.

To most of us who have served in one, the phrase "children's clinic" connotes rather a drab, humdrum affair, the fag end of a general dispensary service. It is usually divided into two services, covering alternate days. It is served by a varying number of doctors, who attend when their private practice is not too engrossing. Into it wanders everything medical under the age of twelve or thirteen, except, perhaps, cases which the doorman diagnoses as "tonsils and adenoids," and sends by virtue of his diagnosis direct to the throat department, no matter what else they may be suffering from. Each patient is asked a few questions by the overworked doctor who happens to be present. These may be pretty well expressed by their least common multiple, "What is the matter with the child?" After as much of an examination as the number of cases still to be turned out allows of, the doctor writes down a number corresponding to a mixture in the dispensary formulary, hands it to the mother, and calls out, "Next!" Not very inspiring to either mother or physician, is it? And yet we wonder why busy physicians, whose time for anything outside their own practices is so limited, lose interest after a few months of this sort of thing, get lax in their attendance, and eventually drop out. Instead of wondering why they do not keep on, it is really far more rational to ask why they should stay as long as they do! Probably three reasons will explain the motives of most of the men. One class stays on in the hope that faithful service may at last lead to that greatly-to-be-desired haven, a place on the inside staff. Once here, they may look back at a tiresome ordeal safely passed through—but never to be repeated! A second group desires to be able to say that they are connected with a certain hospital—perhaps to be allowed to bring in their private cases to its private pavilion. A third class, which recruits the constant and every-changing "turnover," consists of men who come with a desire to learn something. These men usually feel, in a few months, that they have gained about as much as they ever will, and that they are giving the institution far more than they are getting from it. And the dispassionate observer is inclined to endorse their verdict. As was recently remarked, in the course of a discussion in the New York Academy of Medicine on this very subject, "It is no longer the clinical assistant that is on probation; it is the hospital!"

When we began to look over the field before attempting to re-create our children's clinic, we found that the average dispensary suffered from some or all of the following defects. Tabulating them seemed to bring our problem out into the open, at least. First, an almost universal defect was a lack of enough men to handle the volume of work presenting itself, on anything but a perfunctory basis, entirely different from the scientific basis on which the ward work was carried on in the same institution. In other words, there was a lack of comprehension of the fact that an ambulatory patient may be quite as sick an individual, and quite as needy of careful study and treatment, as another patient who chances to find himself in bed. This shortage, of course, precluded the proper studying of every individual case as a matter of routine policy, through sheer pressure of work ahead. Only the occasional specially interesting case received the careful attention and study that is the portion of every ward case. The man who catches a glimpse of some fifteen or eighteen mothers waiting in the anteroom, accompanied by an equal number of youngsters, is not going to spend much of his precious hour or two in tracing out the border of a heart, or making a Schick or a Pirquet. The volume of work ahead that must be turned off by him alone is too great to allow him to devote the adequate time and attention to the average case. As a corollary to this, admissions to the hospital from the dispensary are not properly worked up. Data that could have been obtained at the time of the initial examination by the clinical assistant from some relative who happened to be with the child, may not

be available to the house admitting officer later. Another corollary is that opportunity is lacking for conference with other men over interesting points as they come up—a most fertile source of inspiration and education. Of course, in such a state of affairs, no definite instruction or training can be given the clinical assistants. In other words, there is allowed to exist a sort of catch-as-catch-can policy, that assumes that any doctor is fitted by his ordinary training to treat the diseases of infancy and childhood. This, of course, is in itself a contradiction of the right of pediatrics to exist as a special and separate branch of medicine.

Again, we noted a lack of proper provision for enough men to do the work well, even should enough have appeared at once, by any rare chance. So that if, for instance, one more man chanced to arrive at the clinic than there was desk room for, he (or one of the men there before him) quickly made good his get-away, on the plea that there was not room enough for him to work.

Another grave count in the indictment against the average dispensary, had to do with the totally inadequate records kept. No opportunity seemed provided for the taking of histories with any degree of completeness and care, such as is assured when once a patient appears for admission to the wards of any hospital worthy the name. Almost as great a lack existed of any careful recording of complete physicals that might have been made. Although we knew that many men who work in the clinics make careful and complete physicals, yet there was little evidence of this shown by the cards consulted. The outstanding positive findings were recorded; but the negative points were rarely made, so that while one might assume that symptoms and signs had been looked for and not found, there was no way of knowing this for certain. The records, in short, no matter how good might have been the histories and physicals they purported to record, were absolutely valueless for the purposes of any future statistical study. And, letting alone any thought of future case studies, they were not nearly so valuable as they might easily have been made, for the actual conduct of the cases from day to day, which was obviously all that the makers had had in mind.

As against this lack of the useful in the records, was the loss of valuable time and the waste of valuable effort, in the multiplication of records of a single individual, wherever such a one had been referred from one department of the dispensary to others, as so often has to be done. For instance, a medical pediatric case referred to the dental clinic for extractions of carious teeth, to the nose and throat room for examination of the ear, nose, or throat, or for possible tonsillectomy, and eventually admitted to the hospital for some intercurrent disease, would appear four different times as a new case; and, had it been gone over carefully each time, would have presented four complete records. None of these departments would have received any information, except perhaps a bare diagnosis, from any of the departments that had dealt with the child before. Hence an enormous amount of "dead" or inactive material clogged the files.

A serious handicap, under which, fortunately, we did not suffer, was the fact that it was rare that a clinic had anything like the ready access to the pathological and radiological facilities available to the indoor service. The fact that our own dispensary had long enjoyed this was one of the great points in its favor, as compared with the average.

Another thing that greatly interfered with the development of interest in the work, and the advancement of real study by the men, was the fact that ordinarily there was no further subdivision of cases into classes, departments, groups of diseases, or ages, after once they had been assigned, by the man at the door, to the children's room. Everything was taken in rotation, according to the order in which the patients chanced to enter the dispensary. Thus, no opportunity existed for comparing methods and results in a series of similar conditions. As Charles Hendee Smith said once, in demonstrating his model children's clinic at Bellevue (as truly a model for this kind of work, as the Babies' Hospital is for an indoor service): "When you begin to group cases into classes, you can't help learning something about them!"

Perhaps the greatest, most vital lack of all, was the almost total absence of any life-giving relationship between the wards and the dispensary. It was as if a limb were trying to exist separated from the parent trunk. There was no inducement for the clinic man to send his cases into the house, because he lost sight of them completely upon their admission to the wards. Even if a case should come back to him on its discharge from the hospital (as was only occasionally the case), he had no way of knowing what had taken place during the time of treatment in the ward, other than the frequently inaccurate or mistaken notions of the mother. The fact that no matter how carefully a case was worked up, no trace of this, further than the mere diagnosis, ever accompanied it to the house, discouraged such careful effort, even in the infrequent event of there being time and opportunity for it. On its discharge from the hospital, again, unless the interne happened to be sufficiently interested in a child's future welfare to write a personal note to one of the clinical assistants (none of whom he might know, even by sight), it must be picked up practically as a new case, without any knowledge of what had been learned about it in the ward or in the laboratory, and without any indication of what the attending considered a proper line of treatment for its future management.

When it came to grappling with our own problem, we took up first the question of increasing our staff—or, rather, our effectives. For we had men enough, theoretically, for each day; and yet, owing to irregularity of attendance, one man a day was our usual attendance. The first thing we did was to try to make the service so attractive that the men would feel that they could not afford to stay away. And the first measure that suggested itself, was that of inviting them to make rounds in the children's wards, whenever possible. This, of course, entailed both faithfulness and punctuality upon the attending, whose coming was now awaited by several men, at the scheduled time. It also meant a little juggling, and occasional filling in as substitute, on the part of the chief of clinic, in order that the work of the dispensary should not be interfered with, or the patients made to wait unduly. For with improved attendance on the part of the doctors, a clinic

always grows by leaps and bounds. Another innovation that made the service even more popular, consisted in granting to the men the privilege of following through in the wards, under the direction of the attending, any cases that they referred to the hospital from the clinic. Needless to say, the men on the inside gained as much from the increased interest of the cases so referred, as the clinical assistants did from the opportunity of studying in the wards the cases that they had been treating outside. Best of all, the patients received far more intelligent treatment, without any break between their outdoor experience and their ward care; and had their confidence in the hospital and its doctors increased, rather than disturbed, by their transition from the clinic to the ward.

Perhaps the most far-reaching measure that we inaugurated to popularize the work, was the erection of separate departments for the care of special classes of cases. These were placed in charge of men who are specially interested in special lines of work, or who became interested by receiving such assignments. For instance, one of our men was especially desirous of learning something practical about infant feeding. In fact, one of his grievances against the clinic was the fact that he had been set to treating babies, when he knew that he had no real grasp of this subject. A division of the medical pediatric clinic into cases under eighteen months, and those over that age, was made, and he was placed in charge of the former, under the direct supervision of a more experienced man, who definitely undertook to teach him what he himself knew about infant feeding. A special record blank was devised for their use, and it was understood that after a definite period of months had gone by, they were to report on the method employed. Result—a man who had been too busy with outside work to attend the clinic regularly, has found educational advantages so valuable that he cannot afford now *not* to attend his *own* clinic with unfailing regularity.

Our vaginitis class came into being in a different way. We had been sending all these cases away to a distant institution for treatment—how many of them ever reached there, we never knew! A room was loaned us, for one period a week, by the gynecological department adjoining. Here all vaginitis cases are referred to one man, at the end of his regular clinic work. He has become interested in this puzzling subject, and is working on the problem, with the cooperation of some of the gynecologists, whose suggestions he is gladly making use of. It is the tacit understanding that he is to publish the result, in a series of cases, of the treatment that he is working out. Meanwhile, he is ready and willing to discuss methods and experiences with any one interested in this problem; and he is called in by the rest of the men for advice on both private and clinic patients.

Our cardiac class, already existent, was another department where a man might find instruction in a pediatric subject that interested him. The class is in charge of the associate pediatrist of the hospital; for in this hospital, clinic work is not considered "infra dig" for an attending. In fact, it is generally understood that any member of the attending staff who so considered it, would soon be made aware of his error in judgment. As this man was so situated as to receive special cardiac instruction during his army service, we consider ourselves fortunate in having an instructor with abundant clinical material already at hand in this little-understood branch of pediatrics.

But where, you will say, did we find geographical opportunity for all this expansion? Was not our equipment an insuperable bar? We had, to start with, but two adjoining rooms in a busy general clinic, each equipped with desk, chairs, examining table and screen. No external expansion seemed possible. We could, however, use what we had more intensively. This we did by installing an extra desk and chairs in each room, so that two doctors could work where but one had labored before. By a little thoughtful consideration, one examining table serves the needs of two men. When it came to dividing the cases into those above 18 months and those below, one room, with two doctors, was assigned to each group. Our vaginitis room was loaned us, as described above, by our friends of the gynecological department. The cardiac class was accommodated on our lightest afternoon, Saturday, in one of the two rooms, by crowding all the other cases into the other room.

When it came to the establishing of a Nutrition Class, however, which we felt that we needed badly, we had about reached the limit of intensive expansion possible. We had to expand in a new direction. We found, on inquiry, that Saturday morning was a free time for the dispensary building. Permission was readily obtained to occupy the building at this time, and to overflow into rooms adjoining our own, if we chose to do so. This was granted the more readily, inasmuch as there were no fees to be charged and no medicines to be dispensed; so that it was possible to run the extra clinic without the assistance of a single employee of the hospital. All the services required could be furnished by the doctors and the volunteer aides.

A word as to both "rationale" and "technique" of the nutrition class (which grew by leaps and bounds) will show how necessary this added space was. The plan calls for (*a*) an exhaustive history and physical examination, exhaustively recorded, and (*b*) an inspirational appeal, both individual and collective, to both parents and children, to get them to carry out the simple but indispensable details of bathing, eating properly cooked food and eating it properly, taking naps, keeping windows open, having regular bowel movements, etc. The end in view is getting each child to gain weight up to a predetermined normal standard for his height and age. When this is reached, they are "graduated," with due pomp and circumstance.

All this requires from the start certain definite geographical requirements. There must be sitting and working space for enough doctors and volunteer aides to properly examine the children from top to toe, and record their results. As the ages run up to twelve, there must be separate rooms for boys and girls. There must be a room for weighing revisits, each week, and advising them in case of failure to gain, as well as praising them for following out instructions. Finally, there must be an assembly room or waiting room, where the children, and such of their parents as will attend, can be

given the talks and demonstrations that form such an important part of this new line of effort.

Several subdivisions of the Nutrition Class soon developed, as a matter of course. One of them was the Health Class, which came into being in the following way. According to Emerson's definition, the seriously under-nourished child is one whose weight is from 7 to 10 per cent. below an established norm for his age and height. When his children reach their predetermined normal, they are "graduated" out of the Nutrition Class with some small ceremony. We soon realized that, whereas we could soon "graduate" a number of our children, they nevertheless needed guidance almost as much as a number of those whose weights were not so good. The Health Class idea of Ira Weil seemed just the thing. These children are kept under the care of the men in charge of the Health Class, working closely in touch with the Nutrition Class. It is practically the High School Department of the Nutrition Class. The children are notified when they are to return for their periodical re-examinations. Any unremedied defects are kept constantly in mind, and efforts made to have them corrected. New conditions are noted, and may be nipped in the bud, before they have a chance to become fully developed.

A Pretubercular Class is being formed, for the benefit of children whose heredity, physique, and environment make them seem particularly eligible to be grouped under this heading. A man with especially good training in the detection of early signs and symptoms is indispensable for this department. Such a man, when the situation is explained to him, is very easily secured, when he learns that only one day a week is required for the work, and that his participation in it entitles him to participation in the various activities open to the men of the clinic. A Tuberculosis clinic proper has not seemed desirable, in our location. A Lues department already exists, in that the adult G. U. clinic already has its department of arsphenamine therapy for women and children; one of the pediatric men has been especially charged with the matter of "liaison" with this department, and the records of all luetic children will be under his care.

An Infant Welfare Clinic is needed, and is almost invited by the force of circumstances. Our Obstetrical Department has always referred to us its babies, as they were brought in by their mothers returning for post-partum examination. These have never been handled quite satisfactorily, mixed in as they necessarily have been with the sick children of the regular clinic, and pushed into the background by them. As once a week is as often as these babies ever need be seen, and as nutrition is certainly what they are brought in for, as a usual thing, rather than for any form of medication, it is by no great stretch of the imagination that an Infant Welfare Clinic may come into existence as a department of the Nutrition Class. Such a service will increase rapidly, as soon as the mothers realize that a well baby is received as gladly as a sick one; and that we are prepared to render them real service in their problems, rather than mere perfunctory attention. It will present a valuable opportunity for the personnel of the infant feeding class, who are seeing sick babies the other days of the week, to keep themselves familiar with the physiology of the normal infant. If our Obstetrical Department ever establishes a Prenatal Clinic, we shall be prepared to cooperate with them, by means of our own machinery already in existence. Details for this service are already being worked out. An ideal arrangement is to have each outgoing mother and child seen in the hospital by a member of the Pediatric Department assigned to this work, who gives her suitable instructions regarding breast-feeding, supplementary feeding, etc., and tells her when to come to the clinic. Careful discrimination must, of course, be exercised to conserve the interests of the private physicians who send their maternity cases into the hospital.

Now came the ever-puzzling question of the keeping of efficient records of all this work done on the individual child. By "efficient" we mean records that really work enough to justify their existence and pay for their keep. We soon found that there was but one way to handle the record problem, and that was to establish, at least for the children's department, what has been called the individual record room, or central records office. According to this plan any child entering the dispensary for any cause whatsoever, goes first to the pediatric department for a complete examination. This is recorded, together with an equally detailed history taken by a volunteer aide, on rather an extensive blank, uniform for all cases. This was a direct outgrowth of the custom at the Nutrition Class, where several doctors make the examinations, each with a volunteer aide acting as his clerk. This scheme is well brought out by Emerson of Boston. His form is the basis of our own. This record accompanies the child to every special department which he visits for examination or treatment; so that everything known about him is available to any doctor who comes in contact with him, at no more cost than is involved in looking over the record that accompanies him. If he is admitted into the hospital, the record is *loaned* to the house for as long a time as he remains here, and a loan slip corresponding to the record is inserted in the dispensary's files. On his discharge, it is returned to the clinic record keeper, accompanied by a discharge slip, made out by the house pediatrician who has had him in his service on the children's ward. This slip gives the important points in his hospital experience, and makes them available to the dispensary man who is to continue the conduct of the case, together with any suggestions from the attending as to his treatment. The records are available also for the use of properly accredited workers from other hospitals, or from welfare organizations.

A distinct advance has been made along the lines of thoroughness, which is shown both in the attention given the patient and in the character of the records kept. The blank shown here is filled out for each new admission. A glance at this will show both its thoroughness and scope, and the ease with which the results of such a thorough physical examination can be recorded, by checking or underlining, crossing out, and using a double or triple +. In this way, remediable defects are detected that would surely have eluded an examiner, had the patient simply been examined for the symptoms that brought him in. History cards for a number of years back have been incorporated into the new system; so

Form No.
NAME
DATE
ADDRESS
AGE YR MO
NATIVITY
THE BROOKLYN HOSPITAL DISPENSARY
PEDIATRIC DEPARTMENT
FATHER'S NAME
CASE NO.
DIAGNOSIS
W C MALE—FEMALE

HISTORY.

FAMILY HISTORY

PAST HISTORY

Born at full term Labor Condition at birth
Born at months 1st Tooth at mos.
Walked at mos. spoke at mos.
Breast-fed Bottle
Mixed Weight at birth

PREVIOUS DISEASES (WITH DATES)

Measles	Otitis (Earache)	Tonsilitis
Mumps	Rheumatism	Convulsions
Scarlet-fever	Meningitis	Chorea
Diphtheria	Pneumonia	Operations
Whooping-cough	Bronchitis	

GENERAL HEALTH AND HABITS

General Health: Good—fair—poor
Frequent colds: Yes—No
How long underweight
Last date when well and strong
Repeated attacks indigestion without apparent cause Yes—No
Habits as to Tea Coffee Ice water
Candy or sweets between meals Nail biting
Washing down foods Bed wetting
Does child take cereals? Milk?
Sleep: Mouth open—quiet—restless—snoring
Nap Hrs.
Bowels regular daily Yes/No What Laxatives used

PRESENT ILLNESS AND CHIEF COMPLAINT

SUMMARY OF DEFECTS FOUND.

Underweight for age and height: lbs. %
Carious Teeth: Number
Condition
Signs of Naso-laryng. Obst.: Mouth breather; Nasal Voice; Granular Pharynx; Tonsils; Adenoid Mass Palpated; Cervical Glands Enlarged; Ear Drus Dull
Recommendations

PHYSICAL EXAMINATION.

INSPECTION: Bright—dull—nervous—phlegmatic—apathetic
GENERAL CONDITION: Good—fair—poor
MUSCLES: Firm—flabby
HEAD: Normal Bosses prominent Pediculi
EYES: Pupils equal—unequal React to light—distance
Motions { normal / abnormal
Blepharitis
Vision: Right /20 Left /20 (Snellen's test)
NARES: Clear—crusted—discharge—spur—deviated septum
MOUTH: Normal—open Cough Herpes
Mucuous membrane: Normal—pale
TONGUE: Normal—moist—dry—brownish coat—white coat
THROAT: Normal—congested—granular—discharge
TONSILS: Normal—large—buried—cryptic—inflamed—absent—infected
GLANDS: Normal—enlarged: ant-cervical—post-cervical—epitrochlear
TEETH: Good—Number carious
Approximation: Good—poor
EARS: Right Hearing drum: Normal—dull—retracted—bulging—perforation—discharge
Left Hearing drum: Normal—dull—retracted—bulging perforation—discharge
HEART: Area dullness inches left mid-sternal line
inches right mid-sternal line
Apex 4th—5th—6th—space in mid-clavicular line
inches outside mid-clavicular line
inches inside mid-clavicular line
Action: Regular—irregular Sounds: Clear—impure
Murmurs: None

soft systolic	apex	tr. to	ant axillary line
loud systolic at	pulmonic	tr. to	mid. axillary line
diastolic	aortic	tr. to	angle of scapula

LUNGS: Resonance good throughout
Respiration good throughout
Rales D'Espine to—Dorsal Vertebrae
ABDOMEN: Normal—large—distended—tympanitic—tender—hernia
LIVER: Dullness space rib to costal border nipple line
SPLEEN: Felt—not felt
GENITALS: Normal
Prepuce: Long—adherent—circumcised—inflamed
EXTREMITIES: K. J.: Present and equal—absent
Edema: Present—absent
SKIN: Smooth—rough—clear—scars
Vaccination: Present—absent
SPINE: Normal—rigid curvature—round shoulders—winged scapulae
CHEST: Normal—barrel—flat—funnel—pigeon—Harrison's Groove
FEET: Arches: Good—flat Station: Good—poor
URINE: Color Specific gravity Reaction Albumen Sugar Casts
TEMPERATURE: WEIGHT: pounds oz. HEIGHT: inches Should Weigh:

Back of Blank

Date	Weight	Gains	Loss	Remarks	Treatment

that many a case that might have been considered a new admission is found to be an old case, returned after a long interim. A full-time social-service worker for the Pediatric Department is an indispensable part of the personnel—one could spend a whole evening dilating upon the ways in which she increases the efficiency of the service, if only one could find anyone, in this day and generation, to whom this fact is not already well known. Not the least valuable part of her services consists in the fact that her follow-up work changes many a casual case into a permanent attendant of some branch of the work. One of the cardinal principles of the clinic is, never to discharge a patient—a return visit, no matter how many days, weeks, or months ahead, is always arranged for. Whatever may be true with adults, we believe that a child should always be under the direct supervision of some agency for the conservation of child health and welfare. In other words, the highest function of such an organization as this is not the alleviation of temporary ailments, but the building up of better boys and better girls—the better men and women of tomorrow. The Nutrition Class serves for this

purpose, in the case of a child who has just recovered from an acute illness, whether he has been treated in the wards or in the clinic. As soon as he is no longer in need of the intensive treatment of the Nutrition Class, he is graduated into its high school department, the Health Class.

A most important part in this dispensary renaissance has been borne by the volunteer aides. A word should be spoken here, as to just what is meant by this term. The head of our Social Service Department, herself a graduate nurse with Red Cross experience, realized that a very valuable potential asset was about to be allowed to dissipate itself, by the demobilization of the young women who had been doing Red Cross work during the late unpleasantness with Germany. She has been able, through her own personality, to attract a staff of these girls, from the best families of the city, many of them of a type to whom the offer of a salary would have meant nothing. Several of them have been assigned to our department, where they have done work of a sort that has greatly increased the scope of the doctors, by freeing the latter from much of the clerical work that had always been done by them in the past. They have not interfered with the strictly nursing work, which is still done by the pupil nurses assigned us from the training school. They do all the filing; and fill in as much of the history blank as is routine, and can be done by a clerical worker quite as well as by a physician, clearing the way for the important questions that the doctor himself must ask, in the pursuit of a diagnosis. Without some such assistance, such history blanks as we use would be, of course, out of the question. In time of shortage of nurses, they may be called upon to help with the simpler nursing procedures. Even more valuable an employment has been made of them, in time of stress, by having them serve as amanuenses for the doctors. The employment of the blank used, which allows of a checking or lining out of many of the words that otherwise would have to be taken by dictation, renders this the more feasible. Prescription blanks with the formulary numbers, transfer slips, hospital admission requests, and clinical pathology blanks, all have to be filled out; and the removal of this work from the doctor to the volunteer aide, enormously increases his medical effectiveness.

To sum up, we have a unified service under one head, the Chief of Clinic. By virtue of his position as Assistant Attending, he brings the clinic into close affiliation with its alter ego, the in-patient service of the childern's wards. They are even more closely bound together by the fact that the clinical assistants are frequently making rounds with the attending, as well as following up the cases that they have sent into the wards. Although unified, it is at the same time highly diversified or "departmentalized" into the following subdivisions:

1. General Medical Pediatric Clinic, daily: (*a*) Infants under 18 months; (*b*) Children over 18 months and under 12 years.
2. Cardiac Class, every Saturday afternoon.
3. Nutrition Class, every Saturday morning. (*a*) Infant Welfare Clinic for well babies; (*b*) Nutrition Class proper; (*c*) Health Class; (*d*) Pretubercular Class.
4. Vaginitis Class, every Friday afternoon, after general clinic.
5. Lues Department (in connection with G. U. Department).
6. Cutaneous Test Department (for vaccination, Schick, Pirquet, protein sensitization, antityphoid and diphtheria toxin-antitoxin mixed treatment, etc.

All these changes, you will say, involve a new conception of the function of a dispensary department. That is exactly the conviction that has gradually been forced upon us. In the days when hospitals were few, and clinical opportunities limited, dispensaries could pick and choose from among those who were anxious to serve their rooms. With the multiplication of hospitals, and the consequent increase in the number of indoor positions to be filled, the dispensary has come to the place where it must offer something of value in return for the services it exacts from its staff. Most hospitals are not as yet prepared to offer financial remuneration to their clinical assistants—but they can, if they will, attract a higher class of men than any they could hire, by offering them real postgraduate opportunities for perfecting themselves in their chosen specialties. This, in short, is what we have tried to do—to create a real postgraduate teaching institution for the men in our outpatient pediatric department. As soon as we realized what this new conception was leading to, we set to work to build up more formal didactic work, in addition to what was already available in the clinic rooms. If the clinical assistants were to be the postgraduate students, it devolved upon the chief of clinic, ex-officio, to provide the instruction. As the representative of the clinical assistants, it is to his interest to see that they are properly taken care of. If they are not, their attendance will become irregular, they will be lacking in dependability, and his results will be poor. We consider it part of his duty to arrange for clinical advantages for the men, as they show a desire to secure special kinds of work. In our own case, the hospital radiologist was approached, and readily consented to give us one period a week for the exhibition and interpretation of radiograms of children. This proved so popular a feature that another period was set aside, immediately following one session of the clinic, at which a man from the otolaryngological department demonstrates conditions of the ear, nose, and throat in children. Suitable cases for teaching are selected from both pediatric an E. N. T. rooms, and held over for this course. A demonstration course in procedures of clinical pathology, especially as applied to children, will probably soon be available. Similar facilities will be provided, or already existing ones expanded, as the men show a desire for them, and a readiness to take advantage of what is offered. Eventually, if a demand for such a thing is found to exist, there will be built up a pediatric seminar that will compare very favorably with the few that exist in this country in connection with postgraduate teaching institutions. Such an opportunity, existing in one's own city, where, without stopping his daily work, a man can ground himself in his chosen specialty, ought to prove a most welcome boon to many a man who could hardly afford either the time or the expense to fit himself otherwise for definite exclusive work in his specialty.

Whether these teaching facilities shall be extended so as to become available to men not on the

hospital staff, whether resident in the city or visitors to it in search of instruction, is a matter for the hospital authorities to decide. At all events, if the greater city ever becomes the great medical center that some of us envisage, there will at least be a working postgraduate pediatric center already existent on this side of the river, which may prove to be a nucleus around which larger things may form and crystallize.

We are leaving behind us—let us hope, forever—the days of the shamefully understaffed clinic, when one man made a mockery of examining and treating twenty or thirty patients in one clinic period. Just what should be the limit of patients seen by one man is still a moot point. The Cornell Adult Medical Dispensary allows but two new cases, and all his revisits, to one man, and turns away all in excess of this. At any rate, we are approaching the time when it will be realized that a dispensary has just as definite a limit to the number of patients that it can treat properly as has a ward inside a hospital. Overloading in the latter case would bring a protest from doctors, nurses, and patients, and, eventually, an order from the Department of Health. Surely the time is coming when the overloading of the former will subject the hospital that allows it to the censure of everyone who comes to learn of it, on the same grounds that we reprobate lodge practise for the private physician. Quick, slipshod work is the best that can be done under such conditions; and the hospital can no more cover that with its ægis, than the private physician of the better sort can afford to allow it in his office.

By a little physical rearrangement, and a little mutual forbearance on the part of the men doing the work, we have utilized our equipment so intensively as to provide working space for as many clinical assistants as we need to handle our cases properly, without increasing the number of rooms occupied. The freeing of the clinical assistants from the pressure of "cases ahead" greatly improves the character of the work done in several ways. It allows of one man's dropping out from the routine work, in order to properly work up a case for admission to the hospital, or do some special examination or test, without halting the work of the day unduly. Liaison with the other departments is greatly improved, and the instructional side of the work greatly enhanced, by the freedom thus allowed for each man to accompany any case, on which he needs special assistance, to the department whose help he wishes, instead of simply referring it there by a slip, and learning nothing about the findings except the bare diagnosis. Each man thus secures as much special instruction in skin, ear, nose and throat, orthopedics, etc., as he cares to ask of the men in these rooms. On the other hand, these men get to know the pediatricians, and become accustomed to reciprocate with their cases; so that the pediatric clinic is enriched at the same time. Time is now allowed for the men to confer over difficult or interesting cases as they come up—one of the most helpful features of outpatient work. They can take turns in making rounds with the chief and seeing their own cases in the wards. Laboratory and *x*-ray help are more frequently sought and more carefully considered. Luetic children, formerly turned over completely to the G. U. department, are now carefully observed throughout their arsephenamine therapy, and returned to our department without a break at the end of the course.

The question might be asked, "What is the effect of such an outpatient department upon the indoor service" "Might be," I say, but never would be asked by anyone who has ever seen the vivifying effect of an active O. P. D. upon its sister service inside the house. The wards are kept full of cases rich in interest, instead of those that chance might otherwise bring in. The men on the wards take a much more careful and painstaking attitude toward their work, knowing that it is at any time subject to review by a number of keen assistants, any one of whom may at any time bring to light an error either of omission or of commission. The whole tone of such a service is lifted out of the rut of routine and mediocrity and placed upon the higher plane always occupied by a teaching institution. A better class of men can be attracted to the staff, because of the class of work and the teaching facilities to be enjoyed; and they are encouraged to do a better grade of work, as well as to publish the results that may justify recording. Last, but not least, the hospital always has in training desirable men for the more responsible positions upon its staff that may from time to time become vacant—men who are interested in maintaining its standards, because they have helped to create them; and jealous of its good name, because it is so intimately connected with their own.

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ELECTROCHEMISM IN THE ETIOLOGY AND THERAPEUSIS OF CANCER.

By EDWARD PERCY ROBINSON, M.D.,

NEW YORK.

It has been aptly put by Matthews that we are "Children of the Sea" and when we apply this remark to our cells we realize the true meaning of the reference. Indeed our cells might be compared to fishes of the sea since they float in, or are surrounded by, a saline fluid, the electro-chemical reaction of which is the basis of this paper.

Eighty per cent. or more of our body weight is water, 20 per cent. then being organic matter, the organization of which constitutes organic tissue—protoplasm—or animal flesh. It must strike the mind rather forcibly, when thinking over the cause of disease or pathological status of the body, that the fluid portion of the body weight must play a greater role in the etiology of disease than the cells whose existence depends on the composition of this fluid; for by all rules of reason a thing cannot be greater than its source. The blood, which is liquid tissue, constitutes the chemical composition of every cell of the body. Therefore, when a cell breaks down there must be something chemically wrong with the composition of the fluids of the body. If goldfish, swimming in a bowl of water, begin to lose their scales we would naturally first think of the quality of the water rather than assume a condition of dyscrasia in the fish. In fact we would first renew the water by a fresh supply before thinking of otherwise treating the fish.

A more tangible illustration of the influence of

environment in the production of morphological transitions may be seen in the case of the brine-shrimp as observed and described by Schmankewitsch. "One species of this crustacean, *Artemia salina*, lives in brackish water, while *A. milhausenii* inhabits water which is much saltier. They have always been regarded as distinct species, differing in the form of the tail-lobes and the character of the spines they bear. And yet, by gradually altering the saltness of the water, either of them was transformed into the other in the course of a few generations." The importance of chemical constitution is seen here and in the language of McFarland, taken from his work, "Biology, General and Medical": "The very important fact that the physical, nutritive, or toxic properties of given substances may be greatly altered by a very slight change in the arrangement of the atoms or groups of molecules may be assumed to be conclusive evidence that a trifling modification in the chemical constitution of a vital substance may give rise to a profound alteration in its physiological properties. This coupled with the fact that the differencies in centesimal composition have proved very inadequate to explain the differences in the phenomena of living matter, implies that a much greater degree of importance is to be attached to peculiarities of chemical constitution than is usually recognized."

Assuming the above to be capable of credence it would seem logical to infer that cells which were once healthy, while living in a certain medium, gradually becoming diseased or cancerous, must owe this pathological state to some change having occurred in the medium.

The medium in which our cells live is the blood and we may consider this fluid under the heading of plasma. The reaction is about equal to the neutrality of sea water and is believed to be nine-tenths of one per cent. strong in sodium chloride. This one particular chemical constituent of the plasma is mentioned here because it is considered by the writer to be the direct cause of cancer and the reasons for so believing were published in the MEDICAL RECORD, September 1, 1917, under the heading "An Hypothesis Regarding the Physiochemical Nature of Cancer."

The view which the writer takes regarding the etiology of cancer is that this disease is purely one of faulty chemism. The fact that any portion of the body may present certain physical manifestations known as cancer is insignificant. The disease is not a local affection and cannot be permanently eradicated by any other means than those directed to a restoration of the chemical constitution of the blood. Most certainly this cannot be done by surgery, radium, or *x*-ray, and experience has demonstrated this to be true from the fact that cancer so treated and apparently cured returns as virulent or more so than it was at first. This statement is revolutionary and it is intended to be so. It is a direct challenge to those who think to the contrary. It is a further challenge to those who are treating cancer by old methods, all of which have been tried and found wanting. It is also an urgent plea to abandon these empirical methods and adopt means of cure which are radical and which prove effectual.

The treatment of any disease, to be effective, must be directed towards the cause. Temporizing with local manifestations is dangerous. The application of radium or *x*-ray in the treatment of cancer is simply temporizing with the disease in that the cause remains uninfluenced. The constitutional dyscrasia cannot be remedied by the mere application of light and heat to a part. Radium has been effective in the treatment of skin cancers but its action is limited. It might oxidize the sodium in the inflamed tissue but it cannot remove this sodium from the fluids of the body, the presence of which is the cause of cancer. If it is justifiable to amputate a leg because of the presence of cancer in the big toe, it is just as reasonable and logical to amputate the leg if the big toe is afflicted with gout. This is the logic of an ostrich, "what it can't see does not exist." The surgeon's logic is just as blind for he amputates once, then a second time. He would operate a third time but the cancerous blood, which he could not see, has killed the patient. All honor to the surgeon, but why adhere to tradition and sacrifice a life when the means of saving it by medical treatment are in the reach of all?

One of the constant accompaniments of cancer is acidosis. In fact the presence of the symptoms of acidosis may be the precursor of cancer. They appear first, the cancer later. Obstinate constipation is almost invariably present in cancer. A decrease in the number of erythrocytes by a million or more, with a low hemoglobin, is the result of every blood-count in a cancer subject. Albumin is seldom absent from the urine. Edema of the ankles, involving the legs, is almost certain to be present and it is not always caused by pressure, for cancer of the breast and edema of the legs coexist. A rough and dry condition of the epidermis is an important symptoms of acidosis; the skin is shed in fine scales. Cachexia may appear later and is in proportion to the hemolysis which is progressive. Therefore, to overlook the presence of the above symptoms and operate on the local manifestations or cancer amounts to nothing more than treating the effect and ignoring the cause.

The treatment of cancer by potassium nitrate was advocated by the writer as late as May 4, 1918, in an article which appeared in the MEDICAL RECORD under the heading "A Plea for the Use of Potassium Nitrate in the Treatment of Cancer," abstracts of which are embodied in this paper.

With the intent to make the treatment of cancer by postassium nitrate clear and understandable we will consider a few recognized facts both chemical and physical and patch them together, and from the whole deduce a working hypothesis. We will begin by borrowing some of these facts from Matthew's Physiological Chemistry: "All protoplasm contains a solution of salts and these salts are of the nature of those of the sea. Michael Faraday found that if a current flows through a solution of sodium chloride, for example, the sodium moves down with the current to the cathode, or negative electrode, and the chlorine moves up against the current to the positive electrode, the anode. Now it is clear that if the sodium moves down with the current it must be positively charged, and the chlorine moving up must be negatively charged, since

only particles with charges on them move in an electrical fluid. When a salt dissolves in water then, as it does in living matter, there are reasons for believing that it breaks, in part, into electrically charged particles which, like so many tiny electrodes,, each bearing one or more electrical charges, float about in the protoplasm and become thereby capable of doing many things. Living matter contains before it is stimulated, then, a large number of electrically charged particles, and it is clear that if in any way an accumulation of positive particles in one place and of negative in another could be produced, and if negative and positive particles had different actions on the vital processes, momentous changes might thus be brought about in living matter." This prediction is capable of verification on the following grounds. If we know the electrochemical nature of two substances we are able to determine their action upon each other. For example, when a solution of potassium nitrate is brought in contact with the circulating medium of the body, which contains sodium chloride, we can,

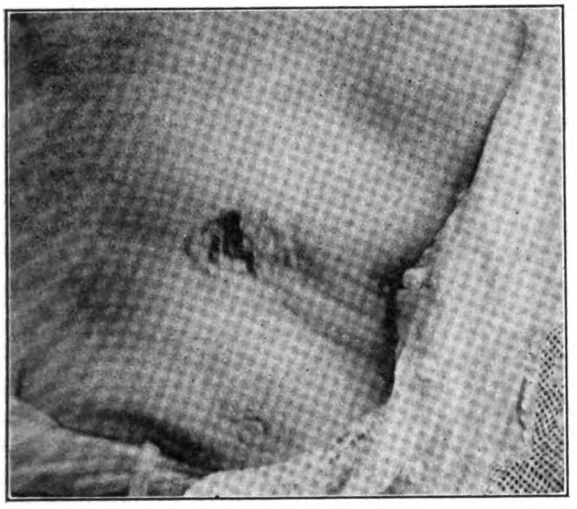

FIG. 1.—Case I. Photograph taken before treatment. The mammary gland is swollen and hard. An area of induration can be felt from the axilla to the median line and as far as the clavicle. The center of the lesion is filled with sloughing tissue. A hard and red rim surrounds the margin of the cancer.

in the mind's eye, imagine electric ions of the positive sodium being bombarded by the negative nitric ions of the potassium nitrate, which by chemical reaction produces sodium nitrate. In like manner the positive potassium ions receive electric charges from the negative chlorine ions of the sodium chloride, producing potassium chloride. The elements. potassium and sodium are electro positive; chlorine, nitrogen and oxygen are electro negative. (Sadtler and Coblentz—"Pharmaceutical & Medical Chemistry" 1918.) According to Matthews, "it may be stated that oxidation in protoplasm is accomplished by such an electrical disturbance"; thus is his prophecy fulfilled, for we see "momentous changes" taking place in cancerous tissue, and this immediately. Theoretically, resolution begins at once because the chemical reaction begins as soon as the two solutions are in contact with each other. Therefore we can assume that the progress of malignancy is also immediately checked, and this is so, for the visible changes in the cancerous tissue and the physical improvement in the patient, generally, justify this assumption; for indeed, the fundamental principle of life, namely, oxidation, has been rekindled and consequently the processes of physiological metabolism are improved and subsequently restored to a normal state.

To quote from the writer's constribution, "A Plea for the Use of Potassium Nitrate in the Treatment of Cancer" in the MEDICAL RECORD, May 4, 1918: "Since the object sought is to replace sodium chloride in the tissues by potassium chloride, and since the end-reaction obtained, when potassium nitrate is administered, is the formation of potassium chloride, the idea will suggest itself quite naturally of giving potassium chloride directly instead of potassium nitrate. But if this is done the potassium chloride would remain in the blood almost entirely, or, if it passed into the tissues, it would not replace or displace the sodium chloride other than in a mechanical way, whereas the potassium nitrate acts chemically by causing actual removal of the sodium elements of the sodium chloride already in the tissues, and their replacement by the potassium elements of the potassium nitrate, at the same time that the displaced sodium elements are removed by combination with the nitric acid elements of the potassium nitrate to form sodium nitrate. The effect of this double reaction is to introduce the potassium in the tissues in the most stable form, namely, potassium chloride.

"There appears to be no other salt which can serve the same purposes as the nitrate. If one should be found later it would probably have thermochemical properties very near those of the nitrate, and the acid radical would probably have as good solvent power for sodium as nitric acid has. There are potassium salts which approach the nitrate in one or the other of these two important respects, but the researches made by the writer have thus far failed to bring to light any other salt that fills the requirements as fully and as satisfactorily as the nitrate."

That displacement of the sodium chloride actually occurs, can be verified by a chemical analysis of the urine. If, for example, a specimen of urine shows the chlorides passed to be 0.50 at the first examination, the next specimen examined after the lapse of a few days will show an increase of chlorides, if the patient is taking potassium nitrate internally. The increase will continue to a certain point and gradually decrease until it has reached a point equivalent to the "threshold valve" (Cushney) of the tissues for sodium chloride. Of course, it is understood that the use of salt in diet should be restricted to a minimum.

In the manufacture of potassium nitrate from Chile saltpetre (sodium nitrate) the double reaction just described is reversed. Sodium nitrate is changed into sodium chloride by the action of potassium chloride, the reaction producing potassium nitrate. Thus any doubt regarding the correctness of the chemical reactions here mentioned in the treatment of cancer is removed and the truthfulness of the interchange of the elements with each other can be corroborated by manual experiment and ocular demonstration. It can be said further that there is not in the entire domain of medical therapeutics one chemical reaction whose opera-

tions, in its relation to disease, is so exact or certain in action as the chemical interchange which potassium nitrate exerts on sodium chloride. In fact there is no known remedial agent comparable with it in the treatment of cancer, not one drug, not one remedy. If there be one, the writer does not know of it.

In the treatment of cancer with potassium nitrate we pass from empiricism of theory to fact. Under its influence sodium chloride is removed from the tissues and the cancer is cured. If salt is not the cause of cancer why should the administration of potassium nitrate bring about a cure by eliminating it? Some one answer this.

The medical treatment of cancer should not be limited to the administration of potassium nitrate alone. The presence of acidosis leads to the assumption that the basic elements of the cells have suffered depletion, since nature, in attempting to neutralize the excess acidity, would in all probability draw a supply of alkaline salts from tissues which might be willing to part with them to restore

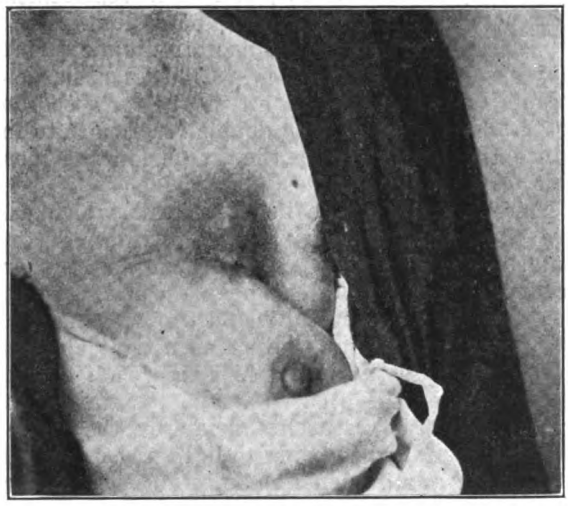

FIG. 2.—Case I. This photograph, taken after the treatment was discontinued, shows the breast reduced to normal. The indurated tissues surrounding the lesion have been absorbed. There is no pain or discomfort and the arm can be moved freely.

neutrality. What these elements might be is purely conjectural, as we have no means of determining their exact nature. We might imagine them to be basic elements, the foundation of the cell, such as magnesium, calcium, iron, manganese probably silicon, etc. Therefore, while displacing the sodium chloride from the cell and replacing it with potassium chloride it would seem reasonable further to strengthen the chemical constitution of the cell by administering some or all of these salts particularly the magnesium, calcium, and manganese. A properly adjusted diet will supply other salts the nature of which, we must imagine, belongs to the entire group of biochemical elements composing protoplasm.

In a very learned article by Dr. Robert Bell, physician in charge of cancer research, Battersea Hospital, London, England, published in the MEDICAL RECORD of February 28, 1920, under the heading "The Cancer Enigma," we find the following, after discussing various so-called causes of cancer he says, in derogation: "Among other theories advanced may be mentioned eating salt bacon, and the employment of salt as a condiment, acting as predisposing causes of the disease." This statement leads the writer to believe that the Doctor frankly doubts the possibility of salt being the cause of cancer. Further on in his article he says, "Now all these, from my point of view, untenable theories have been advanced and circulated since that pioneer of the science of pathology and master of his subject, Sir James Paget, stated, "The condition of the blood is the predisposing cause of cancer," and I have no hesitation in affirming that his opinion still is accepted as final by all who have given prolonged study to the subject. The question therefore arises: What is the fons et origo of this pernicious condition of the blood stream which converts it into a predisposing cause of cancer?" My answer to the Doctor is, *the presence of an excess of salt*, the correctness of which he is at liberty to disprove.

Dr. Bell's treatment for cancer is very varied. His armamentarium is extensive. It is gunshot in character and embraces many things in its field of action. For example, the Doctor says that hot air gives good results and so does thyroid extract. This extract "has proved in my experience to be in many instances almost a specific when combined with a regulated diet." It seems that the Doctor is not content with one specific but aids its action and states, "gratifying results have been consequent upon the subcutaneous injunction of 2 c.c of magnesium colloid." Again, "good results are also obtained from cold drawn expressed juice of various plants and algae." Further, "another valuable source of this preparation is yeast, * * * a patient having lost thirty-two pounds was put upon fruit and vegetable juices, and egg flip composed of the white of an egg beaten up in a teacup full of fresh milk." At the end of seven months "the patient had regained her former weight." In sarcoma he says, "I have also obtained very satisfactory results from the injection, deeply into the gluteals, of 1 c.c. of atoxyl in iodolysin." The entire article of the Doctor is interspersed with remedial agents, but in no one instance does he give a logical reason for their use in the treatment of cancer, nor tell what a cancer is or on what theory he works to bring about his cures.

The following cases have been treated according to the theory already advanced in the MEDICAL RECORD, September 1, 1917, and with potassium nitrate, supplementing it with mineral salts such as magnesium, calcium, manganese, etc., with the object of replacing the cell loss of these substances.

The writer wishes to lay particular emphasis regarding the correctness of the diagnosis of cancer made in these cases. In every instance the nature of the disease was pronounced cancer by physicians or surgeons who had previously seen the patient. The patient came voluntarily for treatment giving the names of the diagnosticians or was sent by one of them. In no instance did the writer primarily make the diagnosis.

CASE I.—Mrs. H. The diagnosis of the case was given as a scirrhus cancer. No biopsy was made in confirmation as the patient objected to any surgical interference. Because of the absence of a microscopic verification the possibility of doubt creeps in. Indeed, a well known pathologist who saw the case, because he

was unable to view the cells under a microscope, emphatically stated that he did not know the nature of the disease. By all physical appearances the thing does seem to resemble a scirrhus but the writer ventured the opinion that it might be something else. Perhaps an old syphilitic gumma. No? Then a tuberculous lesion. No? Then it must be a brand new disease which is yet to be catalogued. However, four physicians pronounced it a scirrhus and as the majority ruled, treatment was commenced. Examination of the breast revealed an indurated area of inflammation above the gland involving the pectoral muscle. The axillary glands were swollen and sensitive to touch. Both legs were edematous. Obstinate constipation was present and had existed for years. She complained of difficult respiration and was "hungry for air." This is a characteristic symptom of acidosis. There was a dark patch on the cheek, which was redness due to an epithelioma. The tongue was coated and the color of the skin very anemic. In the uranalysis the point of greatest interest in connection with cancer is the high percentage of acidity, 70, and the quantitative examination of chlorides passed which showed 20 per cent. The blood examination showed erythrocytes per cu. mm. 3,840,000; hemoglobin, 60.

Treatment was commenced August 7, 1919, and the patient was discharged cured on March 5, 1920. The erythrocytes are now 4,960,000; hemoglobin 80. There is no edema of the legs, constipation has been cured, and she states her health is as good as it ever was. She is seventy-two years of age.

CASE II.—Mrs. F. Age sixty-five years. Cancer of left breast. Diagnosed by two physicians. Operation refused. Examination shows an ulcerated mass under the fold of the left breast, oozing and with distinct odor; area of redness about four inches in circumference; sharp lancinating pain in nipple; axillary glands enlarged and painful. Treatment commenced by her physician February 10, 1920. Seen by the writer, third time, March 8, 1920. Healing complete, redness absent but a nodule of indurated tissue is felt at the seat of the cancer. This is fibrous tissue and in all probability will remain unabsorbed. Physical condition markedly improved. Still under treatment.

CASE III.—Mr. S. Age seventy-five years. Cancer of jaw. Operated on eighteen months ago. Recurrence. Examination: Half of left jaw absent, ulceration at end of bone, tongue sore, deglutition painful. Treatment commenced January 24, 1920. Ulceration now healing; swelling of tongue and cheek absent. Physical condition good. Prognosis favorable. Four months ago, the patient states, he was refused treatment at one of the hospitals, his condition being then considered hopeless.

CASE IV.—Mrs. S. Age forty-three years. Cancer of neck of uterus. Severe hemorrhage with fetid discharge. Marked cachexia, constipation, and marked debility. Treatment commenced November 12, 1919. Still under treatment March 29, 1920. No hemorrhage and discharge serous and free from odor. Does her own housework, anemia greatly improved, constipation relieved. Gain in weight of nine pounds. Prognosis good.

CASE V.—Mrs. McL. Registered nurse. Age forty years. Abdominal tumor, probably fibrous; has existed for fifteen years. Circumferential measurement thirty-eight inches. Treatment commenced September 2, 1919. In six weeks tumor was so reduced as to show a circumferential measurement of thirty-four inches, which size is maintained and will prove permanent. Treatment continued for four months in all. Patient discharged. Health good. Further treatment not advised.

CASE VI.—Mrs. P. Mother of physician. Age seventy years. Epithelioma on side of nose treated by her son and reported by him to the writer as cured. This patient, the doctor stated, had been treated with radium and the *x*-ray. The disease seemed cured for a few weeks but persisted in returning. A year has passed since treatment with no return of the malignancy.

CASE VII.—Captain G. Police department. Operated on for tumor of the tongue. Recurrence in eighteen months. Radium had been applied to lesion. When seen by the writer the attending physicians had retired from the case giving the prognosis of death within two weeks. Patient was taking ninety grains of aspirin and ten grains of morphine daily. A tumor mass occupied the entire right side of the cheek and neck from the temple and extending below the clavicle. The right cheek and eyelids were edematous, the latter closed by the effusion. Both legs were swollen. The patient suffered most excruciating pain and was forced to maintain a cramped sitting posture day and night. A description in full of this case is much too lengthy for this paper. Briefly then the same treatment was given him that other cases received and was commenced on October 17, 1919. In forty-eight hours the edema had disappeared from the face and legs. The relief in pain and discomfort was remarkable. Within four weeks the cancer mass became reduced to one-half its size and the patient was able to walk, lie down, and sit erect. After ten days narcotics were no longer needed. This patient had lost during his illness one hundred forty pounds, about half his weight. He lived six weeks and died free from pain and peacefully. He might have lived but was unable to assimilate the nourishment given, although fed every hour with highly nutritive substances. The metamorphosis in the cancer tissue from intense malignancy to practically a benign fibrosis was observed by two well-known physicians, one a pathologist, and also by the patient's son, a dentist, who was with him during his last six weeks of illness. That he died from malnutrition and not from cancer was the consensus of opinion of all who had been connected with the case.

CASE VIII. — Mrs. O'R. Tumor left vocal cord. Marked aphonia. Edema of both legs, constipation. Difficult respiration. General anemia. Under treatment these symptoms disappeared and she was discharged in three months, her voice restored but with a slight trace of huskiness. Further treatment was not advised.

Those who have investigated the prevalence of cancer in various parts of the world find certain peoples not afflicted with it and in many instances the disease is unknown. Particularly is this observed by Williams. Quoting from his work, "Natural History of Cancer:" "During a recent extended trip through the Far East I was unable to see or even hear of any cancer, although I met a large number of medical men and made inquiries regarding the same and visited hospitals with a total of many thousands of patients in Japan, China, Korea, the Philippines, India, Siam and Egypt, I met the same response that cancer was rarely seen among those vegetarian peoples."

It might be considered a coincidence that these vegetarians live in some of the countries in which potassium nitrate is found. This salt exists in different parts of Europe and in South Africa, Egypt, India, etc. Probably the saline efflorescence in the soil, consisting of potassium nitrate, finds its way into the human economy with the vegetation eaten. Thus in a natural manner any excess of sodium chloride which may be indulged in would be eliminated or kept within physiological proportions, at the same time the basic minerals contained in the vegetable matter would operate to neutralize acidity and remineralize the tissues. Potassium nitrate is a constituent of vegetable tissue. The thought occurs that sodium nitrate should not be substituted for potassium nitrate as a fertilizer. However, as soon as the customs and manners of life and diet of civilization are adopted cancer develops, and this has been particularly observed in negroes before and after the civil war, and also in primitive peoples of India, Africa, Mexico, Brazil, etc., who previously had been free from it.

Furthermore, it appears that animals living in a wild state are also free from cancer, but develop it

as soon as they are brought into captivity, domesticated, and fed the diet of modern civilization. For example, it is not uncommon to find house dogs and cats afflicted with cancer. The mammary glands of the female dog being the site of preference. The writer was fortunate to discover accidently a cat with cancer of the lip which served to verify the presumption that there is in or about civilization something which predisposes to the development of cancer—and this something is common table salt. This cat is four years old and came into the possession of the family when a kitten. Believing in the popular idea that salt is good for animals the cat's food was generously sprinkled with salt for which the cat developed a taste. After three and a half years of this diet the cat became sick and its fur began to fall. It refused to eat and the upper lip became sore and red. Local remedies were applied, but after six months of treatment in which many things had been tried the cat was taken to a veterinarian who pronounced the condition cancer and advised that the animal be killed. With a history of an excess of salt in the diet, the cat presented an excellent opportunity to try the efficacy of potassium nitrate. Therefore, the same treatment was administered as was given to patients with cancer, with the result that the cat is cured and has grown a new coat of fur.

That salt stands convicted of the cause of cancer seems to be based upon more than circumstantial evidence, for in all the cases of cancer giving a history of an excess of salt in the diet its elimination by potassium nitrate has been productive of cure or in greatly ameliorating the condition and relieving pain. This last feature is noted in a communication which I have just received from Dr. T. Howard Plank of Chicago, in which he says, "I have read some of your articles on the use of potassium nitrate in the treatment of cancer and acting on your suggestion have been able to dispense with the use of morphine." From this it may be assumed that the nerve tissue is being irritated by some chemical substance, the removal of which relieves the patient of pain. Is it not logical to infer that salt is the cause of the pain?

The writer has so far treated cancer of the following histological structures:—bone, glands, liver, stomach, mucous membrane, and skin. In not one case has the condition failed to respond to the influence of potassium nitrate. Some have been cured, others are under treatment and improving, the prognosis pointing to a favorable recovery.

It may well be asked, how long will a patient remain cured of cancer? This may be answered by another question, how long will a person cured of alcoholism remain sober? Therefore, if the causes which operated to produce cancer in the first instance are renewed the disease should recur. A cancer patient knowing that the disease is caused by the excessive use of salt should refrain from its too liberal use. In fact, it is the duty of the physician to instruct the patient regarding prophylaxis. If there is a possibility of recurrence of the disease the patient should make regular visits to the physician so that he may be able to recognize any latent symptoms and give timely warning. We read a great deal about educating the public regarding cancer, but it seems difficult to do so intelligently when all that is now advised is a surgical operation. Hygiene and diet, the very moderate use of salt and plentiful amounts of fresh vegetable substances, containing the mineral salts of which protoplasm is composed, seem to the writer to be the synopsis of public education.

452 Fifth Avenue.

AN EVALUATION OF MINOR SURGERY*.

By MARTIN W. WARE, M.D.,

NEW YORK.

THE fact that you have seen fit to make the order of the afternoon's program "Minor Surgery" is significant that you consider the "minor" to be of "major" import, and I shall furthermore endeavor to justify the saying "multum in parvo" as aptly characterizing minor surgery. For major surgery it is our boast that giant strides have been made; but it must be conceded that whereas a uniformity exists the world over by the pursuit of asepsis, antisepsis, and anesthesia in the practice of major surgery, there is far from anything of a like uniformity or unanimity as to treatment of minor surgical conditions. Of this deplorable state of affairs you may readily convince yourselves by visiting various dispensaries and out-patient departments of any community, and witness the variegated treatment accorded, and again witness the like treatment which physicians in private practice mete out in the stress of first aid, under the cloak of minor surgery. Minor surgery is largely synonymous with "first aid."

During our participation in the Great War, a questionnaire was issued by the Surgeon General to many surgeons and many physicians, to elicit from their replies what was the consensus of treatment in conditions calling for "first aid." Upon this concerted response was predicated the standard instructions of first aid incumbent on the medical corps. Manuals of Minor Surgery extant are antiquated and it is therefore earnestly to be wished for that efficiency in the teachings thereof should now prevail. The standardization, or rather efficiency, of minor surgery is of as much concern as standardization of hospitals; for minor surgery is the major part of the surgical practice indulged in by the practicing physician in the privacy of home or office, encompassing a clientéle larger in its census than that of hospitals or dispensaries. No little wonder therefore that minor surgery, being the bread and butter of our existence should merit revision tending to increased efficiency.

Passing over these admonitions and censurers, I will essay with your indulgence to give some constructive and practical aspects of the commonplace which have engaged considerable of my time these past two decades.

First as to control of hemorrhage.—It is an opprobrium to the medical profession that dilettante parlor surgery instruction still appears in first aid and minor surgery manuals. Thus one still encounters the reprehensible directions "that when confronted with a hemorrhage, pressure manually, preferably with torniquet, should be applied, cen-

*Read before the meeting of the Sullivan County Medical Society, Liberty, N. Y., May 12, 1920.

tral or distal, according to the type of bleeding, whether arterial or venous. This is not only *not* minor surgery but it is also *minus* surgery, since it is at variance with good surgical practice; for the surgeon at the operating table is wont to make pressure directly at the bleeding point and with the finger first, or a sponge in hand, and thereafter may follow forcipressure and ligature or gauze may be left in situ. Anyhow wherever the need of a tourniquet does arise, the surgeon always places it centrally.

Many a hemorrhage from a small sized vein will require nothing further than a direct pressure. To illustrate, I would recall the examination question by an astute surgeon which all applicants failed to answer. The question was put as follows:

"One of two physicians, in full evening dress, returning from a dance was suddenly stabbed in the neck, following which a huge gush of blood took place. What would *you* have done for your injured companion?

Answers: One—would have rung for an ambulance. 'Before the ambulance responded an undertaker would have been more in place'. said the examiner.

Another—to outdistance the previous applicant—offered the use of his pocket instruments, to which the examiner retorted, 'they are not usually carried about at a dance'.

The last applicant thought he would be equal to the occasion, by crowding a handkerchief into the wound. 'That', said the examiner, 'let us assume, was left as a souvenir with the lady."

It therefore remained for the examining surgeon to point out what is done in daily practice—'Place the finger into the wound and holler for help'.

This hypothetical question propounded actually took place recently: Dr X. was out riding with his wife in an automobile when a collision took place, shattering the glass wind shield, a fragment of which struck the wife in the neck and cut her jugular vein. The physician, as reported by the papers, pressed his finger into the neck wound and sped on to the nearest hospital where surgical measures were successfully applied.

Very much in common with this type of hemorrhage is that of varicose veins. Hemorrhage from these needs only pressure with gauze.

In hemorrhage following extraction of the teeth by the dentist, the doctor's advice is often sought—'What to do'? Pressure! Simply take a small handkerchief, roll it and bite upon it, and caution not to look at it for at least half an hour.

At this juncture, I want most emphatically to condemn the Rip Van Winkle practice of the lingering use of styptics. Whilst I do not wish to repudiate the use of modern hemostatics, I for one do not even believe in adrenalin as a hemostatic. When you stop to consider, you will recall that with every application of adrenalin, there is conjoined pressure either of the cotton applicator or pledget of gauze. There are, however, parts where prolonged pressure is of no avail or even injurious. I cite an experience where the flow of blood from a divided vessel of the scalp was staunched by pressure with gauze, deplorably resulting in a large decubitus ulcer, for the skin was exsanguinated by undue pressure against the unyielding bone.

Without available artery forceps, hemorrhage can be readily controlled by simply passing a suture deep enough to encircle the vessel. For the scalp—mere suture of wound will suffice; for the wounds of the lip and tongue, and in rare instances where a nevus is wounded, a well placed suture is the only method.

My advice was recently sought by a physician for the control of a vesical hemorrhage for a prostatic patient declining operation, who bled profusely following each catheterization for retention of urine. I counselled him to leave a large catheter in place and put a 3 lb. bag weighted with sand, shot, or salt over the suprapubic region and never to be forgotten in any hemorrhage—to insure absolute rest, to give the patient an opiate.

It is opportune to dwell on the miscarriage of surgery because physicians, even in the pursuit of minor surgery, do not sufficiently avail themselves of the beneficient use of a general anesthetic. There are a host of conditions requiring such. Innumerable times, I have encountered this shortcoming. Where no general anesthetic is used a focus of suppuration is nine times out of ten inadequately incised. Don't attempt to remove foreign bodies from the nose, or puncture the ear, or reduce a fracture, or attempt to ligate a deep vessel, or do much suturing without a general anesthetic. Contrast what the dentist has gained by his high universal use of N_2O anesthesia in extraction, and analgesia in the operation on teeth. I venture to anticipate a reply that the general physician is at a disadvantage because he has no such facility for giving a transient efficient anesthesia with N_2O.

Nearly 20 years ago, I realized the dilemma of the general practising physician and I turned to use ethyl chloride for the aforesaid purposes. I was the pioneer in its use for general anesthesia in this country. Its safety having been vouched for, I claim for it a superiority over nitrous oxide, because it is more readily obtainable in drug stores, it requires no special apparatus, and is most portable. Just this parting reminder to inspire confidence in its use in minor work. Pure ethyl chloride is adjudged absolutely safe for inducing anesthesia and such being the case, I plead for its wider acceptance. Use it as you do any other anesthetic. Rules for any of the anesthetics apply equally in its administration.

The ritual exacted in the toilet of wounds, made in the performance of an operation applies with equal force to all accidental wounds. I take it that nowadays a pair of sterilized gloves are part of every physician's kit. Any gross dirt should first be removed with benzine or ether, and tincture of iodine should be applied without the preliminary use of water or soap. The pitfalls of accidental wounds are the control of hemorrhage, tetanus, and foreign bodies. Hemorrhage, as aforesaid, being stayed by pressure with gauze, not cotton, a cautious survey of the wound should be made to learn whether a joint is laid open; and in transverse and punctured wounds of the forearm and hand, if a tendon is divided. It is all too frequently an error of omission to suture wounds of hand and wrist and gloss over the injury of the tendons, so easily diagnosticated by noting the abeyance of function by eliciting motions of extensions and flexion. To attempt a primary suture of tendon with local anesthesia, I regard as an error of commission. This conviction is gained from experience, for retraction of the divided tendon ends may demand prolonged manipulation for which general anesthesia is bet-

ter; and as accidental wounds are prima facie infected wounds, local anesthetics injected are risky in their tendency to spread the infection. Gross foreign bodies readily presenting should be removed and if it is a fragment of wood, the overlying parts should be split under local anesthesia to guard against a particle being broken off and left behind. The enlarging of the wound in the case of penetrating wounds and those of pistol shot variety secures additional advantage in that air gains access to the cellular spaces and thus combats the development of the anaerobic tetanus bacillus.

Best surgical judgment commends the immediate injection of large quantities of tetanus antitoxin in all wounds contracted along the highways and in field work. I think the epidemic of tetanus about 10 years ago, incident to 4th of July celebration was due to the filth of streets (host of the tetanus bacillus) infecting the hands. I recall my good fortune to have had no tetanus in the dozens of cases treated at the time which I attributed to the freedom of exposure of all the wounds under general anesthesia, excision of all the lacerated tissues, and use of 5 per cent. solution of carbolic acid along the lines recommended by Baccelli.

The recognition of foreign bodies, such as particles of glass of the lead variety or needles, it is true, is vastly facilitated by the *x*-rays. Their presence once established, their removal is facilitated by use of a rubber constrictor to render the field bloodless. Needles are most elusive foreign bodies—even located by *x*-ray, they are very difficult to remove. I daresay many of you have been chagrined or witnessed such on the part of the surgeon trying to ferret out the needle. The wanderings of needles are famous in the annals of medical literature and the impunity of their itinerary is likewise. I always plead "non vult" against their removal, even where there is a metastatic deposit of that needle in the brain of the host. If then, I am none the less importuned to search the haystack, I make a clean breast of the difficulties and once more plead "non possumus" before yielding to force majeure.

The various pitfalls of accidental wounds guarded against, the question of suture is paramount. It may be necessary, if the wound is very grimy, to give an anesthetic to effect cleansing. As for suture, I favor rather little than too much. Not uncommonly, I have seen a half dozen stitches applied to a wound little larger than one inch. In wounds about the face, I presume to advise abstaining from the use of sutures or reduce them to a minimum; since the puncture of the needle may emphasize the scar by the formation of cheloids.

Of late years, I have satisfactorily employed sterile strips of zinc oxide where there is no great tension. Whether stitches or plaster, an interval of half an inch should be allowed between each. Such wide spacing allows for the escape of secretions. The zinc oxide plaster strips may be sterilized by passing the sticky surface over a flame and cooling before bringing in contact with the skin. It is very rarely, notwithstading effective iodine sterilization, that you can sew up a wound without some provision for drainage, be that drainage through a wide interval of sutures or by placing a small piece of rubber tubing, or a piece of gutta percha tissue quickly sterilized by immersion in tincture of iodine.

Wounds of very recent date made with sharp instruments on a comparatively clean surface can be dressed with aseptic dry gauze—no iodoform gauze is necessary. Drainage with gauze is bad practice, the free gauze end dries out and the gauze acts like a cork so that the secretion is pent up.

The factor of rest by confinement to bed, which is essentially elementary in the after treatment of major surgery, is through perversity quite uniformly wholly omitted in minor surgery. A generous sized well-cushioned splint and suspension of the arm or forearm in a sling should invariably supplement any treatment of whatsoever wound injury or infection, and healing will be greatly facilitated and hastened, and much pain allayed. In this connection, I would counsel from the start, the application of splints of sufficient length to immobilize the painful joints of rheumatism and gonorrhea. This practice is altogether too frequently overlooked. You will recall that the strictest orders prevailed in all the Allied armies, to apply a splint fortwith to all injured members. Violation of this order called forth severe censure.

Passing on to fractures, I can deal with them only in a fragmentary way. The universality of *x*-rays has usurped the development of clinical acumen and with the bedside unit soon to be the vogue, clinical diagnosis of fracture will receive still further setbacks. But notwithstanding, there remain numerous exigencies that call for the art and skill of the family doctor as of old, to recognize a fracture. Fracture of the hip in the aged, I would single out to best exemplify this. With the prevalence of *x*-rays, sprain is fast disappearing from the vernacular and the lesson has to be learnt that local bone tenderness with or without extensive discoloration from extravasted blood, incident to indirect violence is strongly presumptive of fractures.

In general, I am for the earliest and immediate application of plaster of Paris bandage as the best and quickest way to reduce the swelling, allay the pain, and hold the fragments in place. The reason that the use of the plaster of Paris bandage is so much deplored is traceable to the atrocious commercial product on sale. An expert must needs likewise fail if he would use the plaster of Paris of Commerce. Herewith a hint to overcome the shortcoming. Unroll the boughten bandage reroll it very loosely and remove the large excess of plaster. Then if you will pad the conspicuous points with cotton and exert neither traction nor pressure in applying the bandage, you will experience no ill effects of interference with circulation, nor cause pressure sores or pressure paralysis. The use of ice-bags to remove swelling is a waste of time. More efficient is great elevation of the limb and elastic pressure of a flannel or elastic woven or gum elastic bandage. It should be recalled that a number of hours lapse before the necessaries can be assembled for use of plaster and preparation for anesthesia effected, and in that interval the swelling, even untreated, has attained its maximum, and if treated as outlined it will be limited. At any rate, I offer you the assurance of a committee of the American Surgical Association, whose investi-

gation on the treatment of fractures endorses the earliest possible use of the plaster of Paris bandage in fractures of the extremities.

It would be a matter of supererogation to tell any representative body of physicians that every infection should be incised. But may I reiterate that a general anesthetic is a *sine qua non* for the proper execution of the incision. All too frequently a fatal sepsis ensues because the patient demurs to a second operation when the first was done without an anesthetic.

The paradox of infections is certainly a furuncle, commonly designated a boil, and facetiously referred to as an ingrown hair, which I have never seen. A furuncle is potential of much suffering and evil, and notwithstanding that osteomyelitis and septic infarct of the kidney are not infrequently traceable to it, yet empiricism has the upper hand in its treatment. In the initial stage, I prefer the use of flaxseed poultices or a poultice of the clay ointments, and when liquefaction has set in, spontaneous perforation may result or a small incision will facilitate expulsion of the core. At any time that adjacent glands become tender or enlarged, general anesthesia and incision are in place.

The dressing of suppurating wounds of small dimensions is best effected by the use of wet dressings, held in place by a gauze bandage. Covering the wet dressing with impervious oil silk or guttapercha tissue favors bacterial decomposition. Such practice is at cross purposes with principles of all dressings, the aims of which is to absorb the discharges and then by virtue of evaporation or the contained antiseptics, to render them more or less innocuous.

Deep-seated abscesses, not involving the overlying, cellular tissues and skins, such as gland abscess, may be drained through a small opening at a dependent point with a rubber drain tube. The cure of a cold abscess, however, is well within the province of minor surgery. It may not be amiss to dwell on the technique insuring its successful outcome. I wish to emphasize that puncture should be by a circuitous route through healthy tissue, and not directly over the abscess. Contents evacuated, the cavity is to be washed clean till fluid returns clear and then a glycerine emulsion of 10 per cent. iodoform and 1 per cent. gauiacol is to be injected through the same cannula that was used for evacuating. This procedure is to be repeated with diminishing quantity of the emulsion until the cure sets in.

I do not dwell on the Carrel treatment, which is no concern of minor surgery; the Carrel treatment disregards the rule of making the incision at the dependent point. It is fundamental with Carrel to sterilize in loco, wherefore the Dakin fluid must be allowed to pool and the escape of pus is from the top of the cavity.

"Débridement" of war surgery—the removal of all diseased tissue—has a limited application in minor surgery. The excision of a carbuncle well into the healthy area antedates "débridement" and bears some resemblance to its principle.

Wet dressings should be of liquor Burowii (alum acetate), boric acid, Thiersch solution, NaCl. 0.9 per cent., and dilute alcohol, and where pain is severe, carbolic acid 1 per cent. at the most because it acts as an anesthetic, but only for a limited time in order to guard against the tendency to gangrene.

Burns being a species of injury the aforesaid treatment obtains, with additional factors to be contended, namely—the extent of skin destruction baring large areas of sensory nerves and the variable period of reconstruction of the skin. Dependent on each phase, a burn would call for different treatment. A saline wet dressing at the start or continued immersion in a saline water bath to combat and reduce infection, later to be followed by bland ointment, and where the secretion is scant, some desiccating powder. Exposure to air and light allowing a burn to heal under a scab is by no means unsurgical.

The open air treatment and exposure to sun of granulating surfaces is a valuable resource. At night contact of clothes and bedding is obviated by suspension and the use of a cradle.

In contrast to the wounds with large extent of destroyed skin is a "sinus" or "seton-wound." Providing no foreign body, diseased bone, or specific infection, such as tuberculosis or lues, is underlying, the healing may be quickly brought about by sterilizing the tract with carbolic acid or iodine, and when microscopic examination discloses organisms reduced to a minimum, a Beck's bismuth paste, sterilized and injected, will very often pull off the trick.

The treatment of ulcers of the simple variety is covered in the remarks of granulating wounds, and such directions will carry you far, if, in the case of a leg ulcer, the victim would but give the leg just that amount of rest which is wont to be ordinarily advised in a like ulcer on the upper extremity.

In conclusion, I submit that minor surgery be dignified as major surgery, applied to surgical ailments, minor in kind not in degree, and with that due sense of proportion which physician and surgeon alike should exercise, there is but one surgical effort for capital or minor ailments.

27 East Eighty-first Street.

ECZEMA OF THE VERMILION BORDER OF THE LIPS.

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AND
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A DIFFICULTY arises at the very beginning of this subject, as we are not sure that we ever have seen a case of true, patchy, vesicular eczema of the lips. Our material consists of either exfoliative cheilitis without vesiculation, or cases which appear to be analogous to blepharitis marginalis, and which are associated with seborrhoic eczema, or still other cases which are analogous to keratotic patches on the free surface.

Catarrhal Inflammation of the Red of the Upper Lip.—The lower lip is much more subject to trouble than the upper one. There are, however, cases of obstinate catarrhal inflammation of the red of the upper lip with acute exacerbations, and accompanied by anteroposterior cracking, and as a consequence,

streptococcic infection with swelling and deformity of the whole lip. In two of these cases seen by us, both in young females, there was also eczema of the navel, and one of them had a patchy psoriasis. These cases, leading to enlargement of the upper lip, were at one time included in the large, inchoate group of scrofula, and indeed, were often associated with catarrh and tuberculosis of the respiratory tract, and tuberculous enlargement of the cervical lymphatic nodules. Treatment is often not brilliantly successful, because of the difficulty of controlling the gastrointestinal and nervous troubles, of which they are one of the expressions. Everything of a general nature, both dietetically and hygienically, must be done to improve the general health.

During the acute exacerbations, weak subacetate of lead lotions or bathing with a saturated solution of boric acid to which 10 per cent of liquor alumini acetici may be added, are ameliorating. One of the best salves is boric acid ointment with the addition of one or two per cent of camphor. The one per cent. yellow oxide of mercury ointment, so much employed by oculists, is also excellent.

Eczema of the Lips as it Occurs in Those Having the Exudative Diathesis.—Often young people, especially young girls, have a blazing red prominent lower lip, frequently desquamative, not infrequently herpetic, and often showing a tendency for a deep crack to form anteroposteriorly in the median line. We infer that the crack forms here because it is a fetal suture, and therefore weak. This affection is particularly apt to occur in soft, rotund, young girls, with a fine textured, fair skin and infantile fingers, who have the exudative diathesis. It may lead to permanent scurfiness of the edge of the lower lip, with permanent enlargement of the whole lip.

The constitutional treatment, involving attention to exercise and diet, is of great importance, but as the disease occurs in particularly effeminate people, this is difficult of attainment.

The local treatment is the same as for the previously mentioned class of cases. When the cracking is deep and stubborn, a much heavier salve must be employed—one made from lead plaster 60 per cent., vaseline 38 per cent., and 2 per cent of salicylic acid. This ointment is spread on stout cotton cloth and adapted to the lip at night. During the day it is to be frequently smeared on the lip so as to form a protective coating. As advised by Pusey, an adhesive plaster brace may be applied across the lip to prevent it stretching in the movements of the mouth. A weak nitrate of silver solution may be painted in the crack. It is best to do this very thoroughly and then not to repeat it for several days. In cases in which the crack has existed for a long time, is very deep and surrounded by considerable inflammatory infiltration, radium heavily screened and retained for some hours may succeed in effecting a cure when everything else fails.

The Scurfy, Scaly Lip of the Outdoor Worker.—There is another most important group of cases consisting of men in outdoor occupations, exposed to wind and weather. This type is not infrequent among the teamsters and auto drivers of the hot interior plains of California. The lips become dry, scurfy, often unduly full, and tend to crack. Often the exposed red assumes the appearance of scurfy, roughened skin. Often, also, these men have that fair type of skin which burns but does not tan in the sun. Gastrointestinal disturbances undoubtedly aggravate this condition. The lip tends to crack, and especially so, if the man smokes, and in such a crack an epithelioma may develop.

The treatment is the same as for the preceding group of cases. The heavy lead plaster ointment is particularly valuable.

The cracks in these cases must be taken seriously, and if they do not heal under simple means, and especially if they show induration, they should be proceeded against as if potentially cancerous. They may be curetted, and burnt either with trichloracetic acid, or with the acid nitrate of mercury. And if proceeded against in this way, it should be with the intention of thorough eradication, and of subsequent treatment of the wound as a simple wound, using the mildest dressing and avoiding further cauterization.

Far superior to this procedure, however, is the treatment by radium, employed in the same way as for cancer.

Patches of Hyperkeratosis.—A scaly, rough patch may develop on the external, or visible, aspect of the red of the lower lip, that is to say, on that part of the mucous membrane of the lip which closely resembles the cutaneous surface. These patches are in all respects similar to seborrhoic keratoses, so frequently seen on the face and on the back of the hands, and are frequently associated with them on the same patient. As before mentioned, the patch may be scurfy and roughened, in which case the hard, rocky masses may cling tenaciously to the mucous membrane. On the other hand, the patch may shed, at intervals, a fine, translucent pellicle. After a variable time—it may be months or years—the base becomes indurated, and the other clinical characteristics of epithelioma develop with varying degrees of speed.

There is still another group of these dry, scaly, precancerous affections which, for lack of a better classification, may be included in the eczemas. A dry, scaly line forms from side to side across the lip, situated about midway between the cutaneous border and the summit. It may stretch from one corner of the mouth clear across to the other, or it may be broken. It may be a roughened, brown line of dry epithelium, or it may be a narrow, brown, facetted line. We believe this line to be the same one seen in the "rosebud mouth" of the infant, and to represent the junction, in the fetus, of the mucous membrane resembling the cutaneous surface with the mucous membrance resembling that of the oral cavity. It is in this line, when roughened, that an epithelioma is apt to develop, and the recognition of this line is of importance because the epithelial degeneration, of which the epithelioma represents the maximum degree, extends out along it for a very considerable distance on each side of the epithelioma proper. Therefore, any operation failing to take this into consideration is liable to be a failure as not being inclusive enough.

It is our experience that surgeons habitually neglect this line, as they are intent only on eliminating the epitheliomatous nodule itself, or in ex-

tirpating the lymphatic channels along which the epitheliomatous cells may float.

The treatment of these keratoses of the exposed red of the lower lip is identical with that of the keratoses of the skin. The base should be cleared either with the curet alone or by first softening the hard masses with liquor potassæ and then curetting. After curetting, the base may be cauterized with pure trichloracetic acid, followed by water or boric acid solution to prevent overaction. After this, boric acid ointment should be used until healing is complete.

It is in these cases also that *x*-rays and radium are so beneficial, especially the latter. The employment of radium well screened secures the best results of any we have obtained. In many so treated it is impossible to tell that any previous lesion had existed.

The illustration indicates what would be regarded as an inadequate operative procedure. The patient, a woman thirty-seven years of age, for years had been afflicted with psoriasis. Her skin, as can be seen in the photograph, was far too atonic for her years. It sagged at the jowls, under the chin, and

Eczema of the vermilion border of the lower lip.

in front of the neck, as can be seen in the photograph. She had a number of sebaceous glands in the mucous membrane of the upper lip, the significance of which as pertinent to the lesion for which she consulted us was not evident. She presented herself, January 6, 1920, with a rough, irregular, rocky, hard, adherent keratosis of the exposed red of the lower lip which had existed for several months. It was tightly adherent, and had an anteroposterior crack through its center extending down into the "quick." From each side of this central keratosis there extended a linear keratosis. This lay in the usual situation, midway between the lower border of the red of the lower lip and its summit. It did not extend on either side as far as the corner of the mouth. The lesion was undoubtedly a seborrheic keratosis, and not a patch of psoriasis, and it was a lesion which, if left to itself, would likely have degenerated into an epithelioma.

The keratosis was removed with liquor potassæ and the denuded base was found to be bright red and without any induration whatever.

She was treated with radium, a 12.50 mgm. plaque screened with 0.4 of lead and twelve thicknesses of writing paper, held in place for five hours. Under boric acid ointment, perfect healing took place, both of the central keratosis and of the lateral wings.

The point wished to be brought out is that if the central keratosis had been removed by a wedge-shaped excision, as indicated in the illustration, a cure would not have resulted, as the lateral wings would have been left to develop the same kind of lesion, and besides, the patient would have had a disfiguring scar.

323 Geary Street.

INTESTINAL PARASITES AS A CAUSE OF APPENDICITIS: REPORT OF A CASE

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In the early literature on appendicitis, a great deal of attention was directed to the relation existing between intestinal parasites and that disease. Kelley, in his book, "The Vermiform Appendix and Its Diseases," devotes considerable space discussing the probable relation that enterozoa bear to diseases of the appendix, and cites many case reports in which intestinal parasites have been mentioned as an etiological factor.

Among the more common parasites that have been found in the appendix or in appendical abscesses at the time of operation, are *Ascaris lumbricoides, Oxyuris, Echinococcus, and Trichocephalus dispar.* Oxyuris has been frequently found in the normal appendix as well as in diseased appendicies removed at operation, and it would appear that many surgeons are of the opinion that the parasites are capable of provoking the attack.

It is conceded by all that intestinal parasites may, in children, give rise to symptoms, which, in their sudden onset and stormy character at least, closely simulate acute appendicitis.

Erdman, in twenty-nine cases of acute appendicitis in children, in four instances found from six to thirty pinworms in the appendix.

Amebiasis is of interest, especially in tropical countries, in connection with diseases of the appendix on account of the frequency with which this disease is diagnosed as appendicitis, as well as the frequent occurrence of perforation of the appendix as a fatal complication of amebic dysentery.

In a series of autopsies on this disease in Manila, the appendix was found to be involved in 7 per cent. of the cases.

Stitt states that in chronic amebic dysentery there is usually a moderate leucocytosis and this with the pain and tenderness about the cecum, may lead one to diagnose appendicitis and operate on a normal appendix. Rogers, who had a wide experience with amebic dysentery in India, observed that the appendix is frequently affected and that perforation is not uncommon.

After a careful review of the available literature, I have been unable to find any reference to a case in which *Lamblia intestinalis* was considered to have been the cause of pathology in the appendix or in which a case infected with this parasite was diagnosed as appendicitis. In fact the literature

would lead one to believe that infection from the *Lamblia intestinalis* is infrequent in this country.

CASE.—G. T., age nineteen, white male, a native of North Dakota, was admitted to the surgical service with a diagnosis of acute appendicitis. The family history was negative.

Previous History: Influenza one year ago. Diarrhea, accompanied by pain in abdomen, six months ago. Denies venereal diseases.

Present Complaint: About six hours before admission to hospital patient began to have colicky pains in the lower abdomen. The pain at first was diffuse, but later became more severe in the right lower quadrant of the abdomen. He was nauseated, but did not vomit. No cough. Bowels always constipated.

Physical Examination: Well developed young male. Head and chest were negative. Abdomen was slightly distended. There was some tenderness on deep pressure over the right lower quadrant, with rigidity over the right side. Temperature on admission was 98°, pulse 76. White blood count, 10,400; polymorphonuclears, 78 per cent. Urine was negative. On the following morning the temperature was 99.8°, pulse 86. The pain, tenderness, and rigidity were more marked than on admission. The patient was seen by the members of the surgical staff, one of whom urged immediate operation.

Operation: Right rectus incision. On opening the peritoneum a small amount of serous fluid escaped. The intestines were distended with gas and were packed off with difficulty. The ileum, the cecum, and that portion of the colon in sight were edematous and markedly congested. The appendix was swollen, tense, and hyperemic. The appendix was removed, the stump was inverted by means of a pursestring suture, and the abdomen was closed without drainage. Some difficulty was experienced in closing the abdomen on account of the distention of the intestines.

Convalescence was uneventful until eighteen hours after the operation, when the temperature suddenly rose to 103° and pulse to 114. Mild delirium, with clouding of consciousness, set in and during the next twenty-four hours there were eighteen bowel movements, diarrheal in character. The stools consisted chiefly of blood and mucus, and had an offensive odor. The face was flushed and the tongue was covered with a dirty gray coat. The patient complained frequently of pain in the abdomen. On the third night, while delirious, he got out of bed and walked to the bathroom.

Blood Count: 13,700, white cells. Twenty-four and forty-eight hour blood cultures were negative. A thorough examination of the stools by cultural methods failed to reveal the presence of any pathological organism; however, on microscopical examination there were found, in large numbers, certain actively motile, flagellated, pear-shaped organisms, identified as *Lamblia intestinalis*.

The temperature remained at 101° to 103° and the bowels continued to move at frequent intervals until the fourth day, when all symptoms subsided. With the drop in temperature and pulse rate the diarrhea ceased, the patient became more alert and asked for food, and convalescence from this on was uneventful.

The patient was born in North Dakota and had never been out of that State until one week prior to the onset of the present illness. He had always lived in a Norwegian settlement and during the past year a number of immigrants from Norway had settled in his neighborhood. It is interesting to note that many of the cases of dysentery supposed to have been caused by the *Lamblia* have been reported from countries bordering on Norway.

As to what influence this parasite had in causing the pathology in the appendix and in the subsequent diarrhea, I am unable to say. Grossly, there was sufficient pathology in the appendix to account for the symptoms present before the operation. Unfortunately, the appendix was not submitted to the pathologist for miscroscopical examination.

The *Lamblia intestinalis* was first observed and described by Lamblia of Russia in 1859. Later the parasite was found in dysenteric stools in Italy, Germany, Finland, and other European countries. Cases were reported in this country by Stiles who succeeded in inducing the infection in guinea pigs by means of cysts of *Lamblia* obtained from human feces. Stiles is of the opinion that flies may transmit the infection.

As to the treatment of this condition, no one drug seems to be successful in all cases. Methylene blue is recommended but the dose to be sufficient must be large and may cause symptoms of poisoning. Emetine has been used, but the results have been rather indifferent. In the case cited, there was no treatment directed to the destruction of the parasites.

Examination of the patient's stools before his discharge from the hospital, failed to reveal the presence of the parasite.

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PROSTATIC BACKACHE.*

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IN the course of chronic prostatitis low backache is a frequently complained of symptom. The patient attributes it, as a rule, to "kidney trouble" and consults the urologist, although the pain is located in the sacral, sacrolumbar and sacroiliac regions of the spine, and is aggravated by spinal motion and a lasting upright position.

Some textbooks on Urology mention this symptom only casually. In Keyes Urology[1] we find the statement: "Pain in the back is usually in the upper sacral region, constant aching in character, uninfluenced by urination." Pedersen[2] says: "Spondyloarthritis is not uncommon a complication of gonorrheal disease of the joints and the sacroiliac joints are involved sometimes." Guiteras[3] speaks of a possibility of gonorrheal arthritis of the sacroiliac and intervertebral joints.

From these statements may be concluded that the urologist regards the backache as being due to gonorrheal inflammation of the joints and muscles of the lower spine. This assertion may be supported by Billings[4], Rosenow[5], Adami[6] and others, who have proven beyond question that bacteria may live in confined regions in certain organs for indefinite periods of time and that the prostate and seminal vesicles are important sites of such infections, in view of the frequency with which they are attacked by the gonococci and other micro-organisms and the difficulty of eradicating these sites of infection. The bacteria or toxins may free themselves from these places of hiding, enter the blood stream and lodge in the terminal arteries of the joints or in the capillaries of the muscles and other connective tissues where pathologic lesions are then set up. These lesions in the joints, muscles, fasciæ, and joint capsules have been named by Luff[7] "fibrositis" and have been described by him as consisting of a hyperplasia of the connective tissue with exudation and proliferation of the fibrous tissue elements. This in-

*Read before the San Francisco County Medical Society.

flammatory hyperplasia in the tissues of the small of the back may undergo resolution and entirely disappear if the focus of infection is attacked early and eradicated; or, if treatment is neglected, it may go on to organization and formation of adhesions, thickening, and contracture of the connective tissues. This latter is what causes the stiffness in the spinal area involved.

In the causation of this pain must not be disregarded the static element to which Reynold and Lovett[8] have first drawn attention. They ascribed the pain in the muscles and ligaments of the back to the abnormal attitude of the patient. Lovett[9] has pointed out later that inflamed pelvic organs may induce the patient to assume an attitude in standing or walking which increases muscular backstrain of a static nature. He pointed out only the woman with pelvic disorders, but this statement is true of the man with prostatic inflammation as well. Besides that, many of these patients suffer from flat or at least pronated feet which contribute to the backache. It is necessary, therefore, not to overlook these static disturbances of balance in the diagnosis and treatment of this condition.

The treatment should be constitutional and local to the prostate and the back. Constitutional treatment consists in observing hygienic and dietetic rules applied to every aspect of the individual's life, such as regularity of bowels and temperance in eating and drinking. The treatment of the prostate is left to the skill and knowledge of the urologist.

The most effective treatment of the back is the application of heat followed by ionization, diathermy, vibration and massage, and support to the pelvis and back, as well as correction of any possible foot abnormality.

Local heat causes a state of active congestion, stimulates leucocytosis and tissue metabolism. The heat is applied by means of a high candlepower incandescent lamp, if a limited area of the back is involved, or by means of a hood lined with numerous electric bulbs which is placed over the back from the dorsal region above covering the buttock below. The heat is applied directly to the skin. After the radiant heat exposure for about 20 minutes, the part is red, feels burning hot, is relieved of pain, and the patient enjoys more motion in the spine, because the spasticity of the muscles has relaxed. Following this exposure, ionization with iodine ions is instituted.

Ionization consists in applying a 2 per cent. solution of lithium iodide to the affected region by means of the negative galvanic pole; the positive pole, the indifferent, is placed on the opposite surface. A lint padding of the negative electrode carries the solution of the iodine, while that of the positive is soaked in sodium chloride solution. The strength of the current varies with the tolerance of the patient and ranges between 30 and 50 milliamperes. The time of exposure is gradually and slowly increased from 10 to 20 minutes and treatment is repeated every other day.

Another electric current of value is the D'Arsonval, which I use with great benefit on alternating days with the galvanic ionization. The D'Arsonval current distributes heat in a straight line between the electrodes. One electrode, large enough to cover the lumbar and sacral regions, and the other on the opposite surface, on the abdomen, are placed in contact with the skin. The exposure is about 20 minutes. Either of these procedures is followed by local vibration and massage for the purpose of dissipating the artificially induced effusion and dispersing and absorbing the fibrous tissue thickening.

Besides the constitutional and local treatments, the faulty statics mentioned above, if such exists, must be corrected. The patient is provided with properly fitting shoes with a lift on the inner half of the sole and heel to correct the pronation; he is instructed how to walk, stand, and exercise so as to increase the muscular strength of the legs, and, when indicated, he is supplied with a made-to-order arch support.

A canvas corset or pelvic belt is ordered for the patient with the object in view to rest and support the strained muscles. Such belts, if well fitting, afford very great relief to the small of the back.

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1661 Sacramento Street.

THE MENTAL CONFLICT.

By H. LAVESON, M.D.,
NEW YORK.

A MENTAL conflict is a battle between two opposing groups of ideas, part of which are acceptable to the patient and part antagonized by him. These groups of ideas may be either conscious or unconscious. As a rule conflicts are of a moral nature and frequently refer to the grossly sexual character of the patient's thoughts. The attempt to banish these thoughts produces the conflict and the neurosis. Mental dissociation is the result of conflicts. In every mental conflict there are two opposing forces, the positive or the force of reality, by which we come into touch with the external world, and a negative, through which reality is opposed by shutting off the external world. It is this last which produces the shut-in personality or the negativism which is so characteristic of dementia præcox.

Bleuler presents us with a psychological axiom that every tendency is balanced by its opposite tendency. Similarly all other tendencies, under the stress of emotions, are balanced by their opposites —thus giving an ambivalent character to their expression. This theory rests on clinical observation of catatonic negativism, which more than proves the existence of contrasting tendencies and values. These facts are well known to psychoanalysis, where they are summed up under the concept of resistance. But this must not be taken as meaning that every positive psychic action simply call up its opposite. If we investigate psychoanalytically a

case of obvious ambivalency, *i.e.* of a more or less unexpected negative instead of a positive reaction, we find that there is a strict sequence of psychological causes conditioning negative reaction. The tendency of this sequence is to disturb the intention of the contrasting or opposite series, that is to say, it is resistance set up by a complex.

The original method by which the conflict was dealt with therapeutically, and still the most important feature of its therapeutic handling, was to get the unconscious factor into consciousness. So long as the unconscious factor remains unconscious the conflict continues with no power to bring matters to a satisfactory conclusion. The patient, the host of the conflict, is in a position similar to a soldier in the trenches being shot at by a sharpshooter using smokeless powder. He is conscious of the impact of the bullets about him and of his danger, but he does not know what to do about it, he does not know which way to turn, he is as apt to move in the wrong as in the right direction. Just as soon as he can learn the location of the sharpshooter it will be a relatively simple matter to move around a bend in the trench and get out of range, but until he learns this he is helpless. And so the first effort is to help the patient learn this, to help him get the unconscious factor into consciousness.

Those at all familiar with psychoanalysis will know that the opposing forces of the conflict are, in psychological terms, the conscious and the unconscious; that is by what these two terms represent, the unconscious representing the inherent and acquired tendencies, the conscious representing the moment when they come into active touch with reality, in an effort to effect an adjustment. The conflict is at the very root and source of life, it is the very stuff out of which life is made, and the necessary pre-condition of progress. Innumerable examples might be given to show the presence of conflict at the psychological level. Hunger brings about those activities necessary for the procurement of food and the consequent appeasement of the craving. The desire for money prompts those activities which lead to its acquisition and so bring about a state of affairs that leads to satisfaction by supplying the stimuli for generating neutralizing reactions, thus relieving the stress in the system. Fear prompts to run away and get into an environment that will give the feeling of safety. Anger prompts the killing or injury of an enemy.

The essential nature of a conflict is the existence of two opposing forces. Action and reaction are equal and in opposite directions. Motion meets resistance in the opposite direction, the conjunction of two forces striving in opposite directions, one succeeds in dominating the other. The conflict never results in a draw; on the contrary, first one of the opposing forces gains the ascendant, the other is for the time being worsted, then the other is successful, and so this process goes on about a central point, like the needle of a tangent galvanometer, constantly in motion, swinging first to one side and then to the other of the zero mark on the scale, but never coming to rest—a moving equilibrium.

When an emotion is aroused a conflict necessarily occurs between its impulse and that of any other existing affective state, the impulse of which is antagonistic to the aim of the former. Consequently, instincts and sentiments which, through the conative force of their emotion, tend to drive the conduct of the individual in a course in opposition to that of a newly aroused emotion, meet with resistance. Whichever instinct or sentiment, meaning whichever impulse, is the stronger necessarily downs the other; inhibits the central and efferent parts of the process—ideas, emotions and impulses—though the afferent part conveys the stimulus to the central factor. Thus processes of thought to which the inhibited sentiment or instinct would normally give rise, or with which it is systematized, are likewise inhibited and behavior is correspondingly modified. These statements are descriptive only of what is common experience. If one recalls to mind the principal primary instincts such as the sexual, anger, fear, tender feeling, hunger, self-abasement, self-assertion, curiosity, etc., this is seen to be an obvious biological truth. Fear is suppressed by anger, tender feeling, or curiosity, and vice versa; hunger and the sexual instinct by disgust. The sentiment of love for a particular person may be completely suppressed by jealousy and anger. Hatred of a person may expel from consciousness previous sentiments of sympathy, justice, pity, respect, fear, etc. Fear may be suppressed in a human being if impelled by great curiosity over a strange object. Instead of taking to flight he may stand still in wonder. The suppression of the sexual instinct by conflict is one of the most notorious experiences of every-day lift. This instinct cannot be excited during an attack of fear and anger and even during moments of its excitation, if there is an invasion of another strong emotion the sexual instinct at once is repressed.

511 East Eleventh Street.

ON THE USE OF BENZYL BENZOATE IN PERSISTENT HICCOUGHS.

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It is some two and a half years now since the author first announced the discovery of the interesting therapeutic properties of some benzyl esters, and more particularly of benzyl benzoate.[1] The pharmacological data leading up to the discovery and the therapeutic indications for the use of this drug, as well as reports of clinical cases treated with it, have also been published,[2] and shorter résumés on the subject have appeared in the Proceedings of the Association of American Physicians[3] and the *Journal of the American Medical Association*.[4] It may be stated at present that the therapeutic indications for the use of benzyl benzoate, as first predicted by the author, have been completely corroborated by the subsequent experiences in the hands of the author as well as of other physicians; and furthermore, that certain new applications of the drug in therapeutics have been discovered which were not originally thought of by the author. In the present communication the writer desires to call attention to a minor but none the less important therapeutic use of the drug.

The author, as well as a number of other physicians, who have communicated with him, have found benzyl benzoate to be an invaluable medicine in the treatment of persistent hiccoughs of both adults and children. Not only has it been found useful in allaying the ordinary mild forms of hiccough so common in infants, but the drug has been found to be efficient in stopping those forms of hiccoughs may be termed pernicious, that is, those cases in which the phenomenon persisted for long periods of time, lasting from twenty-four hours to several days, and in which the singultus was unaffected by all other forms of medicinal treatment, both external and internal. The author has collected a series of some ten such cases, of which the following three may serve as illustrations.

CASE I.—M. E., age 28, came to the author complaining of persistent hiccoughs which had continued for over 24 hours, without yielding to the ordinary medication in vogue. The patient was given a solution of benzyl benzoate, 20 per cent., and ordered to take 25 drops in water every 4 hours. One dose of the medicine was sufficient to stop the hiccoughs, and apparently cured the patient, as he has had no recurrence since then.

CASE II.—A man of 64 years came under the observation of Dr. B. Sacks of the Hebrew Hospital, Baltimore, suffering from persistent hiccoughs, which started several days previously and which could not be relieved in any way. In the hospital various external applications, such as mustard plasters, were tried without any success. Then medicine was given internally, but neither bromides, nor Hoffmann's anodyne, nor morphine, nor any other drugs brought relief. The patient was then put on a solution of benzyl benzoate, and after a few doses the condition was completely cured.

CASE III.—A woman suffering from postoperative hiccoughs, under the care of Dr. C. V. W., was treated ineffectually with all ordinary drugs. The condition persisted for over a week, the patient hiccoughing sometimes as often as six to eighteen times per minute. After the ineffectual use of all other drugs, she was put on benzyl benzoate and was relieved within twelve hours.

Not only is benzyl benzoate a useful remedy in the treatment of certain persistent forms of hiccoughs, but, in the author's opinion, it is also of a diagnostic interest in differentiating between the hiccoughs of a purely central origin, on the one hand, and those which are due to some peripheral origin, on the other. Inasmuch as benzyl benzoate exerts its chief effect peripherally on the smooth muscle structures, the author is inclined to believe that this drug may be most useful in the treatment of hiccoughs of peripheral origin.

In administering the drug the author finds the most convenient method to be the one originally described by him in his earlier papers.[3] The benzyl benzoate exerts its action best when given in a 20 per cent. solution in alcohol. Of this solution the patient is directed to take 20 to 40 drops in water or milk. The author has not found it either convenient or advantageous to administer the drug in suspension in various elixirs or syrups, and administration in capsules has been found by him in some case to produce local irritation, and in others to render the therapeutic action too slow. To children the solution can be conveniently administered in sugar water or milk.

It is hoped that this brief note may be helpful to the general practitioner in the treatment of the condition which is not only disagreeable, but may sometimes assume an alarming form.

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Medicolegal Notes.

Practising Without License—Indictment Under New York Act Must Name Individual Treated.—On appeal from a conviction of practising medicine without a license in contravention of New York Public Health Law § 161 providing that "no person shall practice medicine unless registered and legally authorized, . . . or unless licensed by the regents and registered," it was contended that the indictment, in addition to charging in the language of section 161 that the defendant unlawfully practised medicine without being registered, etc., should have specified under the language of section 160, defining what practice means, the specific acts performed by him constituting such unlawful practice. In sustaining this contention the New York Court of Appeals says that it is abundantly established that in charging an offense committed upon or in respect of an individual, as diagnosing, treating, or offering to diagnose or treat, a disease, it is necessary to name, or excuse naming by proper allegation, such individual. There is an exception to this general rule that when the crime consists of a series of acts continuous in their nature, such as carrying on a prohibited business, or keeping an unlawful resort, a general description, reasonably including and describing the series, it will be sufficient. It is not necessary, in such cases, to set forth each act going to make up the offense, for, as said in Commonwealth v. Pray, 13 Pick. (Mass.) 359, 362, "It is not each or all the acts of themselves, but the practice or habit which produces the principal evil and constitutes the crime." "In our opinion, however," the Court of Appeals says, "this indictment does not come within that exception. It does not seem to us that the statute was intended to define or constitute the prohibited offense as consisting of a continuous series of acts amounting to the conduct of a business. It may be that if we had nothing but section 161 prohibiting the 'practice' of medicine, and were relegated to the dictionary or common usage for a definition of that word, we should be compelled to interpret it as meaning a continued and habitual performance of acts. But we are not thus left to these means of teaching a definition. Section 160 defines what 'practice' means. Its meaning is satisfied whenever and as often as an individual 'holds himself out as being able to . . . and offers or undertakes to diagnose, treat,' etc. Whenever within the fair meaning of those terms on a single occasion an offender has held himself out as able to and has offered to treat a patient there has been a completed offense, and it is not necessary to show that this operation has been repeated so many times that it has ripened into a habit or business. We think that the indictment and proofs in this case confirm this view. If this is the correct interpretation, there is no question that the individual operated upon should have been named or proper excuse given for not naming him even within what has been said in cases applying the 'business' rule."

Judgment of conviction was therefore reversed and the indictment was dismissed. Three of the seven judges, Messrs. Chase, Cardozo, and Crank, dissented. —People v. Devinny, New York Court of Appeals, 125 N. E. 543.

Testamentary Capacity.—A testator has sufficient capacity to make a will if he has sufficient mind and memory to enable him to understand the particular business in hand, remembers who are the natural objects of his bounty, and can recall to mind his prop and make disposition of it understandingly accor to some purpose or plan formed in his mind.—He Hart, Illinois Supreme Court, 125 N. E. 366.

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SUGAR DRESSINGS IN SURGERY.

IT seems to be generally acknowledged that the use of sugar as a surgical dressing has a favorable action on wound repair and granulation tissue. The action of moist dressings made with a 48:1000 glucose serum and the action of dry dressings with powdered glucose should each be considered separately. In the first case the dressings act like any other moist dressing; the quantity of glucose introduced on the wound is relatively very small, since a large number of gauze pads can be moistened with one liter of glucose serum—containing forty-eight grams of glucose. Therefore, glucose serum should be employed only when the patient cannot tolerate glucose in a dry form. Dry glucose dressings have two actions; firstly a physical action; they act in the same way as any inert powder and have the property of mechanically irritating the tissues; but the second, and most important action of powdered glucose is that it feeds the cells to which it is applied, and it is for this reason that it increases cell resistance and activity, consequently increasing local life. Sugar dressings may be correctly termed hyperbiotic and this hyperbiosis is one of supernutrition.

Hyperbiosis can be produced in two ways: thus light will, as we know from a present large experience, improve or cure tuberculous ulcerative processes. Radium in small doses acts similarly and in these lesions injections of soluble salts of radium into the tissues can be used or radiferous ointments or powders may be prescribed, some being indifferent, others both antiseptic and modifying. Electricity and active hyperemia increase the local circulation, fulguration also produces hyperbiosis, but in all these instances it is not a hyperbiosis from nutrition. It would consequently seem clear that their action is only momentary, the cells becoming exhausted after a variable lapse of time according to circumstances. Their nutrition is not increased by these means, but in the case of sugar dressing the cells are actually fed, they are not exhausted herapeutic effect is durable. Saccharose is ilable directly and for this reason glucose referred, as its assimilation is complete. al fact remains that saccharose does give some appreciable results, nevertheless. Such being the case, it may be supposed that the cells, excited by the cane-sugar have furnished a ferment capable of transforming non-assimilable saccharose into glucose and levulose, both of which are directly assimilable. The number of ferments in the human organism is considerable so that this hypothesis can very logically be sustained.

But sugar is an excellent food for bacteria in general, although there are instances in which it has no action on them. Certain observers have even shown that sugar decreases the virulence of some, among them the staphylococcus. Others maintain the contrary opinion and deny any favorable influence of glucose on suppuration. The question is still moot, but at least in some cases, glucose has had an undeniable influence in favoring the development of bacteria in wounds treated with it.

There is an important question to solve, that is, whether a wound in a diabetic patient can be treated with glucose. In these subjects we know the ease with which infectious processes develop; but is the sugar the only factor in their development? Sugar has unquestionably an importance, but other no less interesting factors also play a part. In fact, neuritis and polyneuritis are not uncommon in diabetes, and in this respect should not be overlooked since the experiments of a number of competent observers have demonstrated the influence of nerve division on the localization and development of suppurative processes in the area innervated. The vascular changes arising in diabetes, the hemorrhagic infarcts in the capillaries, may certainly not be without significance in the production of necrosis, gangrene, and suppuration. Finally, in the normal state the pancreas throws a substance into the circulation which modifies the histological structures in the tissues and exercises a marked influence on their nutrition. The suppression of this pancreatic endocrine secretion will result in tissue changes insofar as the nutrition of the tissues is concerned; they lose their reserve materials, since the histolysis is no longer under control and consequently become an easy prey to bacterial invasion. But this is but one point. These materials derived from hystolytic disintegration will react upon the liver, bringing materials to it upon which its glyco-formative activity will act, with the result that hyperglycemia will be the consequence. Then two factors become united which, taken separately, would have had a most marked influence favorable to the development of pathogenic agents, and whose association easily explains the frequency and gravity of infections arising in diabetes. That sugar may be a favorable dressing in diabetic wounds is, therefore, still moot.

In all wounds two very important factors must be considered, namely, the bacterium and the soil. Antiseptic and aseptic dressings have for their object only the destruction of the microbe without taking the soil—the patient—into consideration. In the use of physiological salt solution and other conservative measures, the soil is not disregarded

and the cells are placed in an excellent medium. With sugar dressings the cells are given nutriment so that the soil is all, the bacterium a secondary matter, if it be admitted that sugar favors its virulence, which is denied by many observers. So long as we do not know with certainty the means employed by Nature to overcome infection, such means can only be artificially imitated and the treatment of wounds will remain a moot question until more light is thrown on the subject, even in the advanced state of surgery of to-day and the experiences derived from war.

THE VIRULENCE OF THE PNEUMOCOCCUS.

THE pneumococci were properly classified from the time they were found in all typical cases of pneumonia. Besides the complications of pneumonia, this bacterium produces morbid processes of the serosa and lives as a saprophyte on the mucosa of healthy subjects and animals. Four characters are fundamental and constant: the absence of spores, staining with Gram, a capsule, and immobility. There are others more special, but these may be wanting: the lanceolate shape, the scant and fragile growth on ordinary media, solubility in bile, action on hemoglobin, and a decreasing pathogenic power in mice, rabbits, guinea pigs, and birds. The criterion of agglutination is of little value in identifying this organism. Virulence may be defined as vegetability *in vivo*, and must be distinguished from the toxigenous power, with which it is not necessarily associated. The intensity of experimental infection expresses the relationship between the germs and the resistance of the animal; the virulence is, therefore, estimated by the intensity of the infection and the resistance, necessarily unknown, but supposed to be constant. Only infections of the same clinical type should be compared with each other and, all other conditions being equal, the virulence is estimated by the dose administered and the length of survival. A rigorous estimate of the virulence can be obtained only from bacteria which have never passed through animals. The method of direct inoculation of pathological products should be rejected.

The pneumococcus of pneumonia patients possesses a very unequal activity in respect to mice, and the sensibility of this animal has been exaggerated. The pneumococcus is rarely virulent in the rabbit, but exceptionally it may be very virulent. Pneumococci which are very active for the rabbit will be the same for mice, but when mildly active for the rabbit the activity will vary in mice. A minority of pneumococci killing a mouse will kill a rabbit. A very active pneumococcus for mice may be little so for the rabbit, and when mildly active for mice they are generally inactive in the rabbit. Human pneumococci are only exceptionally virulent in the guinea pig, and this virulence always remains weak. Pneumococci active for the guinea pig are always very active in mice and rabbits; the inverse is not true. Virulent cultures of pneumococci are often scant, fragile, and soluble in bile, and although the latter is inconstant, it is an excellent indication of the species and the virulence, when it exists. The majority of pneumococci active in the rabbit—and *a fortiori* when active in the guinea pig—are soluble. The inverse is not true. Pneumococci inactive in mice are insoluble; those which are moderately or very active are soluble; when very mildly active the organism may or may not be soluble. The solubility in bile may vary in the same sample, in which case the strain is mildly or slightly active for the mouse. Very active pneumococci usually retain their virulence and solubility; but the latter may disappear, yet the virulence remains. There is no necessary relationship between the gravity of the pneumonia and the virulence of the pneumococcus. Even if the resistance of man were known, the virulence for human beings would remain an unknown quantity. The number of pneumococci with which a given case of pneumonia has to deal is unknown, while the relative rarity of the germ in the blood of these patients and the importance of the pulmonary lesions remove human pneumonia from comparison with experimental and true septicemias in mice, which are very exceptional in man. The blood contains few pneumococci in cases of pneumonia, and chiefly when extrapulmonary complications arise.

Cultures of the pneumococcus on physiological gelatine kept in the icebox will retain their vitality for several years, and their activity for mice for several months. Cultures kept in this way and restabbed monthly, will usually retain their full virulence for mice. Only a minority of the germs oscillate around a virulence. Sometimes this oscillation can be followed—a disappearance and reappearance of the virulence taking place. A study of numerous passages through three species of animals shows that very active pneumococci for mice—their virulence is always stable for this animal—and very active pneumococci having a stable virulence for the rabbit remain the same during their passage through the three species. Pneumococci little active for mice, or at the limit for the rabbit and guinea pig, cease to progress by passage through animals. Pneumococci little virulent for the guinea pig never increase in virulence, no matter which species of animal is used for passages. Pneumococci which are very active for the rabbit, but with a fragile virulence, will, according to the species used for passages, more or less completely recover the activity they possessed when taken from the human organism and which had rapidly decreased.

THE PHYSIOLOGY OF THE THYMUS GLAND.

THE first experimental excision of the thymus gland was done by Estellí in 1845, on dogs, sheep, and calves, which died after a short febrile period. In 1848 Friedleben undertook experiments on twenty-three dogs, all of which tolerated removal of the thymus, so that this observer concluded that the removal of this gland had no more effect upon the

future survival of the animal than removal of the spleen. It is of interest to note that after thymectomy, Friedlaben's dogs offered changes in the bones in respect to the richness of the vascular supply, flexibility, and delay in growth. Almost forty years later Tarulli and La Monaco found by their experimental work that the thymus is not an organ which is essential to life. Very young thymectomized dogs presented muscular weakness, a diminution of the blood mass, and changes in the bones similar to those in rickets. These disturbances disappeared with the growth of the animal. In 1903 Bosch showed that excision of the thymus done by the majority of observers had been incomplete, and in his opinion the dog was most sensitive to removal of this gland. Since the thymus of dogs undergoes a rapid involution from the second month of life, Basch used very young pups, still suckling, and in them he especially met with changes in the bone—delayed ossification and spontaneous fractures. Besides, he noted a decrease of the intelligence, as well as a change in the psychic state of the animals.

More recent observers, Klose and Vogt, experimented on fifty-four dogs ten days old, and following thymectomy they noted three phases: (*a*) a latent phase; (*b*) a phase of adiposity extending from the second to the third month following thymectomy, and (*c*) a phase of thymoprivous cachexia and thymoprivous idiocy occurring in the thirteenth to the fourteenth month. Still more recently, Matti noted that following thymectomy on very young dogs there was a delay in growth, with softening and inflexion of the bones of the limbs and tumefaction of the epiphyseal region. Other changes consequent upon thymectomy were related to changes in the calcareous metabolism, changes in the figured elements of the blood and hemoglobin, in the central nervous system, the spleen, and pancreas, as well as changes in the various endocrine glands, particularly the thyroid, suprarenals, genital glands, and hypophysis.

Intravenous injections of thymus extracts produce, according to Olivier and Schaefer, a fall in the blood pressure due to a substance probably closebe related to choline. Essays at hyperthymization by injections of thymic extract produced symptoms of intoxication with fever, muscular contractions, and a comatous state. After gastric ingestion of a calf's thymus in dogs, Minkowsky noted in the urine of these animals an organic acid at the time unknown, but closely similar in composition to uric acid. Parisot obtained a fall in the blood pressure by injecting thymus extracts in normal children; they obtained the same fall by the use of extracts of lymph nodes.

Experiments on hyperthymization have been carried out by Ranzi and Tandler, who injected extract of sheep's thymus into sheep and following this, they noted an arrest in the growth of the animal; Charrin and Ostrowski, after treating dogs for three to four months with thymus extract, noted the appearance of bone deformities. One practical point to be noted is that up to the present time no averred symptoms of thymoprivous cachexia has ever been observed in the human subject after thymectomy. This fact can be readily understood when it is recalled that the total excision of the gland is difficult to carry out, and on the other hand a very small bit of thymus may regenerate a neothymus capable of assuming all the endocrine functions of the primary organ.

Is Ambidexterity Advisable?

Regnault asks in *La Presse Médicale* for April 21, 1920, xxviii, 24, if it is advisable that one make himself ambidextrous. Plato, Aristotle, and Marcus Aurelius believed that the left hand is defrauded of its birthright by a certain negligence and that it is a duty to restore its equality. Franklin once wrote a whimsical "petition of the left hand to those who superintend the education of man." The same view is held by many physiologists to-day. Nevertheless there is something to be said on the other side. It may be asserted that the work of the left hand is different from that of the right. We need one free hand and one to carry luggage or equipment and hence the right is used for emergency while the left is continuously occupied. Emergencies call for rapid and skilled actions so that the right hand specializes in these, the left arm having the greater endurance. "The right arm is the dynamic, the left the static arm." The left arm is also a reserve arm when the right has become exhausted. It is very difficult to train the left hand to execute rapid, complicated, and delicate maneuvers, but it can sometimes readily reverse the movements customary for the right hand, as in mirror writing. Hence it would appear that to some extent the education of the left hand should consist not of copying the activities of the right but of reversing them. True ambidexterity would seem to imply teaching the left hand to execute individual movements entirely distinct from those of the right so that the individual can perform two radically different tasks at the same time. Taylor, the American efficiency engineer, advocated the cooperative use of the two hands in a single task along strict efficiency lines, in that both hands could be busy at the same moment, and this appears to be the gist of ambidexterity in practice.

Chloroform Syncope Averted by Direct Heart Massage.

Dr. Petti of Buenos Ayres (abstract from *La Semana Medica* in the *Revista Medica Cubana*, November, 1919, xxx, 11), had under his care a woman of 54 who suffered from an undetermined gastric affection. An exploratory laparotomy was therefore undertaken because of the urgency of the symptoms, and by means of the Roth-Drager apparatus 200 drops of ether and 60 drops of chloroform per minute were inhaled for some minutes. When anesthesia was complete, the incision was made, but no blood flowed and patient was found to be pulseless. Artificial respiration brought no positive resule and caffeine was thrown in both subcutaneously and intravenously, also without returns. The diag-

nosis was now made of primary chloroform syncope, and having obtained the sanction of his colleague Galindez, the laparotomy incision was extended by Petti and the hand introduced for the purpose of transdiaphragmatic massage of the heart. That organ was felt to be quite flaccid and bimanual squeezing was at first without response. All at once a powerful contraction was felt, followed irregularly by others, the massage being maintained. At the end of thirty seconds it was tentatively suspended, but it at once became necessary to resume it. Contractions reappeared and with the resumption of massage artificial respiration and tongue traction were added with oxygen inhalations. Massage was not discontinued again until the subject was out of danger. Although the thoracic organs had begun to function normally, the patient was still unconscious from the anesthetic, and this condition persisted long after the physical effects of the anesthesia had worn off. Recovery was delayed by violent delirium necessitating a straight jacket and morphine. The case is believed to have been the first to occur in Argentina of resuscitation from true cardiac syncope.

Lethargic Encephalitis in the Past.

Durodié of Bordeaux, who wrote entertainingly of the antiquity of pandemic influenza some months ago, has been investigating the past for traces of lethargic encephalitis, according to an abstract in the *Progrès Médical* for April 17, xlviii, 16. In Celsus he finds an account of lethargic fever in which high fever and irresistible tendency to sleep were the main symptoms. This affection, whatever it was, was apparently curable by vigorous treatment directed to the cranium—cold applications and revulsives. Nothing more was found until the description of a somnolent fever by Sydenham already noted in the editorial columns of the Medical Record. Over a century later Stoll described what comes nearest to the modern type of the disease, for in one of the cases the subject had not only high fever, somnolence and headache, but diplopia is actually mentioned. An autopsy was performed and it would seem that some meningitis must have been present, although meningeal symptoms are not mentioned during the life of the patient. A still better account from the modern viewpoint was published some years later by Finot. The patient recovered and despite the parallel with the modern case there were also symptoms pointing to meningitis. In 1802 Pinel describes under "slow, nervous fever" a condition which in many respects corresponds to lethargic encephalitis. He takes the term from Huxham, but adds the adjective malignant to characterize the type in question. Rigidity of the muscles of the limbs is one of the symptoms mentioned and one can also make out eye symptoms and myoclonus from the symptomatology. The term lethargic encephalitis was actually used by Franck in 1837 and this author definitely ascribes the disease to epidemics of grippe. The symptomatology is not satisfactory, however, for no eye symptoms are described beyond conjunctival injection and staring look. Durodié concludes that the disease is not new and has always been present off and on. He fails to mention Dubini's electric chorea.

News of the Week.

Blindness in Saharan Oasis Towns.—A medical examination conducted on behalf of the American Red Cross in Algeria and Tunisia recently disclosed the fact that in the oasis towns of the Sahara 10 per cent. of the native population is blind, whereas in France there are only three blind persons for each thousand inhabitants. It showed, too, that the present epidemic of trachoma has made its greatest headway among the younger children, both European and native. At Boufarik 27 per cent. of the European children and 56 per cent. of the native are affected; at Marengo 33 per cent. of the Europeans and 57 per cent. of the natives. Of 6,025 children examined in different parts of Algeria, 1,650, or 24 per cent., were trachomatous. In the large half-European half-native towns along the Mediterranean, 25 persons in each thousand are blind. Dr. Edmond Sergent, Director of the Pasteur Institute of Algiers, in one small settlement in the department of Oran, found 156 trachomatous cases among a total of 236 inhabitants.

Marsh Plagues Menace Italian Charcoal Burners.—According to the Italian and American Red Cross doctors who have been investigating the large number of deaths which have occurred within the last few months among the Italian charcoal burners in the district about Cittâ di Castello, the universal diet of polenta and life in the unhealthy marshes surrounding the town were contributory causes, while pellagra, malaria, and influenza were found to be the direct causes.

American Nurses Wanted in South America.—Miss Agnes S. Ward, superintendent of nurses in the New York City hospitals, has received appeals from Rio Janeiro and Bogota for five hundred women to establish training schools for nurses in South America.

Malaria in Georgia.—For many years malaria has caused a loss of six million dollars, and, among the negroes alone, a loss of over a million and a half working days each year in South Georgia. It infects from 20 to 100 per cent. of the people in the communities, and causes the death of 800 people yearly. Recently the American Red Cross, in cooperation with the State Board of Health, the Georgia Association, the U. S. Public Health Service, and several large corporations, has undertaken an extensive anti-malaria campaign. Moving pictures, lectures and the press have all been utilized in calling the attention of the people to the importance of destroying the mosquito and all its breeding places.

Finger-Prints from Cradle to Grave.—The suggestion has been made by Deputy Police Commissioner Joseph A. Faurot, the finger-print expert of the New York City Police Department, and Acting Captain John H. Ayres, head of the Bureau of Missing Persons, that doctors filing birth certificates be required also to file finger-prints of the new-born baby. This would require a change in the Sanitary Code.

Police Hospital in Brooklyn.—A campaign is to be inaugurated in the near future to raise a fund of $5,000,000 for the purpose of building a hospital of 300 beds for the Police Department. Brooklyn was selected for its location because land is cheaper there than in Manhattan. It is intended to spend

about $800,000 for a site and $2,500,000 for the building and equipment. The balance of the $5,000,000 will be used to establish an endowment $250,000.

Mobile Loses Fight for College.—The Supreme Court of Alabama has decided against Mobile in the matter of the removal of the Alabama Medical College from that city to Tuscaloosa. This decision is said to be final, and presumably closes this hard-fought battle between medical factions and citizens of Alabama.

The Bronx County Medical Society recently announced that it is not supporting the agitation by certain physicians in behalf of the Bronx physician who was recently convicted of manslaughter in connection with the death of a woman patient upon whom he was charged with having performed an "unnecessary operation"—curettage.

Dispensary Service.—The endowment fund committee of the New York Post-Graduate Medical School and Hospital, in connection with the drive of that institution to obtain a two million dollar fund, has made the following tabulations of the total number of visits made last year to six large non-municipal dispensaries in New York City and to the largest dispensary in Boston: Post-Graduate, 173,285; Presbyterian, 67,818; St. Luke's, 65,895; New York, 65,283; Roosevelt, 54,010; Mount Sinai, 189,959, and Massachusetts General, Boston, 152,025. About 4,000,000 visits are made to the dispensaries of New York City each year.

The Yellow Fever Germ.—It is reported from San Salvador that Dr. Salvador Peralta Lagos, a prominent bacteriologist of that city, has isolated a microorganism in yellow fever which presents the morphological and cultural characteristics of the one discovered in Guayaquil by Dr. Hideyo Noguchi of this city.

The Board of Scientific Directors of the Rockefeller Institute for Medical Research recently elected Dr. W. J. V. Osterhout to succeed the late Dr. Theodore C. Janeway as a member of the board. The following promotions and appointments were announced: Dr. Alfred E. Cohn, hitherto an Associate Member in Medicine; Dr. Peyton Rous, an Associate Member in Pathology and Bacteriology, and Dr. Donald D. Van Slyke, an Associate Member in Chemistry, have been made members; Dr. Francis G. Blake, hitherto an Associate in Medicine, and Dr. John H. Northrop, an Associate in Experimental Biology, have been made Associate Members, and Dr. James H. Austin, an Assistant in Medicine; Dr. Harry W. Graybill, an Assistant in the Department of Animal Pathology, and Dr. William C. Stadie, an Assistant in Medicine, have been made Associates. The following have been made Assistants: Miss Helen L. Fales, Chemistry; Dr. Philip D. McMaster, Pathology and Bacteriology, and Miss Marion L. Orcutt, Animal Pathology.

New York State Civil Service Examinations.—The New York Civil Service Commission announces the following examinations, to be held July 31, for: Assistant in Neuropathology, at a salary of $2,160; Associate in Bacteriology, at $2,360; Associate in Internal Medicine and Clinical Pathology, at $2,360; Senior Physician, at $2,000. The positions to be filled are at the Psychiatric Institute, Ward's Island, New York City.

Opposed to Compulsory Health Insurance.—At the closing session of the seventy-sixth annual convention of the American Institute of Homeopathy, held in Cleveland, in June, steps were taken to combat all compulsory health insurance and to wage a campaign to secure recruits in the field of Homeopathy.

Campaign Against Malaria.—In reviewing the work of the Rockefeller Foundation during 1919 President George E. Vincent states that in June, 1919, a conference was held to plan a concentrated campaign against malaria in the Southern States. Representatives of the United States Public Health Service and of the International Health Board of the Rockefeller Foundation were present, and these men worked out a program which was subsequently approved and adopted in ten Southern States. Funds for malaria control operations, he says, are now being appropriated faster than sanitarians can be found to do the work. From the outset the Foundation's International Health Board has entered an area only at the invitation of the Government concerned, its work being based upon the considerations of cooperation with the authorities, the community's assumption of some part of the expense, and an agreement that if the experiment is successful the Government will take over the enterprise as part of its official machinery. It is estimated that 8,000,000 people are within the malaria area covered by the southern part of the United States, Mexico, Central America, the West Indies, and the northern countries of South America.

Prizes for Anesthesia Research.—The National Anæsthesia Research Society has announced prizes aggregating $200 for the best papers on anesthesia research.

Lake Keuka Medical and Surgical Association will hold its twenty-first annual meeting July 29 and 30 at Keuka, N. Y., under the presidency of Dr. Alfred W. Armstrong of Canandaigua.

Miss Julia C. Stimson of New York City has been appointed by Secretary Baker as superintendent of the Army Nurse Corps, with the relative rank of Major. Miss Stimson, who was graduated from the New York Hospital Training School for Nurses, was chief nurse of the American Red Cross in France, and later director of the Army Nurse Corps, A. E. F. She received the D. S. M. and the British R. R. C.

Dr. Serges Voronoff of Paris, who is known for his advocacy of testicular grafts for the rejuvenation of the aged, has arrived in this country. The newspapers report that he wants to use the "interstitial glands" of men rather than monkeys, and in the absence of volunteer donors is hoping that there will be some electrocutions soon whereby he may obtain material.

Medical Society Elections.—THE RHODE ISLAND MEDICO-LEGAL SOCIETY, at its annual meeting held at Providence in June, elected the following officers for the ensuing year: *President,* Henry D. C. Dubois, Providence; *Vice-President,* Dr. Roswell S. Wilcox, Providence; *Secretary-Treasurer,* Dr. Harry S. Flynn, Providence.

THE WOONSOCKET (R. I.) DISTRICT MEDICAL SOCIETY, at its meeting held June 23, elected the following officers for the coming year: *President,* Dr.

R. G. Reed; *Vice-Presidents*, Dr. A. A. Weeden and Dr. W. C. Rocheleau; *Treasurer*, Dr. A. Constantineau; *Secretary*, Dr. T. F. Baxter.

THE NEW BEDFORD (Mass.) MEDICAL SOCIETY, at its recent meeting elected the following officers for the ensuing year: *President*, Dr. Frank M. Howes; *Vice-President*, Dr. Samuel K. Segall; *Treasurer*, Dr. Charles S. Lipsett; *Secretary*, Dr. Charles Shanks; *Recording Secretary*, Dr. Charles C. Persons.

THE NORTH CAROLINA MEDICAL, DENTAL AND PHARMACEUTICAL ASSOCIATION, an organization of colored physicians, dentists, and pharmacists, held its thirty-first annual session recently at Rocky Mount. The following officers were elected for the ensuing year: *President*, Dr. W. C. Strudwick, Durham; *First Vice-President*, W. H. Williams, Goldsboro; *Second Vice-President*, B. J. Burnett, Rocky Mount; *Secretary-Treasurer*, Dr. Clyde Donnell, Durham.

THE OKLAHOMA HOSPITAL ASSOCIATION at a recent meeting held at Oklahoma City elected the following officers: *President*, Dr. Fred S. Clinton, Tulsa (re-elected); *First Vice-President*, Dr. J. A. Hatchett, El Reno; *Second Vice-President*, Dr. A. J. Risser, Blackwell; *Executive Secretary*, Paul J. Fesler, Oklahoma City; *Treasurer*, Dr. J. H. White, Muskogee.

THE SOUTH DAKOTA STATE MEDICAL ASSOCIATION, at its thirty-ninth annual session held recently at Sioux Falls, elected the following officers for the coming year: *President*, Dr. H. T. Kennedy, Pierre; *First Vice-President*, Dr. G. S. Adams, Yankton; *Second Vice-President*, Dr. G. G. Cottam, Sioux Falls; *Secretary-Treasurer*, Dr. Frederick A. Spafford, Flandreau.

Charitable Bequests.—By the terms of the will of the late Mrs. Luisa de Navarro of New York City it was provided that the bulk of her estate shall be used in establishing a hospital in this city for needy Spanish-speaking peoples. One share each of her residuary estate was left for the work for the blind and the work for the deaf and dumb in Mexico City.

The Bowdoin Medical School has received notice that the late Dr. Frank Byron Brown of Boston, of the Class of 1887, has bequeathed to the school one thousand dollars.

Obituary Notes.—Dr. ISRAEL ALBERT LOVELAND died suddenly at his home in Keene, N. H., July 5, at the age of seventy. He was graduated from Dartmouth Medical School in 1875 and practised in Westmoreland and Gilsum counties until his retirement in 1909. He was a member of the American Medical Association.

Dr. WALTER W. SCOFIELD of Dalton, Mass., died July 6 at the age of sixty-six. He was graduated from the Albany Medical College in 1882. He was a member of the American Medical Association.

Dr. ERNEST K. PARKER of Springfield, Mass., was found dead in his office July 9.

Dr. THOMAS J. BUCHANAN of Toms River, N. J., died July 15 from the effects of *x*-ray burns received fifteen years ago. Dr. Buchanan, who was sixty-one years of age at the time of his death, was graduated from Jefferson Medical College, Philadelphia, in 1889, and was one of the pioneers in the study of the *x*-ray in the treatment of malignant growths. Five years ago he established the Toms River Hospital, but continued his connection with Jefferson Hospital, to the service of which he had long been devoted. He was a member of the American Medical Association and of the Medical Society of the State of Pennsylvania.

Dr. MATHILDA ANNETTE PELHAM died at her home in New York City July 16. She was graduated from the New York Medical College and Hospital for Women in 1900, and was a member of Homeopathic Medical Society of the State of New York.

Dr. CHARLES W. BRANDENBURG of New York City died July 17 at the age of sixty-nine. He was graduated from the Eclectic Medical College of the City of New York in 1891, in which institution he taught for many years.

Correspondence.

PELLAGRA AND THE "SORE MOUTH" OF DOGS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—In 1884 I had a very close friend living in Galveston, Texas, who had a malady that baffled the skill of our best medical talent. He died. Just what his death certificate stated as to the cause of death I know not, and it matters little, for each physician consulted differed from the preceding one as to the nature of his disease. Some twenty-five years afterward pellagra was found to be prevalent in this country and it was only then that I became convinced just what my friend died from.

As a physician now I am seeing and treating many cases of pellagra, and I want to say that I am not willing to accept what has been stated as to the etiology. My friend of 1884 had lived a life of ease and had lived pretty much all his life on a diet that Goldberger has recommended as preventive or curative, yet he contracted the disease and died when it was unknown in this country.

Again, I have seen the disease treated and I have seen treatment refused, and as an observing man I am inclined to the belief that the one does as well as the other. You let a well informed practitioner practise in a community where it exists and I think he will draw the same conclusions, unless he has a conceited ego as to himself or his remedies.

Now for a little story to be taken for what it is worth: Some five years ago I bought a very fine dog in New Jersey and brought him to Texas. The second year in Texas he died with what the veterinarian pronounced "sore mouth." Now, a dog dying with sore mouth was as novel to me as was a man dying with pellagra. I noticed that my dog was losing hair from his front legs (paws). In commenting on the cause of my dog's death with my friends I find that it is a relatively common disease, and that there is a large strip of country east of town on a branch called the Tehuacana where they cannot have dogs, as they all die of the sore mouth. Now, this strip of country has furnished some 40 or 50 pellagrins to the nearby doctors for treatment. The question is, how much the dog plays in the etiology, or are they both, man and dog, infected from the same source, or is the

sore mouth a different disease and is it a coincidence that they are found here side by side?

M. B. SAUNDERS, M.D.

WACO, TEXAS.

THE TWO CLASSES OF PHYSICIANS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—It hardly seems to me that the contributor of the article, "The Two Classes of Physicians," in your issue of June 26 has shown a proper appreciation of the viewpoint, nor a proper respect for, or valuation of the personality of the contributor of the article, "Some So-called Advances in the Practice of Medicine," of your issue of June 5, in his recent rejoinder.

It certainly would not seem just to place Dr. Beverley Robinson, in the category described as, "those who do not care to make accurate diagnoses but by their presence at the bedside, give patients a false sense of security, thereby depriving them of efficient medical aid, or often deferring it until the patient's life is endangered," etc.

To many of us who have borne the heat and burden of the day, such wholesome reflections as come from the mature pen of Dr. Robinson, who has so long practised the art as well as the science of medicine, are refreshing as free from the cant of much that in modern medicine is pure gallery play, and we recall with affectionate remembrance the bedside assurances of comfort as well as security that came from the sympathetic as well as sincere personalities of the many men who were Dr. Robinson's confrères of the old school, none of whom I am sure could have been put in the classification referred to, to those who deserve such classification, Dr. Robinson's reflections in no way refer.

J. B. CUTTER, M.D.

147 BUENA VISTA AVENUE,
SAN FRANCISCO.

OUR LONDON LETTER

(From Our Own Correspondent.)

LONDON, June 27, 1920.

Meeting of the British Medical Association.—By the time this letter is published the eighty-eighth annual meeting of the British Medical Associaion will have come and gone. As a matter of fact, the representative meeting begins in the Examination Halls at Cambridge to-day. The meeting proper commences on Tuesday, June 29, under the presidency of Sir T. Clifford Allbutt, who will deliver his address on that day, preceding the meetings of sections. The annual dinner will be held in the Hall of St. John's College on the evening of July 1. The popular lecture will be given by Dr. G. S. Graham Smith, F.R.S., on "Flies" on July 2. Laboratory and clinical demonstrations will be given on three consecutive days from 2.30 to 4.30 P. M., commencing on June 30.

The scientific business of the meeting will be conducted in twelve sections, which will meet on the days indicated from 10 A. M. to 1 P. M., the demonstrations following in the afternoon.

The meeting of the Association promises to be one of the most successful ever held from the points both of view of attendance and of the importance of the subjects discussed. Cambridge is a convenient place in which to hold it and a great asset of the meeting is the choice of president. Without hyperbole Sir T. Clifford Allbutt may be termed the grand old man of the British medical profession. He is a speaker of rare aptitude and eloquence and in every respect adapted for the position of president.

Ex-Service Men Suffering from Tuberculosis.—The Minister of Pensions has considered the recommendations of the Inter-Departmental Committee on Tuberculosis, 1919. He has, as a result decided that men suffering from pulmonary tuberculosis, which is admitted to be attributable to or aggravated by service, and who on the conclusion of treatment in a sanatorium, undergo a prescribed course of extended treatment, combined with training in a training colony, shall be granted pension at the 100 per cent. rate for six months from the date of leaving the colony, and thereafter at the rate corresponding to the degree of disablement, but not less than 50 per cent. throughout the subsequent period of two years. The award will be subject to the condition that the pensioner presents himself when required in order that the Ministry may be advised as to his condition from time to time, and as to the need for further treatment. The arrangement will apply also to the pensioner who is not recommended for a further course in a training colony, the 100 per cent. pension in his case commencing as from the date of his discharge from the sanatorium.

Tuberculosis and the Workers.—At the Tuberculosis Congress held in Leeds and which was opened on May 13 last Dr. A. Trimble of Belfast said he believed tuberculosis was not caused so much by the actual industrial occupation of the workers as by the terms and conditions under which, and the wages for which they worked. Infection, unless from a massive dose, did not take place to any appreciable extent after childhood. Comparing the tuberculosis rates in England and Ireland, he ascribd the lower figures of the former largely to better education. In Belfast, where women were employed industrially in large numbers, the female death-rate from tuberculosis had always been as high as that of the male. It was not purely a war phenomenon. No woman should be expected to work in both home and factory. Workers should not wait until the classical features of consumption were forced upon their attention, but should look out for tiredness and loss of appetite. Then if only the tired worker could get proper rest, though no doctor or nurse went near him, or her, probably 90 per cent would be automatically cured. Professor Benjamin Moore said that while he did not wish to stand as a strong protagonist in favor of the infection side of the problem, it was necessary to remember that Pasteur and Koch had lived. The cost of making healthy all those invalided by tuberculosis would be a sound piece of expenditure. Since more people died at fifty of tuberculosis than at twenty he was convinced that many picked up the infection in the workshop. The textile workshops, where still air was necessary, were particularly risky in the matters of infection and depressing

effect, because of the difficulty of ventilating them properly. He was convinced that workshop conditions themselves were quite twice more detrimental than all the other evils of city residence taken together. Colonel Nathan Raw, M.D., M.P., pointed out that tuberculosis is never an inherited disease, but always an infectious one. The tuberculosis problem was a social one. The energy of the state must be chiefly directed toward prevention. The reason why sanatorium treatment under the Insurance Act had not come up to expectations was largely the shortness of stay in these institutions, this being due to the fact that they were frequently dull and uncomfortable places. The Government now proposes to set up ten village settlements where consumptives can live for years with their families and work at suitable occupations as far as they are capable. Preference would be given to ex-soldiers and sailors, who would be given full pensions for the first year. Afterwards, when at work they would receive the full rate of wages for the number of hours they could work, which on the average was about 50 per cent. of what a heatlthy man could do, and these wages would be supplemented by an ample subsidy.

The Number of Panel Patients Allowed to One Practitioner.—The Middlesex Insurance Committee decided recently that a doctor employing a permanent assistant should be allowed to have 5,000 panel patients. The regulations allowed maximum of 3,000 panel patients per doctor. If he had a partner they could have 5,000 on the list and the committee thought that if a doctor employed an assistant he should be allowed 2,000 extra patients, making the total 5,000. In reply to criticism that the number was too large, Mr. Cooper said it had been found that the larger the panel the more satisfactory was the attention they received.

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 8, 1920, clxxxiii, 2.

1. Prostatectomy. Henry G. Bugbee.
2. Progress in Surgery. E. H. Risley.

1. Prostatectomy.—H. G. Bugbee holds that any surgical procedure of import passes through three stages in its development: *First*, the recognition of a pathological condition, and preliminary crude attempts at its relief; *second*, widespread experimentation, the discovery of a pathological entity, the presentation of numerous operative procedures, and the ultimate formation of a fundamental surgical foundation; *third*, crystallization, definitely placing the operature procedure in the realm of surgery, where it will stand as a logical and sound method of relief, to be modified from time to time, but remaining essentially the same in principle. The operative relief of prostatic obstruction of the vesical neck presents an admirable example of these steps, the history of which is given in the more important details. It is doubtful if any other surgical procedure will ever have such an interesting and striking history in its development, for the progress in the treatment of this class of cases has accompanied and possibly has largely accounted for the placing of urology upon a definite footing as a special branch of surgery. Unquestionably diagnosis is responsible. The possibility of studying the urinary tract as an entity and its relation to the human organism gave the true light to vesical obstruction, and made the second stage of its surgical development possible. The third stage has now been reached. The writer classifies the cases that fall within the realm of surgery—and these are the majority—as fibro-adenomatous hypertrophy, fibrous prostate, carcinoma, and muscular hypertrophy. The first and most important step in the handling of a prostatic case is unquestionably the diagnosis of the lesion, which cannot often be made at one examination. The immediate indication is to remove the urgent symptoms, which requires excellent judgment. A patient should be prepared for examination by slowly relieving the pressure, increasing elimination from the bowels, regulating the diet, and employing urinary antiseptics. When the local and vesical congestion has been sufficiently reduced, a cystoscopic examination is made. The intravesical surface of the prostate, as well as the bladder, should be studied in every case where it is possible to pass an instrument. Delicate manipulation is essential. Rectal palpation with the bladder empty is essential, and palpation with the cystoscope in position gives a very definite idea of the amount of intervening tissue. The patient as an individual must be studied—his medical history, habits, environment, general physical examination, and lastly, his urological condition, must be taken into account in order to give him his just due. The diagnosis having been made, the next step is to increase elimination by improving the drainage of the urinary tract. (The further discussion of the subject will be given in a subsequent issue of the *Journal*.)

New York Medical Journal.

July 10, 1920, cxii, 2.

1. Chronic Intestinal Toxemia. Anthony Bassler.
2. Constipation and the Effect of Purgatives on Heart and Vessels. Otto Lerch.
3. Dietary Treatment of Constipation. Roy Upham.
4. Choledochitis, Cholecystitis and Cholelithiasis (Concluded) B. B. Vincent Lyon.
5. Fibroma of the Mesentery. A. Jacoby.
6. Peptic Ulcer. Joseph S. Diamond.
7. Vomiting from a Surgical Viewpoint. A. Wiese Hammer.

7. Vomiting from a Surgical Viewpoint.—A. Wiese Hammer considers vomiting as often a cardinal symptom of the first magnitude. He attempts to dispel the too frequent thought that vomiting is an unimportant symptom, and to point out the importance of using care in the interpretation of all cases of vomiting, suggesting that where the causes are not plainly indicated an investigation should be made of every organ and bodily function so as to determine the true cause of this important symptom.

Journal of the American Medical Association.

July 10, 1920, lxxv, 2.

1. Principles of Peripheral Nerve Surgery. Dean Lewis.
2. Clinical Experience with a Standardized Dried Aqueous Extract of Digitalis. Howard F. West and Joseph H. Pratt.
3. Ether-Oil Colonic Anesthesia. Walter Lathrop.
4. Relation of Quantitative Methods to the Advance of Medical Science. Eugene S. Kilgore.
5. Misleading Symptoms and Roentgen-Ray Findings in Suspected Mastoid Abscess. Richmond McKinney.
6. The Treatment of Chronic Indigestion in Childhood. John Lovett Morse.
7. Management of Acute Appendicitis Developing in Latter Weeks of Pregnancy: Report of Case Treated by Cesarean Section and Appendectomy. Norborne Page Cocke and James M. Mason.
8. Control Methods in the Treatment of Diabetes Mellitus. Solomon Strouse.
9. Relation of Acquired Food Dislikes of Childhood to Diseases of Middle Life. C. Hilton Rice, Jr.
10. Plastic Surgery of the Face: Its Recent Development and Its Relation to Civilian Practice. M. F. Arbuckle.
11. The Catalase Content of the Blood in Different Types of Anemia. E. B. Krumbhaar and John H. Musser.
12. Gaucher's Disease: Report of a Case. S. W. Sappington.

1. Principles of Peripheral Nerve Surgery.—Dean Lewis. See MEDICAL RECORD, May 29, p. 935.

2. Clinical Experience with a Standardized Dried Aqueous Extract of Digitalis.—Howard F. West and Joseph H. Pratt. See MEDICAL RECORD, May 8, p. 808.

3. Ether-Oil Colonic Anesthesia.—Walter Lathrop. See MEDICAL RECORD, May 29, p. 938.

4. Relation of Quantitative Methods to the Advance of Medical Science.—Eugene S. Kilgore. See MEDICAL RECORD, May 8, p. 809.

6. The Treatment of Chronic Indigestion in Child-

hood.—John Lovett Morse. See MEDICAL RECORD, May 15, p. 844.

7. Management of Acute Appendicitis Developing in Latter Weeks of Pregnancy.—Norborne Page Cocke and James M. Mason. See MEDICAL RECORD, May 22, p. 892.

8. Control Methods in the Treatment of Diabetes Mellitus.—Solomon Strouse holds that a bird's eye study of the diabetic problem justifies the following conclusions: (1) The diabetic, like any other patient, must be considered as an individual; (2) the history, physical examination and laboratory data are equally important in establishing a basis for treatment; (3) treatment consists of rendering a patient free from sugar and acetone bodies and increasing his tolerance; (4) the patient's cooperation is essential to any permanent results; (5) under such a plan of treatment the lives of some diabetics will be saved, of many will be prolonged, and of most will be freed from distressing complications.

9. Relation of Acquired Food Dislikes of Childhood to Diseases of Middle Life.—C. Hilton Rice, Jr. See MEDICAL RECORD, May 15, p. 846.

10. Plastic Surgery of the Face: Its Recent Development and Its Relation to Civilian Practice.—M. F. Arbuckle.

11. The Catalase Content of the Blood in Different Types of Anemia.—E. B. Krumbhaar and John H. Musser.

12. Gaucher's Disease.—S. W. Sappington reports a case of Gaucher's disease which he says is the twenty-fifth on record in which the diagnosis has been established by histologic examination. The patient was fifty years of age, the oldest recorded. Some positive staining reactions were obtained with concentrated Herxheimer's solutions of scarlet R and sudan III. The significance of these results, however, is not clear.

The Lancet.

June 19, 1920, cxcviii, 25.

1. Hunterian Lecture on the Influence of Nerve Impluses on Visceral Disorders. H. Tyrrell Gray.
2. Some Observations on the Investigation and Treatment of Nephritis. H. MacLean and A. E. Russell.
3. The Factor of Fever in the Diagnosis of Cancer. W. Gordon.
4. Cerebral Reactions Following Injections of Novarsenobenzol. With a Record of Two Fatal Cases. Frederick G. Hitch.
5. Traumatic Rupture of the Heart. R. K. Howat.
6. The Hygiene of the Feet and Physical Efficiency. Frederick Johnson.

3. The Factor of Fever in the Diagnosis of Cancer.—W. Gordon calls attention to this uncommon accompaniment of cancer, the chief importance of which depends on the liability to forget it. If fever be forgotten, cancers may be diagnosed as inflammatory lesions, and inflammatory conditions secondary to cancers may have their cause overlooked. The practical problems which present themselves in connection with fever in cancer are three: (1) If fever is present, is it caused by uncomplicated cancer? (2) If cancer is present and fever also, is the fever due to the cancer itself or to some inflammatory complication? (3) If an inflammatory lesion is present, causing fever, is cancer also present? Despite teaching to the contrary, cancer is not necessarily the afrebile condition it has so generally been believed to be. There is now evidence that rapidly growing cancers, such as round-celled sarcomata and the softer varieties of carcinoma, in certain organs, can cause fever in the absence of an inflammatory complication. This seems to be the case in six situations at least, viz., in the liver, stomach, suprarenals, long bones, lungs with mediastinum, and breast, precise evidence being limited to cancer of the liver, the stomach, and the long bones. The writer denominates this fever of cancer uncomplicated by inflammatory lesion as "growth fever," a name which only commits one to the assumption that the fever is produced by some process of the growth itself, apart from inflammation; and the fever caused by any inflammatory complication of a cancer he calls "complication fever." "Growth fever" has hitherto been explained as "due to the rapid growth and multiplication of the cells," to "an extreme activity of cell growth." While this may well be the cause, there are other possibilities to be considered. It has been suggested that in a rapidly growing cancer the vitality of the new cells is low, and the fever may be due rather to absorption of dead material than to activity of growth. Another suggestion which has been offered is that, as in rapidly growing cancer hemorrhage is common, the absorption of this blood may account for the fever. Gordon classifies cancers according to the type of fever occasionally found in conjunction therewith, as: A. *Either growth fever or complication fever.*—Liver, stomach, suprarenals, lung with mediastinum, long bones, breast (rarely). B. *Complication fever only*—Gall-bladder, bile-ducts, large intestine, appendix, uterus, fallopian tubes, ear, glands in neck, tongue, lip, esophagus, pancreas, peritoneum, rectum, eye, larynx, thyroid. C. *Neither form of fever.*—Kidney, vulva, testis, penis, urethra, parotid, jaw, brain, spine, skin, muscles, heart, and pericardium.

4. Cerebral Reactions Following Injections of Novarsenobenzol.—Frederick G. Hitch presents the histories of two typical cases. Both patients were well-developed young adults, apparently healthy except for their specific infection, and presented neither in their past history nor present physical condition any of the recognized contraindications to arsenical treatment; both developed the usual symptoms of epileptiform convulsions and coma, and both terminated fatally. The study of these cases convinces the writer that the widespread capillary hemorrhages, demonstrated by microscopic sections, afford a clear anatomical basis for the hypothesis put forward (by Surgeon Commander Dudley) that the symptoms are due to anoxemia, that this anoxemic condition is mainly produced by interalveolar hemorrhage into the lungs, and to a less extent by interstitial capillary bleeding into other organs, and that the *continuous* administration of oxygen (as carried out by Surgeon Lieutenant Commander Parnell) offers the best hope of recovery in these unfortunate cases.

British Medical Journal.

June 12, 1920, 1, 3102.

1. The Correlation of Function: With Special Reference to the Organs of Internal Secretion and the Reproductive System. A British Medical Association Lecture. W. Blair Bell.
2. The Commoner Complications of Bacillary Dysentery in Military Practice. Philip Manson-Bahr.
3. Instinct and Hysteria. V. T. Carruthers.
4. The Use of *X*-rays as Immunity-Raising Agents, Before and After Operation for Cancer. Francis Hernaman-Johnson.

2. The Commoner Complications of Bacillary Dysentery in Military Practice.—Philip Manson-Bahr reminds the reader that the complications of bacillary dysentery have received scant attention from medical writers in the past, and proceeds to consider some of the complications which have arisen, since the recent campaigns in the East, apparently due to the absorption of the toxins of the *Bacillus dysenteriae*. Of these complications, monarthritis, or more generally polyarthritis, have been frequently noted during the Egyptian and Palestine campaigns. The majority of the cases of arthritis encountered during the course of bacillary dysentery have been those previously injected with antidysenteric serum, though arthritis was observed twice in cases untreated by serum of any kind. From personal observation the writer classifies arthritis occurring subsequent to the administration of antidysenteric serum, either by the subcutaneous or the intravenous route, under the two headings: (1) Fugitive polyarthritis, with or without joint effusions, occurring during the course of "serum sickness." (2) Intractable polyarthritis, with effusion into joints and wasting of adjoining muscles, apparently due to absorption of dysenteric toxins. He mentions such infrequent complications as iridocyclitis and parotitis. It is reasonable to suppose, he holds, that there exists an idiopathic dysenteric arthritis due to the absorption of specific dysenteric toxins from the bowel wall and their excretion (as is known to be the case during the absorption of toxins of septic and gonorrheal origin) into the joint cavities. In the same manner the arthritic symptoms occurring during the course of serum sickness may be justly regarded as

representing an effort on the part of the organism to rid itself of toxins peculiar to horse serum; and it is possible that a particularly high percentage of these toxins, even when introduced in moderate doses into a subject already suffering from dysentery in which *per se* arthritis is not an infrequent complication, may not only determine the onset of the condition, but also the amount of disintegration of the joint thus produced.

3. Instinct and Hysteria.—V. T. Carruthers, in a brief discussion of this subject, expresses the opinion that men and animals alike are swayed by a purposive impulse in their fundamental activities, and this impulse, or teleological striving, can be studied in the conative aspect of the instincts. In many animals instinctive behavior consists in quite simple reactions, but one also finds animals, especially insects, in which the behavior is extremely complicated. One does not know in the least how this complexity of animal behavior is produced, but there is reason to believe it is due to something different from human intelligence. In man the complexity of his instinctive behavior is due partly to intelligence and partly to the same cause that modifies the primitive responses of the animal. It is here suggested that certain functional diseases often represent the modified conative activity of primary instincts—especially of flight, self-abasement and self-display; and that "hysteria" is an example in man of the complications, which conations, originally simple, are known to undergo in animals.

British Medical Journal.

June 19, 1920, i. 3103.

1. On the Passive Mechanical Factor in Heart Disease: Its Influence and Management. Alexander Blackhall-Morison.
2. On Deficiency Disease: With Special Reference to Gastrointestinal Disorders. Robert McCarrison.
3. Poisoning by Arseniuretted Hydrogen. Thomas H. Wignall.
4. Ruptured Malarial Spleen: Splenectomy: Recovery. Cyril A. Raison.
5. Syphilis Insontium. J. C. McWalter.

1. On the Passive Mechanical Factor in Heart Disease.—Alexander Blackhall-Morison defines the "passive mechanical factor in heart disease" as the conditions which promote or impede the effective exercise of the active factor—the cardiac muscle. The matter so defined is, obviously, both physiological and pathological. The combination of exocardial and endocardial passive mechanical factors finds a place in many cases of heart disease—in some the one class and in others the other preponderating. The management, therefore, of the problems involved is, like the factors themselves, one which combines dealing with both. Thus the thoracotomy or other method used for the removal of exocardial impediment may be necessary to the successful treatment, by appropriate agents, of disorders due to or aggravated by defects of passive endocardial factors. In considering the passive exocardial factors, it was found that to influence beneficially the action of the cardiac muscle it was necessary to deal with impediments to its action outside the heart itself. In treating the endocardial passive factor it can be influenced only by action upon the cardiac muscle and the blood content of the heart. In the management of the passive mechanical factor in heart disease, a maintenance of efficient respiration is of the first importance. One of the earliest evidences of imperfect circulation through the heart is some degree of embarrassment of respiration, of what has conveniently been called breathlessness and technically dyspnea. Regardless of its degree, the condition has to be dealt with on three lines, namely, by posture; in certain cases by rhythmical manual expiratory pressure and it may be also by manipulatory inspiration, in short, by artificial respiration; and by strychnine. As regards the blood content factor, no one can have removed a large clot from one of the chambers of the heart *post mortem*, and witnessed its immediate shrinkage from elasticity, without being struck with the importance of this mechanical factor in dealing with the engorged heart. This effect, naturally, is most evident in the thinner and more distensible auricle, in which the shrinkage reminds one of the contraction of the uterus after removal of the placenta or of blood clot. With such cardiac dilatation during life valvular incompetency frequently occurs, although even this has been denied by some. While direct cardio-puncture, which has been called a "freak operation," may not be frequently justifiable, venesection still has a place in the rational treatment of heart disease. In the presence of cyanosis venesection is certainly indicated, and the writer has practised it with benefit under these circumstances. Venesection, like cardiolysis, may be a necessary preliminary to the effective use of that agent, indispensable to the cardiologist for action upon the passive endocardial factor, namely, digitalis. The most striking results of digitalis are unquestionably observed in the control by it of the paroxysmal tachycardial irregularities of the heart's action found in association with mitral valvular disease, whether obstructive or regurgitant. The heart slows, the tumult is stilled, and quiet reigns. But it is not only in tumult with irregularity, but in tumult—that is, acceleration—with regular action, that this drug is found to still the storm. The regular failing aortic valvular heart may be succored, as well as the irregular failing mitral heart, and the failing heart which is neither aortic nor mitral, but has a sound valvular apparatus. When digitalis lays the general auriculo-ventricular storm, it lays wholly or in great measure both the auricular and ventricular tumult. What is said of digitalis applies to the whole group of which it is *facile princeps*, strophanthus alone approaching it in power and reliability.

5. Syphilis Insontium.—J. C. McWalter cites the case of a married woman, in the early thirties, the mother of four healthy children and no history of abortion, who expected to be confined the following month, and who consulted him about an ulcer at the angle of the mouth. Pathological examination revealed that the sore was teeming with *Spirochaeta pallida*. The husband, upon examination, was absolved from responsibility, no history or signs indicating syphilis. Further investigation of the woman's history showed that she had kissed a child who had an acutely virulent sore on its mouth. On consultation it was decided that salvarsan treatment might be risky, in view of the expected early confinement, and the patient was put on an ordinary course of mercury, cinchona, and iodides. The sore rapidly healed, and in four weeks she was delivered of a fine infant, which exhibited no signs of syphilis at birth, or for four weeks afterwards. In the fifth week, however, the child showed slight but unmistakable signs of congenital syphilis, which cleared up rapidly under mercurial treatment. This case proves: (1) Infection of a mother with syphilis in the eighth month of pregnancy results in infection of the child; (2) The syphilis in the child is of a milder form and develops later than ordinary congenital syphilis; (3) Infection of the mother with syphilis in the later months of pregnancy may have no deleterious effect on her confinmeent; (4) There are some cases of syphilis insontium capable of the most rigid proof.

The Canadian Medical Association Journal.

June, 1920, x, 6.

1. Sciatica from an Orthopædic Standpoint. J. Appleton Nutter.
2. Traumatism of the Spleen. E. L. Connor.
3. Syphilis and Gonorrhea from the Public Health Point of View. R. R. McClenahan.
4. A Plea for the Sphincter Ani. F. N. G. Starr.
5. Some *X*-ray Plates and Their Significance. G. S. Gordon.
6. The Summer's Experience with Infectious Diarrhea. Edward A. Morgan.
7. The Need of Psychopathic Hospitals in Canada. Gordon S. Mundie.
8. Medical Board Work on Psychiatric Cases. H. Dover.
9. Some Observations on the Occurrence of Acidosis After Anæsthesia. Edith M. Ross.
10. Prolongation of Life. Adam H. Wright.

1. Sciatica from an Orthopædic Standpoint.—J. Appleton Nutter, after recounting very briefly some of the views regarding the origin of sciatica, and reporting four cases traceable to remediable orthopedic conditions, such as faulty posture, flat feet, arthritis deformans of the spine, cites other causes of the disease. Lesions of the hip-joint (among which arthritis deformans is the most commonly found); new growths; tuberculosis; injury of the bones of the lower spine

or pelvis; multiple sarcomatosis with sciatica due to pressure in the pelvis; any form of pelvic disease capable of causing pressure on the sciatic nerve, to which may be added gravid uterus; psoas abscess; varicose veins inside the sheath of the nerve; syphilis, which is more likely to be present as a meningitis, as an arthritis of the lower spine, or as a periostitis, though true gummatous neuritis is possible; gonorrhea, acting commonly through the medium of an arthritis, though gonorrheal neuritis has been described; and variations in the lower spine may give rise to sciatica. In the differential diagnosis the writer warns of the pains of tabes. Sciatica is also fairly confused with hip-joint disease. It sometimes simulates the painful spasm of the peroneal muscles which so often accompanies a rigid flat foot. The pain seen in the calf of the leg which accompanies intermittent claudication has been mistaken for sciatica, as also that due to varicose veins. The treatment depends upon the cause. Tonsils, if diseased, may need removal, abscessed teeth may need extraction, a chronic prostatitis may need treatment. An arthritic spine needs fixation, a relaxed sacro-iliac joint should have efficient support, disease of the hip-joint calls for immobilization. All these measures will be found to have a marked effect upon the pain. For the affected limb absolute rest is essential, pillow fixation as a rule being found useful. For the pain, acetyl-salicylic acid is useful, as also the salicylates and drugs of the coal-tar class, such as phenacetin. Counter-irritation over the course of the nerve is valuable. The Paquelin cautery is very useful and should be used only very superficially. The application of mustard and the use of blisters may give relief. The injection of sterile water, alcohol, or weak cocaine solution into or beside the nerve is not often practised, as permanent damage may be done. Nerve stretching is no longer in favor, and properly so in the writer's view. In subacute cases baking and massage will generally be found useful. Hydrotherapy is sometimes of value, but like electricity more often gives only temporary relief. The injection of sterile water into the epidural space of the sacral canal has given relief which has lasted several hours or even longer. It is a procedure easy of accomplishment and unlikely to result in damage to the nerve.

Western Medical Times.

June, 1920, xxxix, 12.

1. The Duodenal Tube in Diagnosis and Treatment of Gall Bladder and Biliary Diseases. Samuel Weiss.
2. Miss Allen, Artist; Assistant to the Plastic Surgeon. Miss Dora Simpkins.
3. The Value of the "No Good"—The Symptoms of Varicose Veins. Douglas H. Stewart.
4. Role of the Starches in the Production of Dyspepsia. A. W. Herr.
5. Appendicitis with Abscess. A Clinic at Broad Street Hospital, New York City. Robert T. Morris.
6. Edema in Children Due to Fat Starvation. A. B. Grubb.

6. Edema in Children due to Fat Starvation.—A. B. Grubb is of the opinion that marasmus and "essential edemas," in children, are often due to fat starvation and will respond to butter and cream within a few days.

Schweizerische medizinische Wochenschrift.

April 22, 1920, l, 17.

The Wildbolz Reaction.—Lanz refers to the reaction noted some months ago in the MEDICAL RECORD and known today as the "own urine" reaction. It is used only in the tuberculous and chiefly to distinguish the active from the latent form of the disease. The urine of the active tuberculous subject contains an antigan, it appears, and if inoculated into the patient's integument gives a reaction comparable with that produced by tuberculin. The author has tested it in nearly 100 cases. Attempts to sensibilize the patient to repeated injections met with conflicting results. The author gave the reaction a thorough try-out, and his conclusions were that negative results seem to exclude the existence of tuberculosis, although exceptions occur when active foci have a very thick capsule. Positive results show that foci exist in the body, but a given focus cannot be accused unless it be shown that no other exists in the body. The author made a special research into certain paratuberculous affections, such as Poncet's tuberculous rheumatism and chronic ankylosing spondylitis. His experience, while not conclusive, leads him to believe that in some at least of these cases there is a tuberculous etiology. This is equally true of Hodgkin's disease, which seems to be sometimes tuberculous, sometimes heredosyphilitic, and doubtless sometimes a mixture of the two, without reference to other causation.

Journal de Médecine de Bordeaux.

April 10, 1920, xcl, 7.

Acute Diffuse Epidemic Encephalomyelitis.—Creyx under this designation describes lethargic encephalitis with especial reference to the myoclonic deliriant form. As far back as 1917 Cruchet had isolated 9 clinical types although the material for analysis at the time was but 40 cases. Already the lethargic was regarded as but one of the types. Three years have now elapsed and the justice of Cruchet's analysis has been amply borne out. There was for a long time, however, a tendency to see but one form—the lethargic—and it is only by degrees that the original Cruchet conception has been rehabilitated. Netter with his vast personal experience has been slowly but surely recognizing the polymorphous character of the disease, and it would appear that at the outset the typical lethargic case must have been greatly in the ascendant. But according to Achard it is more likely that the atypical case at first escaped diagnosis altogether. Both theories are doubtless sound. The author gives a case of the myoclonic, deliriant type and his comments on diagnosis are of interest. The patient presented evidence of syphilis in a positive Wassermann and history of an abortion so that cerebral syphilis had to be excluded. This was done by the treatment test, which remained quite negative for the cerebral symptoms. Delirium tremens was closely simulated, so that had the patient been a hard drinking man instead of an abstemious woman another source of confusion would have arisen. Uremia and acidosis (diaceturia) could be excluded without trouble through uroscopic examination. There was no hemoculture practiced to exclude typhoid and other sepsis, but the thermic curve was not that of septicemia. Rabies would have been thought of had the subject been dog bitten by reasons of the spasms of the diaphragm associated with delirium. The case ended fatally, but the author was unable to obtain permission from the relatives to perform an autopsy.

Paraffinomas from Injection of Camphorated Oil.—Durand and Michon report this somewhat rare accident, the patient having received the oil during an attack of influenza. Several tumors had developed in the subcutaneous tissue of the thigh. While but three case reports are cited, Durand claims that the accident is not uncommon. Naturally the oil used in these cases is of mineral origin and the accident can be minimized by using a vegetable oil. In discussion analogous phenomena are mentioned in which presumably only vegetable products were used, as eucalyptus oil and oil mixed with creosote. In such cases, not tumors, but lesions suggestions scleroderma, have been seen. It is evident that this genus of artifacts is extensive and varied. Stigmata may be caused which persist throughout a long life.—*La Presse Médicale.*

First Case of Contagion of Oriental Boil in France.—Ravaut describes the following: A young girl who had never left France sojourned during the war in the Eastern Pyrenees. She was bitten every summer by mosquitos and two of the bites were followed by nodules—on the nose and eyelid, respectively. These lesions lasted a year and resisted all treatment. Diagnosis was impossible until a biopsy showed the Leishmania in great abundance, making the diagnosis of Oriental boil. Neosalvarsan caused an immediate recession of the lesion. The source of the parasite was doubtless some Kabyl or colonial white man brought into the vicinity by the war. Some of these people were employed in the graperies of the region at the time.—*La Presse Médicale.*

Book Reviews.

DIE GESCHLECHTSKRANKHEITEN Ihr Wesen, ihre Erkennung und Behandlung. Ein Grundriss für Studierende und Arzte. Von Prof. Dr. KARLZIELER, Vorstand der Universitäts- und Poliklinik für Haut- und Geschlechtskrankheiten in Würzburg. Mit 13 Abbildungen im Text. Leipsig: Georg Thieme, 1920.

THIS small pocket volume of 170 pages has a definite value to medical students and practitioners, since it presents venereal diseases in a concise and clear manner, setting forth in large type the axioms and postulates of the various subjects. The first fourth of the volume is given to gonorrhea and the remainder to syphilis. No new subject matter of particular importance is presented, but the author's pedagogic ability shines through in his sound advice and clear descriptions of technique.

A TEXT-BOOK OF PHYSIOLOGY FOR STUDENTS AND PRACTITIONERS OF MEDICINE. By RUSSELL BURTON-OPITZ, S.M., M.D., Ph.D., Associate Professor of Physiology, Columbia University; Professorial Lecturer in Physiology in Teachers College and the Extension Department of Columbia University. Illustrated. Philadelphia and London: W. B. Saunders Company, 1920.

THE appearance of a new work on physiology is welcome and timely; for physiology is coming into her own, and is now recognized as the keystone in the arch of medical education. The book before us is based on the author's lectures on Physiology at the College of Physicians and Surgeons in this city during the past twenty years. During this lengthy apprenticeship the contents of this work have naturally acquired proper proportions; the relative values of the different facts, and the best methods of presenting the same have also been ascertained; and, further, the author has learned (what some teachers never learn) that the student's time is limited, and that there are other professors with other subjects all claiming their full share of attention.

The first thing that strikes us on examining this volume is the careful and logical arrangement of the subject matter. The book is divided into nine parts, containing in all thirty sections and ninety-five chapters. This liberal allotment allows of chapters of quite moderate length, a decided advantage for the reader, and an absolute necessity for the student. In the next place, the author has not burdened his pages with unnecessary details concerning the minutiæ of anatomy, histology, embryology, chemistry, and physics. True, all these subjects enter into the comprehension of physiology, but they are only referred to in these pages when necessary to a proper understanding of the subject under discussion. At the same time, in a few special instances, the student's attention is directed to the physics of certain processes of the body, as for example in the chapters on the circulation, the respiration, vision, and on the production and dissipation of heat.

Laboratory work and experiments are duly described and explained, but the volume is in no sense a laboratory manual. This is an important feature, for many a physician is repelled by the excess of laboratory detail with which some of the more modern text books on physiology are overloaded. The author's long experience as a teacher has shown him the needs of medical students, and he has carefully allotted most time and space to the subjects likely to be useful to the practising physician. Hence, a feature of this book is the constant reference to the clinical aspects of physiology; the reader is shown the real relation existing between physiology on the one hand, and practice, surgery, and pathology on the other. The thoughtful student must appreciate, at an early period of his career, that without physiology there can be no scientific medicine and no rational therapeutics.

The volume is amply illustrated, and the numerous diagrams and original drawings are of real service, and often render more assistance than could be derived from more elaborate and artistic pictures. The author writes in an easy and attractive style, and this combined with the logical arrangement of his material makes the book of special value. It is needless to say that the book is up to date; the author's reputation as a physiologist and as a most successful teacher are ample guarantee for the quality of the work. Among the chapters which have specially impressed us are those on the action of the heart, the mechanics of respiration, the voice and speech, the sense organs, and the secretions in general (both external and internal). There are numerous references to the literature of the subject, so that those interested may continue their studies in the original authorities; but there is no regular bibliography.

LA TOXÉMIE TRAUMATIQUE (Shock Traumatique) dans les Blessures de Guerre. Par E. QUÉNU, Membre de l'Académie des Sciences et de l'Académie de Médecine, Professeur de Clinique Chirurgicale à la Faculté de Médecine de Paris. Paris: Librairie Félix Alcan, 1919.

QUÉNU covers the subject of shock fairly and completely. The subject is discussed under six headings, which may be translated as follows: Historical Review; Definition and Etiology; Clinical Course (*Evolution*); Pathogenesis; Critical Study of the Different Varieties of Shock; and Treatment of Shock.

In the historical review the various theories of shock that have been advanced (in France and countries allied with France during the late war) since the time of John Bell (1795) are mentioned and discussed, and there are almost innumerable bibliographical references and quotations from the work of French and Allied observers. Quénu finds that the conception of shock as due to a toxemia is of French origin. His definition of shock is as follows: "Shock is a syndrome characterized by arterial hypotension, rapidity and extreme feebleness of the pulse, lowering of the temperature, pallor of the skin, and a certain hypoesthesia; to this one may add shallowness of respiration." He finds that the war has (or, at least, should have) convinced surgeons that shock is due to something besides a reflex nervous disturbance; and he discusses all phases of the matter in a most interesting and instructive way, finally stressing the therapeutic measures which were tried out during the war.

DIE SCHWEBELARYNGOSKOPIE UND IHRE PRAKTISCHE VERWERTHUNG. Von GUSTAV KILLIAN, Direktor der laryngo-rhinologischen Klinik der Universität Berlin. Price 40 mks. Berlin and Wien: Urban und Schwarzenberg, 1920.

THIS work with 77 pages of text and 62 illustrations of which 18 are colored may be regarded as an atlas of suspension laryngoscopy. Over half of the text is devoted to a description of the apparatus and its introduction. Suspension laryngoscopy is then described and there follow, in the order named, pharyngoscopy, tracheoscopy, and bronchoscopy. The differences in technique between laryngoscopy in children and adults are then stated. A few Americans and British are mentioned in connection with the method, including Freudenthal and E. Meyer of New York, Davis, Lynch and others, but most of the authors quoted are Germans. Credit is given to Kirstein for the inauguration of the method, but his procedure had fallen into disuse when Killian took it up.

TREBALLS DE LA SOCIETAT DE BIOLOGIA. Any Size, 1918. Publicats sota la Direcció de A. PI SUÑER, member de l'Institut de Ciència. Barcelona: Institut d'Estudis Catalans, 1918.

THESE Transactions are published in the Catalonian idiom of the Spanish language. Seven sessions were held during 1918, devoted respectively to Physiology, Histology and Biology, and no less than five of these sessions were devoted to the first named science. There were in all 28 papers on Physiology, most of them very brief. Among the more pretentious of these papers is one by Pi Suñer on the chemical sensibility of the nerve endings of the pulmonary branches of the vagus, one by Telles on new types of microtome, one by Alzina y Milis on the oculocardiac reflex in psychiatry and neuropathology. A good proportion of the papers are devoted to technics—including the reactions of Lange, Scales-Carrasco (2 papers) and Boveri—in which blood studies predominate. The volume is well printed and well illustrated.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held March 18, 1920.

THE PRESIDENT, DR. GEORGE DAVID STEWART, IN THE CHAIR.

The Unconscious.—Dr. W. H. R. RIVERS of Cambridge University, England, delivered this address, in which he said, in part, that the concept of "the unconscious" in psychology was one which had aroused the liveliest differences in opinion and which had been met by bitter opposition. The opposition had come from advocates of the older introspective school of psychologists who had found it difficult to fit an unconscious region of the mind into their schemes of description and explanation. The aim of the older psychology was to furnish a rational explanation of human behavior and endeavor. As the material for such explanation they used almost exclusively the happenings in their own minds which could be directly, though really only retrospectively, observed, and made this material the basis of constructions whereby they fitted into coherent schemes the infinitely varied experience of the human mind. When their introspective method failed them, and they were driven to assume the existence of factors lying outside those accessible to introspection, they were accustomed to assume subconscious processes or to speak of psychological dispositions and tendencies, or they would even throw psychology wholly aside, bringing into their schemes of explanation factors belonging to the wholly different order of the material world, and used psysiological processes as links in the chain whereby they connected one psychological happening into another. It was noteworthy that the full recognition of the unconscious and the first comprehensive attempt to formulate a scheme of its organization and of the mechanisms by which it was brought into relation with the conscious should have come from those whose business it was to deal with the morbid aspect of the human mind. The necessity for the use of unconscious factors continually arose when dealing with the experiences of health, but the opportunities afforded by such experience were usually so fleeting and the experience itself often apparently so trivial that they failed to force the psychologists of the normal to face the situation. It was only when unconscious experience had contributed to wreck a life or produce a state with which the physician had to struggle, often for months or years, that it became impossible to push such experience aside or take any other line than that involved in the full recognition of its existence. It had needed the vast scale on which nervous and mental disorders had been produced in the war to force this recognition upon more than the few specialists to whom it had been previously confined. In making clear the sense in which the term "unconscious" was used, Dr. Rivers pointed out one sense in which it was not used in his paper. At any given moment we were only clearly conscious of the experience which was in the focus of attention. This formed only an infinitesimal proportion of the experience which was capable, by being brought into the focus of attention, of becoming conscious with an equal degree of clearness. At any given instant there was a vast body of experience which was not in the consciousness only because at that instant it was neither the object of attention nor so connected therewith as to occupy consciousness with more or less clearness at the time. Experience of this kind was not included within the "unconscious." In so far as the term "unconscious" applied to experience it would be limited to such as was not capable of being brought into the field of consciousness by any of the ordinary processes of memory or association, but could be reached under certain special conditions, such as sleep, hypnotism, free association, and certain pathological states. The kind of experience which formed the subject matter of his lecture, Dr. Rivers said, might best be illustrated by some examples. The first instance was that of a young man with an underlying condition of claustrophobia who was suffering from a war neurosis. For as long as he could remember this patient had been subject to a dread of confined spaces, so severe and producing states so painful and unendurable that he was debarred from taking part in many of the ordinary occupations of life, or could do so only at the risk of suffering and discomfort. His first memory of the dread went back to the age of six, when he slept with his elder brother in what was known in Scotland as a box bed. The bed stood in a recess with doors which could be closed. The child slept on the inner side of the bed next to the wall, and he still vividly remembered his fears and the desire to get out of bed. As he grew older he had a fear of tunnels and crowded buildings. During the war he went to France as a doctor, and was greatly disturbed by having to live and work in dugouts and would seek excuses to go to the trenches in order to escape from experiences which were to him far more trying than the dangers of the front line. As a result of the strain he broke down and came under the writer's attention. Taking a dream going back to the age of six and a memory as a starting point, the patient was led to recall other instances of that time, several of which were completely forgotten until recalled at this time. Later in thinking over a dream he recalled that when he was between three and four years of age he had visited an old rag-and-bone merchant who lived near the house his parents then occupied. The old man was in the habit of giving the boys a halfpenny when they brought him anything of value. He had been admitted through a dark, narrow passage from which he entered the house by a turning about half-way along the passage. At the end of the passage was a brown spaniel. Having received his reward the child came out to find the door shut. He was too small to open the door; the dog began to growl. The child was terrified. Later he recalled the name of the old rag-and-bone merchant. The patient's parents were still alive and from them it was learned that the old rag-and-bone man had lived in the neighborhood in such a house as the patient remembered, and that the patient had recalled his name correctly. The recovery of his long forgotten fright was followed by a remarkable improvement in his specific dread. A few days after recalling the memory he sat in the midst of a crowded picture house under conditions which for years would have given him the most serious discomfort. This was a typical example of the kind of experience the writer had in mind when he spoke of the "unconscious." This patient not only afforded conclusive evidence for the existence of experience shut off from consciousness under ordinary conditions, but his case showed that this experience, though inaccessible to consciousness directly, might yet be capable of affecting it indirectly.

The records of others, Dr. Rivers said, could never, however, carry the conviction which came from one's own experience, even though one's own experience could rarely have the dramatic and conclusive character of that he had just cited. The result of his self-analysis had convinced him of the reality of the unconscious. He was a person whose normal waking life was almost wholly free from sensory imagery, either visual, auditory, tactile or any other; but through the erperience of dreams, half-waking states, and of slight delirium in fever he was quite familiar with imagery. On looking back in life he was aware that his mental imagery was much more definite in youth and he remembered the presence at that period of fairly vivid visual imagery in connection with certain kinds of experience, especially of an emotional kind. In examining into his memories of childhood he discovered that he had a more definite knowledge of the topography of the house he left at the age of five than of any of the many houses he had lived in since. He had supposed that his imagery had faded from lack of attention and interest which would have kept it active, even if it had not promoted its development into the instrument which imagery had become in the mental life of the majority of human beings. It was only within the last year or two that he had discovered an aspect of his early experience which led him to revise this earlier opinion. This discovery was that the knowledge of the house he left when five years old was strictly limited to certain parts of it and that the rest was even more inaccessible to memory than any of the houses in which he had lived since. He recalled everything in the topography of the

ground floor and basement, but had not succeeded in penetrating the veil which separated him from all knowledge of his life in the upper story. He had failed to explain the blank by any mechanism provided by differences in effect or interest on memory. This early period of life was especially apt to afford occasions for experiences to become unconscious, but the passing of experience into the unconscious might happen at any age, and its occurrence had been brought into notice very widely by the experience of war. One of the most frequent features of the nervous disturbances of war has been the complete blotting out of the memories of certain events, the obliteration usually extending considerably beyond the event which furnished its special occasion. Although events might remain for months or years quite inaccessible to memory when approached by the ordinary channels, they might be brought to the surface by means of hypnotism or by the method of free association. The effects which could thus be ascribed, at any rate in part, to the experience of war fell into two main groups. They were, on the one hand, general changes in the personality, and changes in tastes, in likes and dislikes, preferences and prejudices, while, on the other hand, there were specific dreads or other morbid experiences of waking or sleeping life, such as nightmares, hallucinations or morbid impulses, which could be more or less directly ascribed to the activity of the unconscious experience. The writer did not call an idea unconscious if it sprung into the mind without obvious antecedents in consciousness, or when a person behaved in a manner which corresponded to something taking place in the mind of another person, but was not wholly, or perhaps not at all, determined by anything in the mind of the behaver, but in mentioning such processes he spoke of them as "unwitting."

Dr. Rivers then considered the question how these experiences to which he had referred became unconscious. Writers on the unconscious often used repression for the process, but he reserved this term for the process by which we wittingly endeavored to banish experience from consciousness. It seemed that this process of witting repression might be one means of producing suppression, that experience wittingly repressed might, at any rate under certain conditions, succeed in becoming inaccessible to the general body of consciousness. But there was little doubt that this was only one of the ways in which suppression occurred, and that more often it took place wholly without the intervention of volition, especially when it occurred as the result of some physical or mental shock. There was still much uncertainty concerning the exact mechanism by which suppression occurred, but there was reason to believe that in the majority of cases it took place without conscious effort, or unwittingly, and there was reason also to believe that suppression only followed witting repression, when conditions of some other kind favorable to suppression were present. One of the inquiries which might lead to the discovery of the nature and biological significance of the mechanism of suppression was the comparison of suppression with the ordinary process of forgetting. Suppression was only one form of forgetting, a form in which the forgetting was especially complete. Formerly psychologists were especially concerned with the process by which we remembered, but they had gradually been coming to recognize that the more important problem was to discover how and why we forgot. According to Freud, forgetting was not a passive process, dependent upon lack of interest and meaning, or varying with the intensity of the impression, but was an active process in which some of the mental content was suppressed. The suppressed mental content did not disappear because it was uninteresting or unimportant; on the contrary, it was usually of very special interest and had a very definite meaning. It was suppressed because the interest and meaning were of a kind which aroused pain or discomfort. Active forgetting was thus a protective process, one by which consciousness was protected from influences which would interfere with the harmony essential to pleasure or comfort. In the case of his own experience it was not possible to say why the memory of the upper floor had been forgotten, but he felt fairly confident that it was of an unpleasant kind and was forgotten because the memory of it interfered with his comfort and happiness. The conclusion to which one was led both by the experience of every-day life and by the analysis of pathological and semi-pathological states was that there was no difference in nature between the forgetting of the unpleasant experience of ordinary life, often quite trivial in character, and such examples of complete and lifelong suppression as those which he had chosen to illustrate the nature of the unconscious. The pathological suppression taking place in adult life seemed in most cases to be clearly involuntary and unwitting. The most complete cases of suppression did not occur in people who had tried consciously to repress painful experience, but had come about without any conscious activity on the part of the sufferer, especially as the result of shock or illness. Hypnotism furnished a striking example of the process by which experience was suppressed. By means of suggestion given in the hypnotic state any experience, pleasant or painful, which occurred during this state might be banished from the memory. When this had been done the hypnotized person was quite unable to recall the experience, and it would remain unconscious until he was again hypnotized or until the experience was recalled under some other condition in which the unconscious suppressed experience came to the surface. In this case the suppression took place quite independently of the will of the hypnotized person, but there was reason to believe that the suggestion to forget was more likely to be successful the more the forgetting was in consonance with the conscious wish of the subject. This probably gave the clue to the fact that conscious repression seemed often to lead to suppression. Still another characteristic of active forgetting and suppression was of great importance in understanding its nature. The experience which tended to be forgotten or repressed was the immediately painful. The process of active forgetting took no account of ultimate consequences, but was directed exclusively toward the avoidance of the more immediate pains and discomforts. The same seemed to be true of cases of pathological suppression. If, as he supposed, the claustrophobia of his patient was the result of the suppression of his four year old experience there could be little doubt that the sum total of unhappiness due to his dreads was far greater than that which would have resulted from the immediate memories of his terror when in the passage with the dog. The memory was suppressed because of its immediately painful character, and in following this course nature took no account of the effects of suppression which were to torment the child and the man for thirty years. The suppressions which formed so large an element in the neuroses of war were also directed to allow escape from the immediately unpleasant, regardless of the future consequences. Suppression was a process of reaction to pleasures and pains which were immediately present and took no account of the more extended experience with which it was the function of intelligence to deal.

Dr. JOSEPH BYRNE said that he had scarcely expected to discuss a problem that most of his hearers did not know he had been particularly interested in for many years. Psychological investigation more nearly concerned the profession as a whole than medical men would like to believe. In 1918, at the meeting of the American Medical Association in Chicago, he had heard another distinguished visitor from London, Sir James Mackenzie, insist on the necessity of evaluation of the psychological factor in cardiac disorders as a *sine qua non* for rational treatment. What Sir James so ably urged for the assessment of values in cardiac symptomatology, Dr. Byrne had already emphasized to the profession concerning the evaluation of the psychic element in all painful disorders. In all human ailments the psychological phase of the problems presented to the physician must not be lost sight of and in particular two things must ever be kept in mind, namely: (1) that pain was not to be regarded as a purely physical process and (2) that mental perturbation (anxiety, fear, etc.) was the twin brother of pain and might in any given case be the predominating factor in the patient's suffering. Thus, in any case in which pain was the chief complaint, upon analysis it would often appear that the patient's suffering is 90 per cent. or more of psychic origin and 10 per cent, or less of physical

origin or *vice versa*. The practical point here was that if the patient's suffering was predominantly of psychic origin physical methods of treatment were of little use and might even be contraindicated. Failure to appreciate this fact of fundamental significance was one of the chief reasons why the members of our profession in many States to-day stood in the humiliating position of equals, in the legal sense at least, competing with quacks and charlatans for public favor. Such a condition of affairs was intolerable to those familiar with the traditions of our calling. The fault, however, rested not altogether with the laity, but rather with the members of our profession, who frequently placed too much reliance upon their knowledge of objective or organic medicine and little or none upon the subjective or psychological side, whereas of the two, in any given instance, it often happened that the subjective or psychological side was the one that predominantly demanded attention. It seemed strange that it was on this human side that our laboriously trained representatives of scientific medicine should fail, while those unblessed with opportunities for scientific education along any line succeeded beyond measure. And it did no particular good to call these "practitioners" names. The answer the laity made to such vituperation was "They have helped us." Something here for teachers of orthodox medicine to think of. In concluding, Dr. Byrne laid particular emphasis upon the fact that in our daily lives the unconscious influenced us to an extent that was undreamed of by the profession. This was true of normal as well as of pathological states. In closing, Dr. Byrne thanked Dr. Rivers for his lucid exposition of a difficult subject and in particular for the benefits the general profession would unquestionably derive from his timely address.

Dr. STEWART PATON said that Dr. Rivers had given us a number of interesting problems to think about. It probably had occurred to many who had listened to the address how unfortunate it was for civilization that so much emphasis had been placed on the conscious processes to the neglect of the unconscious. Egotism and belligerent activities were to a large extent results of pride in our conscious life. A distinguished representative of Cambridge, Charles Darwin, had reminded us of our lowly origin; and it was fitting that another representative of that same university should remind us not only of the importance of the unconscious, but by his study of the history of primitive man he had recalled the fact that, instead of being just a little lower than the angels, we were, as a matter of fact, only little higher than the animals. It was unfortunate that medical men were not making the best use of their opportunities in studying the conscious and unconscious, and the general subject of human behavior. Think, for example, of what physicians might do in assisting the public in acquiring methods for the successful arbitration of social, economic, and international problems. We heard a great deal about subjects to be arbitrated, but as yet little had been said about methods of arbitration. Recently a distinguished European physician had pointed out some of the unfortunate results of physicians being so absorbed in the study of serology, bacteriology, etc., that they devoted little time to the study of man's conscious and unconscious processes. More should be done to interest medical students in the behavior of patients and to train those competent to undertake the investigation of social problems. The present opportunity of medical men to lead the way in the study of human behavior was unique in history. When we paused to consider the magnitude of the present opportunity it was discouraging to recall the fact that there were only three university psychiatric clinics in the United States, at Ann Arbor, at Baltimore, and at Boston; and these three clinics were by no means adequately equipped for carrying on research in this important field. New York, a city in which the examples of human behavior were probably more varied than in any other city in the world, did not yet possess a clinic of even moderate size. Enormous sums of money were spent in treating and caring for the insane, while but little was expended in investigating the causes of psychopathic conditions. Recently the study of the life histories of sixty-six revolutionary leaders in Germany had shown that practically all of these leaders had psychopathic characteristics. To-day radical changes in society were proposed by those who believed that they could direct intelligently the conscious processes without any special knowledge of man. On all sides it was becoming apparent that the organization of society could not be changed to advantage without considering the unconscious. Beneficial radical changes in human society could not be expected until we had more accurate information than we now possessed in regard to the foundations of temperament and character. During the period of the war physicians began to take intelligent interest in the so-called cases of shell-shock, and at one time the medical profession seemed to be aroused to the necessity of studying human behavior. Since the armistice this interest has rapidly declined and to-day the majority of physicians were only interested in studying the parts of the machine. It does not require profound knowledge nor very active imagination to realize that physicians could, if they would, become more active as leaders in the development of our civilization.

Dr. THOMAS W. SALMON said this was the first time he had told one of his dreams in public. He used sometimes to tell those dreams at the breakfast table, but since the technique of psychoanalysis had come so widely into vogue he had deemed it wise to abandon the practice. He now dreamed of a psychiatric clinic in New York. In addition to the psychiatric clinics which Dr. Paton mentioned, there was one at Ann Arbor, and plans were being formulated for others as integral parts of university hospitals in eight States. Each of these clinics was in charge of a medical director who was a full-time professor of psychiatry and received a salary which the rich city of New York had as yet been unable to pay to any clinical teacher of psychiatry. The dean of one institution said he did not propose any longer to send out deformed medical students who were trained only in the physical side of medicine and knew nothing about the psychic side. Sometime there would be a psychiatric clinic in New York. When that time came there should be in the front yard a statue of an American soldier in khaki, because it was the soldier with mental disorders produced by the war that had centered public attention on this question. No one worried much about the psychoneurotics before the war, though we had many even then, but when the war produced 10,000 psychoneurotics the need of making provision for their care awakened the interest of the public and the medical profession. We should have here, at the earliest possible moment, such a clinic where physicians could come to study these disorders, first for new light on their nature and causes and then for new measures of prevention and treatment. This dream, Dr. Salmon said, was not like most dreams, because some day it would come true. The only question was how far behind the Michigan city New York was to follow.

Dr. EDWARD D. FISHER said he would not attempt to review what Dr. Rivers had so plainly put before them. In the short time Dr. Rivers had spoken he had succeeded in giving the gist of this matter that had been before them for many years. Dr. Fisher said there were many things in Freud's theories that were untenable, but Dr. Rivers had shown what Freud had done in making plain those conditions that were on the border line of insanity—hysteria and psychoneuroses. There was one thing that had always puzzled him and that was in reference to the searching back for the original cause of these various peculiar mental states. It seemed sufficient to Freud's mind to find something in the past experiences of the individual that unconsciously influenced him afterward. If something that happened in childhood never came into the consciousness of the individual, how was it to have such an enormous influence on him as an adult? Take the little lad referred to by Dr. Rivers who had this experience and did not remember he had had it until it was brought to his mind when he was thirty years of age. How could that have such a tremendous influence on his life? He might have had fifty other experiences any one of which would have been capable of affecting him similarly. Why was it that this particular experience obsessed him? Dr. Fisher said he could relate instances in which there was no mystery. For instance, a boy was held in a dark room and thoroughly frightened; he never

forgot the experience and was always afraid of the dark, even when he was a man fifty years of age. The trouble with Freud was that he clung to the idea that the injury was a sexual trauma and usually an evil sexual trauma. The presentation this evening related nothing of that kind, nevertheless he could not make a connection between that early trauma and the subsequent phobia. Again, this boy whose case was cited was relieved when the supposed cause of his phobia was discovered, but the speaker had met with many cases in which the finding of the cause of the trauma had not removed the phobia, and in fact had not affected the phobia in any way. Dr. Fisher said he knew Dr. Rivers would prefer to have him speak just as he thought on this subject. He was aware that many cures did take place through psychoanalysis. Psychology had been defined as applied common sense, and common sense was an important factor in the study of these cases. It was a great thing that men such as Freud and Dr. Rivers had taken up this study, but he could not accept their conclusions. He could not believe that they always happened to get hold of the right mental trauma or injury to the personality received in youth.

Dr. RIVERS, in closing, apologized for having limited himself to the matter of definition and having said nothing about the very important problem of the way in which the unconscious produced its effects on character and the way in which it produced alterations in character, or failure of adaptation to conditions. Dr. Salmon, Dr. Byrne, and Dr. Paton had drawn attention to some of the corollaries of the subject that were of great importance to the whole medical profession and to the psychological side of disease, and particularly to the psychiatric clinics and other means of treating psychiatric disease. When Dr. Salmon spoke of the psychiatric clinics in the United States he felt very envious that so much had been done in this country while in England they had no psychiatric clinics. Dr. Rivers said he regarded it a great privilege, coming from a country where they had no psychiatric clinics, to be allowed to speak in this country where they were doing so much more in this line.

Stated Meeting Held April 1, 1920.

THE PRESIDENT, DR. GEORGE DAVID STEWART, IN THE CHAIR.

THE program of the evening was under the auspices of the Section on Medicine, and was furnished by the staff of the Peter Bent Brigham Hospital of Boston.

Acute Dilatation of the Heart So-Called Occurring During or Following Surgical Operations. Its Mechanism and Management.—Dr. SAMUEL A. LEVINE of Boston presented this paper, in which he characterized the expression "acute dilatation of the heart" as a medical waste basket for circulatory upsets occurring suddenly in persons known to have had heart disease, and in those who previously had not suffered from cardiac disorders. The exact nature of many of these upsets had remained obscure, and in fact reliable evidence of actual dilatation of the heart had been wanting. An opportunity had presented itself during the past few years to observe nine surgical cases which had some sort of circulatory upset or collapse during or following operations. In this study particular attention was paid to the mechanism of the heart beat and in each instance this was found to be abnormal. Of the nine cases three had paroxysms of auricular tachycardia, four suddenly went into auricular fibrillation, and the other two had paroxysmal auricular flutter. The striking fact was that every case had a high grade of auricular disturbance, and in all but two the condition was of transient nature. Graphic proof of the abnormal mechanism was obtained by taking electrocardiograms in six of the cases, and the clinical course of the other three left no doubt as to the nature of disturbance. While *x*-rays of the heart were not obtained in these cases, roentgenographic studies of similar paroxysmal rapid heart action were made of other cases in the medical wards, which failed except in very isolated instances to show any marked changes in the transverse diameter of the heart. The essayist noted three types of disturbances, auricular tachycardia, auricular flutter, and auricular fibrillation. A proper differential diagnosis of these three conditions was important because one type, paroxysmal auricular tachycardia, could generally be arrested by vagal stimulation, either by direct pressure over the carotid arteries or by ocular pressure. In the other two types this quick and dramatic method of controlling the disorder was impossible, and could not be hoped for. In these they were dependent upon proper digitalis therapy. These heart upsets might occur at any time during the administration of an anesthetic, or while the patient was still unconscious after the operation was completed. All three cases of auricular tachycardia occurred while the patient was still unconscious. The other six cases had their upsets following operation at varying times, from twenty-four hours to nine days post-operative. The attacks lasted from several minutes to several days in seven cases, and in two the abnormal rhythm remained permanent as long as their observations were made. At times the clinical condition of the patient became alarming during the attack, while others were not much disturbed. From the study of these nine patients it was impossible to predict what type of case was apt to have a cardiac upset during or following operation. In none did syphilis seem to be an etiological factor. Ether was used as the anesthetic in seven cases and novocaine as a local anesthetic in the other two. Clinical examination of the heart showed that one case had outspoken mitral stenosis and five others had slight cardiac hypertrophy without disease of the valves. Eight of the patients were over 45 years of age, and the other was a boy of 17 who gave no evidence of any organic disease whatever, except a fractured clavicle, for which he was operated. In a word there did not seem to be any constant etiological factor. In three patients of this series having paroxysmal auricular tachycardia the attack was terminated by pressure over the left or right carotid or by ocular pressure. Confusion would be apt to arise between auricular flutter with a regular ventricular rate and auricular tachycardia. The absolute arrythmia of auricular fibrillation practically ruled out any other condition. Vagal pressure never stopped an attack of flutter, although the ventricular rate was slowed temporarily. On the other hand, the rate of auricular tachycardia was rarely affected unless the attack was completely arrested. It followed, therefore, that if an abnormal regular heart rate slowed temporarily during vagal stimulation, the mechanism was not due to auricular tachycardia, but rather to flutter. In deciding whether a rapid regular rate was a normal acceleration or an abnormal tachycardia, it would be of considerable assistance to make an accurate determination of the apex rate, counting a full minute and repeating this observation in five or ten minutes. If it was an abnormal tachycardia the rate might not carry even one beat, or at the most not more than two beats, while in normal acceleration greater variations were found. Should the attack be one of auricular fibrillation or flutter, digitalis in some form was the one drug at their disposal. It might not be necessary to use it if the clinical condition of the patient was satisfactory, for the attack might be transient. Although none of these patients received large single doses of digitalis by the Eggleston method, one would expect that such a procedure or intravenous use of strophanthin might find a proper place under these circumstances. It was urged that well-defined terms which actually described the abnormal mechanism be employed when possible, rather than the vague name "acute dilatation of the heart."

Dr. THODORE B. BARRINGER said he thought Dr. Levine had done a very real service, particularly to the surgeon, in calling attention to this condition occurring in patients during or after anesthesia. There was a decided lack of knowledge of this subject, not only on the part of the surgeon, but on the part of medical men, so that Dr. Levine's paper was well worth while. He did not think these cases had always been termed acute dilatation of the heart. He had talked with a number of surgeons recently and the only circulatory disturbances during operation that they recognized were syncope and surgical shock. Dr. Barringer said he had also talked with several anesthetists, thinking they would have opportunities of seeing cases of

this sort more frequently than the internists. Dr. Bennett had told him that he found that chloroform anesthesia not infrequently caused paroxysmal tachycardia and occasionally ether would do the same. He said that before patients went into syncope with chloroform anesthesia they were apt to have very marked irregularity of the pulse, and also that he was never very much disturbed by these auricular tachycardias because they generally stopped spontaneously. Furthermore, Dr. Bennett believed that it was well to digitalize patients giving a history of palpitation or dyspnea before operation. Dr. Barringer said that the difficulty he had had in securing information about these purely cardiac conditions from the man who had most opportunity to see them was an excellent commentary on the service Dr. Levine had done in calling attention to this matter.

Glucose Tolerance Test in Chronic Vascular Hypertension.—Dr. JAMES P. O'HARE of Boston read this paper, which described the findings in 25 glucose tolerance tests, done on 23 cases of vascular hypertension, which threw an interesting light on the question of potential diabetes. The tests were arranged on a chart according to the size of the difference between the fasting blood sugar and the blood sugar two hours after the ingestion of glucose. The result was a widening band of difference which showed that these cases tended to merge into the typical diabetic reaction. The first seven cases showed fairly normal reactions, except that one showed glycosuria during the test. The next seven were only slightly abnormal, while the remaining eleven showed well-marked abnormalities. The last two cases, the one with a difference of 0.14 per cent. and a glycosuria of 4 per cent., the other with a difference of 0.22 per cent., and a glycosuria of 2 per cent., approached the typical diabetic reaction if they were not actually diabetic. Very little connection could be established between the blood pressure or the degree of arteriosclerosis and the variation in the reaction. It was known that cases of chronic vascular hypertension were potential nephritics. This chart indicated that they were potential diabetics as well. The test of time alone would tell whether they developed into true diabetics.

Dr. WARFIELD T. LONGCOPE said that the problem of vascular hypertension was so important and one so difficult to elucidate that such observations as those Dr. O'Hare had presented added valuable information to the subject and were of much importance. For some time observations had shown that a high blood pressure might be associated with diseased conditions other than those of the kidney. As an illustration it was only necessary to mention certain instances of exophthalmic goiter, in which the systolic pressure might be very high, while the diastolic pressure was very low. It had also been recognized that the large proportion of diabetics showed various degrees of hypertension. In further studies the group of cases which Dr. O'Hare presented, it would be important to determine whether the hypertension in most cases preceded the appearance of glycosuria, or whether the glycosuria was of long standing and the hypertension appeared later. There was one possibility that had to be taken into consideration, namely, that these patients suffered from either a functional or an anatomical disease of the smaller blood vessels. Early evidences of the vascular disease were temporary or permanent hypertension, while the late effects were dependent upon secondary changes that took place in the heart, kidneys, and possibly in the pancreas.

Epinephrin Hypersensitiveness in Hyperthyroidism.—Dr. J. T. WEARN of Boston made this presentation. He stated that this study came about as the result of the investigation carried out at the U. S. Base Hospital at Lakewood to ascertain the relationship of hyperthyroidism to the effort syndrome. During that study they had used the basal metabolism and at the same time the epinephrin tests. They had used the tests described by Goetsch. The patients were kept at rest in bed for one day, or certainly for several hours, before observations of the blood pressure and respiration were made. The degree of tremor, sweating, dizziness, palpitation, etc., were noted at the end of the rest period. Five cubic centimeters of epinephrin was given subcutaneously or intramuscularly, and observations were made on the blood pressure at five and ten-minute intervals for an hour and a half. Observations were recorded and a positive reaction was interpreted as increase in pulse rate, tremor, sweating, and palpitation. There were no reactions from the drug after 45 minutes. The reaction usually occurred within one-half hour. Several cases did not react. Goetsch had found a positive reaction in all cases of hyperthyroidism. There was a greater dilatation of the pupils in cases of diabetes than in those of hyperthyroidism. The severity of the reaction seemed to depend upon the severity of the hyperthyroidism. They had also taken 26 soldiers from the 34th Division who had trained fourteen months and were in excellent condition, and not one of these reacted to the drug. They next took 28 others, and of these four reacted. These men had been athletes and had increased systolic blood pressure and slightly increased pulse. In all the experiments the respiration was dependent upon the rate of increase of the pulse and blood pressure. In 17 cases of mitral stenosis three gave a positive and two a doubtful reaction. Then 21 cases of acute infection were tested; of these two cases following pneumonia reacted; three following diphtheria were positive, and one was negative; of eight cases following acute rheumatic fever four were positive and four negative. Of six cases of sore throat, three reacted and three did not. Other conditions in which they had found one or more positive reactions were syphilis, chorea, asthma, myxodema, acromegalia, diabetes, neurasthenia and dementia præcox. In each of these the basal metabolism fell within normal limits. Of 21 cases of hyperthyroidism, 15 gave positive reactions and six gave negative reactions to epinephrin. All of these were outspoken cases of hyperthyroidism. The cases giving negative reactions were all early in the course of the disease. Nine cases of hyperthyroidism were tested with epinephrin after the removal of the gland and four still gave a positive reaction. Forty-eight per cent. of the cases with irritable heart responded to the test. In view of the fact that positive reactions to epinephrin were observed in other conditions than hyperthyroidism, they felt that extreme caution should be exercised in interpreting this test.

Dr. EMIL GOETSCH said he was afraid it had been assumed by some that he had said that a positive response to epinephrin meant in all cases hyperthyroidism. He had never held that this was the case. He did believe, however, that epinephrin hypersensitiveness meant a hypersensitive nervous system, and that of all the diseases in which the sympathetic nervous system was peculiarly hypersensitive to epinephrin, hyperthyroidism was the one by far the most frequently encountered. In a study of 450 cases of thyroid disease with reference to the epinephrin hypersensitiveness before and after operation, he had found that it was very important to be able to control the preoperative diagnosis by very careful microscopic examination of the gland tissue removed at operation, in order to be certain, from the pathological point of view, that there was truly a histological change in the thyroid gland of a hyperactive character. Without the aid of the microscope one was frequently at a loss as to the final diagnosis. He felt now that hyperfunctioning thyroid tissue, whether of the usual hyperplastic character or of adenomatous nature, could be recognized not so much by the grosser features of hyperplasia and hypertrophy, but more precisely by the mitrochondrial concentration of the cytoplasm of the gland cells. In this manner he believed the diagnosis of hyperthyroidism could be placed upon an impersonal basis. There seemed to him to be a tendency to assume that if there was a normal or only slightly increased basal metabolism in a particular patient suspected of having hyperthyroidism, we could, therefore, conclude that this patient was not suffering from hyperthyroidism. He did not believe that this statement held true. Woodbury and Webb had found that in cases of adenoma of the thyroid with a definite history of hyperthyroidism the symptoms of the latter rapidly disappeared when these patients were put to rest in bed, and that at this time, also, the metabolic rate was normal. During the same so-called quiescent phase the epinephrin hypersensitiveness was still found to be present. In other words, this hypersensitiveness was found to persist even

through the quiescent phase when the patient was at rest, and when the basal metabolism was normal, and thus was a very definite aid in recognizing this type of case. If one were to base the diagnosis upon an increased metabolic rate one would miss the diagnosis in these cases in which hyperthyroid symptoms were so apt to reappear when the patient again assumed the responsibilities and cares of normal life. Dr. Woodbury was about to publish a number of cases of this kind in the *Journal of the American Medical Association* that were cases of true hyperthyroidism which were hypersensitive to epinephrin, but in whom there was a normal metabolic rate. With reference to the statement that a few cases which were clinically hyperthyroid, but gave a negative reaction to epinephrin, in the first place it was very difficult to state positively from clinical manifestations alone in the milder types that a case was truly hyperthyroid, and he believes he could safely say that in his experience he had never seen a case of true hyperthyroidism which did not react positively to epinephrin. Again, he emphasized the importance of considering very carefully the exact nature of the reaction before calling it positive or negative. The typical positive reaction was a sustained one characterized by a fairly prompt response to the drug with a preliminary rise of blood pressure and pulse above 10 and with the exhibition of symptoms and signs; then a fall with a diminution of symptoms and signs, and finally a fall of blood pressure and pulse and disappearance of symptoms, with a return to practically normal state in the course of one and one-half hours. There was danger of calling a test positive when there was a short preliminary rise with a quick return to normal. This was sometimes seen in psychoneurosis and neurasthenia, in which the sustained character of the reaction was missing. With reference to the metabolic rate as evidence of hyperthyroidism, it might be said that, as McCaskey and others had shown, there were instances of increased metabolic rate in conditions not hyperthyroid, as also cases of true hyperthyroidism in which the metabolic rate was not increased. One must, therefore, not control the epinephrin test, for example, by the findings in regard to the metabolic rate, for it was dangerous to control one test by another test, neither one of which was completely understood. In other words, each test must of itself stand upon its own merits. It had been stated that a positive epinephrin test was obtained in postinfectious cases, and it seemed to have been assumed that these were not cases of hyperthyroidism. He should like to differ with this opinion, for it seemed to be well founded that hyperthyroidism could result from acute infections, such as influenza, grippe, pneumonia, and tonsilitis. Patients recovering from these diseases frequently exhibited tachycardia, throbbing of the heart, asthenia, tremor, perspiration, and nervousness. These symptoms and signs might well be due to postinfectious hyperthyroidism, and the fact that these patients showed a positive epinephrin test was additional evidence to his mind that these patients did have a true hyperthyroidism. Another point he emphasized was that the epinephrin used for these tests should be as fresh as possible, for after a time the drug lost considerable of its potency by oxidation. He knew that in some instances of supposed negative reaction the latter was due to the use of old epinephrin. The epinephrin he was using was furnished directly from the Parke, Davis & Co. laboratories. It was difficult to determine for purposes of the test whether a person whom one was testing for metabolic rate or epinephrin hypersensitiveness was normal or not, for it was known that there were individuals who appeared normal but in whom one found an unstable nervous system, or again individuals might vary from day to day as to their thyroid state, which depended in a large measure upon their psychic reactions to their environment or to other factors. While the fact that some of the supposed normal individuals, as quoted by Dr. Wearn, reacted to epinephrin, did not, of course, necessarily mean that they were hyperthyroid, yet on the other hand it was not shown, he believed, that they were not possibly mildly hyperthyroid even though the clinical manifestations of such a condition were not clear. He knew that in individuals with true thyroid disease, such as adenoma, and with a typical history of periods of hyperthyroidism might have quiescent phases. In other words, he thought we must concede that there were conditions of hyperthyroidism which were not possible of certain diagnosis after the ordinary clinical examination. In brief, the epinephrin test when positive meant that the individual had a sympathetic nervous system, hypersensitive to the action of this drug and, furthermore, we all knew that of all the diseases of which this was true hyperthyroidism was the one condition which was by all odds the most frequently found. On the other hand, a negative reaction was of great value, for then one could positively exclude hyperthyroidism. The occasional case with a positive epinephrin reaction which was not hyperthyroidism could be excluded, he thought, by a careful history and physical examination, and, furthermore, by failure of most of the ordinary medical and hygienic measures. The fact that a very definite improvement, if not almost a cure, had followed thyroid resection in individuals who had undergone every other form of treatment for long periods of time without relief, in whom no other pathological basis, such as tuberculosis was found, but who gave a positive reaction to epinephrin, and in whom what he called "diffuse adenomatosis" of the thyroid gland was found, remained to be explained.

A Study of the Correlation of the Basal Metabolism and the Pulse Rate in Patients with Exophthalmic Goiter.—Dr. CYRUS C. STURGIS and Dr. EDNA H. TOMPKINS of Boston presented this paper, in which they stated that while a study of the basal metabolism was probably the most accurate method that could be used in the diagnosis and in following the course of patients with exophthalmic goiter, its exact value was not known, and as it was a somewhat complicated procedure it was not available in many patients with the disease. Certain symptoms and signs of the disease, such as tachycardia, loss of weight, warmth of the skin, and sweating, were directly referable to the increased heat production, and hence they were indirectly a measure of the presence or absence of increased metabolism. Of these signs the simplest and easiest to determine was the pulse rate, and hence a series of patients with exophthalmic goiter and increased metabolism had been studied in order to ascertain the precise relation of the pulse rate to the increased heat production and also to determine the value of the pulse rate as an indication of the presence or absence of hyperthyroidism, and as a guide to the overactivity of the thyroid gland.

In a total of 104 individuals with a normal basal metabolism, only five had a resting pulse over 90 per minute. A total of 496 basal metabolism determinations on 99 patients with exophthalmic goiter from the Peter Bent Brigham Hospital and 55 patients as reported by Means and Aub had been studied. In 426 instances the basal metabolism was elevated plus 15 per cent. or greater, and the resting pulse rate was 90 per minute, or more in 84 per cent. of these. In 70 instances when the basal metabolism had fallen below plus 15 per cent. there was a simultaneous fall in the pulse rate below 90 in 78 per cent. Probably the most accurate interrelation between the pulse rate and the amount of heat production was to be found during the course of the disease in any one patient. In a series of 52 patients with exophthalmic goiter, in whom two or more metabolism observations had been made, changes in the pulse rate gave an accurate idea of those in the heat production in 85 per cent. It was hardly to be expected that a given heart rate would always correspond to the same elevation of metabolism in different persons because of the variations of normal pulse rate in different individuals. In spite of this, however, when a considerable number of observations were considered, there was a suggestive interrelation between pulse rate and metabolism. There were, however, a good many discrepancies in which the metabolism was greatly elevated and the pulse rate relatively low. Patients with auricular fibrillation could account for the slow pulse rate associated with the high metabolism in a number of cases. In other instances the slow pulse might be accounted for by the fact that when these patients had a normal metabolism their pulse rate was unusually slow.

Dr. EUGENE F. DUBOIS said that Dr. Sturgis had

made an exceedingly careful analysis of his cases, and had drawn very conservative conclusions. He had called attention to the fact that the pulse rate was one of the most important guides in hyperthroidism, at a time when we were finding out that a good many of the so-called classical signs were not dependable. Dr. Sturgis was wise in emphasizing the fact that one might be misled by placing too much reliance in the level of the pulse rate alone in different individuals. The correlation between changes in pulse rate and basal metabolism in any one individual, however, seemed to be a valuable method of controlling treatment. There was probably a causal relationship between pulse rate and basal metabolism, because the increased demand on the oxygen consumption in hyperthyroidism was similar to the demand made by exercise. Since this increased oxidation was going on night and day, it was not surprising that the heart responded by increased rate. He was sure they were all greatly indebted to Dr. Sturgis for the laborious study of this important correlation in a large number of cases.

Clinical Experience with a Dried Aqueous Extract of Digitalis.—Dr. HOWARD F. WEST of Boston read this paper. He described the preparation of a dried aqueous extract of digitalis, in which the active principles of digitalis were in more concentrated form than they occurred in the leaf, and which was made to conform to the U. S. P. standard by mixing with lactose. A freshly prepared infusion was evaporated to dryness. This gave a fine brown powder which had maintained its activity for a year. Each lot was assayed and mixed with equal parts of anhydrous sodium sulphate, which aided in protecting the powder from moisture. It was put up in capsules containing 5.5 frog units each. The digitalis was grown in Virginia and Oregon. This preparation had been used in a considerable number of cases in the Peter Bent Brigham Hospital with uniformly satisfactory results. It was found that 39 mg. of standard leaf per kilo body weight, discounting edema, was the average physiological dose. When given rapidly, largely as single doses, to patients with auricular fibrillation, an initial effect as judged by the slowing of the heart rate was noted in from three to six hours—a complete effect in from twelve to twenty-four hours. Marked diuresis was frequently seen after large doses. When used in patients with regular rhythm who had obvious symptoms of heart failure the effects were quite as satisfactory as in those with auricular fibrillation. After large single doses they showed rapid clinical improvement, and the vital capacity of the lungs showed prompt and striking increases, amounting to as much as 15 to 20 per cent. in twenty-four hours. The vital capacity offered a valuable measure of improvement, and in patients with regular hearts was the best graphic indication of the therapeutic effect of the drug, since there was usually much less change of the heart rate than in patients with auricular fibrillation. The physiological dose was found to be practically identical with that found by Eggleston, that was, 0.145 cat units per pound body weight when the patient had become free of edema. Careful observations were made showing the effect of this preparation on pulse rate, urine output, weight, and vital capacity.

Dr. B. S. OPPENHEIMER recalled that Sir James Mackenzie had stated at the 1918 meeting of the American Medical Association that all the English preparations of digitalis which he had ever used had shown some activity. He thought this was true also for all American preparations of digitalis. The modern clinician was no longer satisfied with this, however; he required of the pharmacologist a preparation which was standardized, remained potent, and was absorbed. Dr. West's dried aqueous extract had met the requirements. Professor Hatcher of Cornell had supplied the speaker with a standardized tincture prepared from the chloroform soluble extract of digitalis which was quickly absorbed and prolonged in its action. This had been administered according to the Eggleston method in divided doses at six hour intervals. The results with it had been very satisfactory. He had not as yet ventured to use this tincture intravenously. There was still a demand at the hospitals for preparations for intravenous use; over two hundred doses of digitalis were administered intravenously each month at Mt. Sinai Hospital. Personally he used cuabaine intravenously, but it was rather generally agreed that the indiscriminate use of strophanthin without careful regard to dose and previous digitalization, would lead to fatalities. In closing, Dr. Oppenheimer congratulated Dr. West on his use of the vital capacity as a measure of the patient's improvement under digitalis. Dr. West had demonstrated a marked improvement not only in patients with auricular fibrillation, but in those with regular pulse.

Dr. WEARN, in closing the discussion, said there had been an objection to the diagnosis of hyperthyroidism by means of the basal metabolism. They did not make the diagnosis of hyperthyroidism on the basis of basal metabolism, but in five cases of hyperthyroidism that showed no reaction to epinephrin the diagnosis was made on the clinical signs and symptoms and the basal metabolism. The post-infection cases were probably cases of hyperthyroidism; they showed tremor tachycardia, nervousness and restlessness, which after rest disappeared completely. When the pulse rate dropped below 60 all other symptoms, including tremor, disappeared; these patients had not lost in weight and did well on treatment directed by the hyperthyroid condition. In their work they had used Park Davis adrenalin tablets.

Dr. WEST, in closing, said that with care strophanthin administered by mouth in one-half grain doses and large single doses of digitalis had given results quite as satisfactory as though intravenous methods had been used.

Stated Meeting, Held May 6, 1920.

THE PRESIDENT, DR. GEORGE DAVID STEWART, IN THE CHAIR.

THIS meeting was held in memory of the late Dr. Abraham Jacobi.

Dr. GEORGE DAVID STEWART, opening the meeting, said that when Dr. Jacobi was taken from us last summer the New York Academy of Medicine was in vacation. It did what it could to honor him at that time, but many members were out of town and could not offer their tribute and there were also many laymen who wished to join them in paying tribute to Dr. Jacobi. Dr. Sondern had looked into the matter and found that there was a feeling among the members of the Academy and among their lay friends that a meeting should be held in honor of Dr. Jacobi. Then it happened that the Stated Meeting of the Academy of May 6 fell on the anniversary of Dr. Jacobi's birth. He was born ninety years ago to-day. There was still another circumstance that added to the fitness of holding this meeting, that was that his daughter, Mrs. McAneny, wished to present the bas-relief, a gift to Dr. Jacobi from the Medical Society of the State of New York, to the New York Academy of Medicine, so it was decided to hold this meeting.

Presentation to the New York Academy of Medicine of a Bas-Relief of Dr. Jacobi.—Hon. GEORGE McAneny made this presentation. He said that this day, Dr. Jacobi's ninetieth birthday, recalled irresistibly, not only to the minds of those who had known him in his home but to those who knew him publicly and privately, another occasion when they had met to celebrate his deeds, his actions, and his many noble and lovable qualities. He was recalling the night, twenty years ago, when having reached the scriptural three score and ten years, and when the thought was perhaps in the minds of those who did not know him so well as those who knew him at home that perhaps he might take a less active part in life than he had done hitherto, a great dinner was given in his honor. Those who knew him well would never forget that occasion and the things that were said of him at that time. The wish was expressed that he was not through with active life and that he would continue to do even greater things than he had done. This wish was granted.

The Bas-Relief which was here was presented to Dr. Jacobi by the Medical Society of the State of New York. It was most fitting that it should be returned to the custody of the New York Academy of Medicine,

not only because of its origin but because in the ten years it was his it had had a treasured place in his study, and he believed in it. He always admired it and wanted others to admire it. Bringing it back to the Academy of Medicine was fulfilling Dr. Jacobi's own wish. The members of his family gave it in his name. His love for the Academy was a part of himself as was his love for medicine. His love for the Academy as an institution, Mr. McAneny said, surpassed anything of that sort he had ever seen. As the years crept on a few signs of advancing age began to leave their mark, but no matter what the state of the weather or his own state of body or mind, Dr. Jacobi never permitted any of these things to keep him away from the meetings of the Academy. He not only attended the meetings regularly, but his voice was raised when he thought it worth while, always in a kindly way. If at times the expression of his frank judgment might have seemed severe, it was because he believed that what he said was for the welfare of the Academy and of the profession of medicine. Above all other qualities his kindliness stood out. Those who knew him more intimately felt this more keenly than those who only saw his work out of doors. Most touching was his love for little children, and thousands of them rose up to call him blessed. To them he gave a service and a devotion that would never be forgotten by those who saw it. He felt that it was pardonable on his part to speak a little more intimately of his part of Dr. Jacobi's nature, inasmuch as those who were to follow would speak rather of his public work. He recalled that at Lake George, three days before he died, a little child was brought to him sick unto death. Dr. Jacobi, at that time, was not ill; he simply felt tired, his life over. This was typical of him—when this child was brought to him he spent an hour of his time with it, entirely forgetful of himself. The child was taken away and lived. It was not fitting to say that Dr. Jacobi died in harness, for that was entirely too rough an expression for the service of such a nature as his. For more than half a century he had made his summer home at Lake George. He was one of those wise men who set apart a portion of the year for recreation and building up. At Lake George he had his woods and water and miles of paths bearing names he had given them. He piloted his own launch on the lake, and until the last year of his life was his own engineer, refusing to accept assistance in the care and management of his boat. His love for the forest, perhaps a part of his German nature, his love for the woods and for the lakes was a very part of himself.

Mr. McAneny then read the poem to Dr. Jacobi written by Wier Mitchell and read at the dinner twenty years ago. In closing he said: "Here he served, here he was brought when he was dead. It is most fitting that he should express through this bronze reminder his continued presence with you, for his spirit must go with you in your work."

Acceptance of the Gift on Behalf of the New York Academy of Medicine.—Dr. GEORGE DAVID STEWART, in responding to Mr. McAneny, said Dr. Jacobi joined the New York Academy of Medicine in 1857, ten years after it was founded, and continued an active member until 1919. He was, therefore, connected with the institution for over sixty years, and thus a member for more years than Pitt or Fox, Nelson, or Hamilton were permitted to live, and for almost twice the span given to Byron or Burns. During all that time his punctuality and regularity in attendance were a constant reproach to less resolute spirits. But Dr. Jacobi did much more than attend the Academy during his life; he gave freely of his resources, influenced others to give largely, and in his last will and testament did not forget the institution, leaving a generous donation of money and books. In 1889, he had set a goal of One Hundred Thousand Dollars as Library Fund, and lived to see this far surpassed. Dr. Oliver Wendell Holmes, in a letter of regret that he could not be present at the laying of the cornerstone of this building in 1889, said, "The Medical Profession will always have to fight against the claims of the wrongheaded and too often dishonest individuals and *schools*, as they call themselves. A fraction of the community will always run after false prophets. There are a certain number of squinting brains as there are of squinting eyes in every thousand of the population." It always falls to the Doctor to protect the public against these astigmatics." When legislation is sought that will grant privileges to these *schools* or individuals, ignorant, undeserving, often a menace to progressive and preventive medicine, no other profession or social group will undertake the thankless task of the opposition, but most other social groups are willing to criticize the doctors who oppose, accusing them of selfishness. Dr. Jacobi was vigorous in the support of everything that he believed would forward the science of medicine, fearless in opposition to every agent, no matter how strongly entrenched, that he feared would work harm, but the Academy was to him a shrine, to which he could bring no differences other than those of his science and art. Like Lydgate, he carried "the conviction that the medical profession as it might be was the finest in the world, presenting the most perfect interchange between science and art, offering the most direct alliance between intellectual conquest and social good." Further, like Lydgate, "he resolved to reject the decorations and other humbugs of medicine and to be the possessor of genuine qualifications." As the home of this quality of Medicine, he strove to keep the Academy a thing apart. Dr. Stewart recalled that a great American had said that twenty per cent. of wisdom consisted in being wise at the right time. Dr. Jacobi was wise in his day and generation. He was never led away by unscientific gods; never misled by pseudo-science, no matter how brilliant the phrasing. To reverse Dr. Thomas Browne, his ears were opener to logic than rhetoric. In the roll of victories inscribed on the banners, the forced marches, the muddy bivouacs, the reeking trench and the driving in of the outposts were forgotten. The victories of peace rarely went down in history. However, there were many who would rather be remembered by a sonnet than a victory; who would rather build fine phrases than a St. Paul's; who would rather give a cup of cold water to a little one than to rule a province. And while it was true that the doctor, who had discovered a new drug to lessen suffering, or a new germ to conquer, was forgotten or remembered only by the few, while he did not reach the Hall of Fame, still he often lived in the hearts of his patients as a special Providence. In closing, Dr. Stewart said: "And so, Sir, we accept this Bas-Relief of Dr. Jacobi with sincerest thanks. It will serve as the symbol and suggestion that we may draw from the walls of memory, tokens of our patron and friend. Though made of enduring bronze, it is not nearly so imperishable as the spiritual legacies which he has left us and which will go on and on, for they are of the very essence of immortality."

The Life and Influence of Dr. Abraham Jacobi on His Times.—Dr. GEORGE E. VINCENT, President of the Rockefeller Foundation, delivered this address. He said, in part, that it was interesting to speculate about what might have been the outcome if the German Revolution of 1848 had been successful. Might a democratized Fatherland have followed a different course? Would the wars of 1870 and 1914 have been avoided? Who could say? This much was certain: the "forty-eighters" brought to their adopted country substantial contributions. Of this group Abraham Jacobi was a distinguished member. His life and work enriched American science, medical teaching, public health, civic organizations, and social idealism. Dr. Jacobi's early passion for democracy made him deeply appreciate the freedom of his new home. His scientific training fitted him for service of a much needed kind. He was in a sense a product of social influences but it was also true that his imagination, creative ability, courage and loyalty enabled him to influence his time in fundamental and permanent ways. He was a force in interpreting and modifying his environment. He grasped and furthered the essential features of modern medicine. He warmly advocated medical research; insisted upon the indispensable nature of laboratory methods; recognized the value of experience gained by the practitioner; and urged the necessity for the closest cooperation between laboratory and clinic. He might be said to have founded in the United States the subject of children's diseases as a division of scientific medicine. The fundamental things in medical edu-

cation were clearly recognized and intelligently supported by Dr. Jacobi. He worked earnestly for more thorough preliminary training for medical students; emphasized the need for adequate endowment and proper equipment for medical schools; suggested the closing of weak institutions and the consolidation of separate schools in a given city into one large, well-equipped and strongly manned teaching center; insisted that medical schools must control hospitals for teaching and research; urged the necessity of establishing diagnostic laboratories in school hospitals; made a special point of bedside teaching and student participation in care of patients; and demanded a general training as the proper basis for specialization. He was one of the first to declare that modern medicine aimed more and more at the prevention rather than the cure of disease. Public Health from the first made strong appeal to Dr. Jacobi's intelligence and sympathy. He looked at the health of the people as a national asset. The preservation and improvement of infant and child life were his chief interest. It was his conviction that the State had a responsibility for public health. He worked energetically for health legislation. He saw that in a democracy public opinion must be educated. He was an early advocate of campaigns of instruction in hygiene through the schools, by public lectures, popular literature and newspaper articles. He thought that every large journal should have a medical man on its staff. In the medical profession Dr. Jacobi saw the leaders of preventive medicine and the future administrators of public health organizations. Dr. Jacobi recognized and loyally discharged his duties as a citizen. His early experiences in the Rhineland revolution had given him a vivid sense of social obligation. He gave himself freely to good causes. At legislative hearings his voice was heard pleading for advances in social legislation, for protection of women and children, for higher standards in medical education. His interests were broad enough to include municipal government and civil service reform. Courage was never lacking and personal interest was always subordinated to general welfare. High ideals were exemplified in Dr. Jacobi's life and eloquently proclaimed by his tongue and his pen. Professional aims were exalted. Medicine to him was a high calling, a noble profession, not a business. He urged the cultivation of science as a lofty aim. To him service to others was a satisfying experience. He proposed the motto "Ich dien" as befitting the medical profession. Dr. Jacobi was modest and humorous. He lost himself in the causes he promoted. His sense of humor saved him from an egocentric theory of the cosmos. Virtues will abstract qualities which had been generalized from countless persons in the course of centuries. These detached elements of character could have no warmth or vividness until they were translated into concrete, vitalizing personality. Dr. Jacobi incarnated the scientific spirit, love of his fellows, unflagging devotion to his work, a firm conviction of its value, a clear vision of its larger possibilities, a deep sense of social comradeship and obligation. The memory of his fine, loyal, winning personality would live on and inspire the profession and the public which he served and led so wisely and to such good purpose.

Parasites of Venezuela Rats.—Gonsalez publishes an interesting original study of this subject in the *Anales de la Direccion de Sanidad Nacional* for July-September, 1919, i, 3. In the rats of Caraccas the author in 1918 discovered the spirochete of spirochetosis icterohemorrhagica, although the disease itself has not yet appeared in man. The animal in question was the so-called gray rat or *Mus decumanus*. No other pathogenic microorganism is mentioned, but a worm known as the *Acanthocephalus* was found in the rat's intestine. The fly known as the *Periplaneta americana* or some other acts as intermediate host in the distribution of the parasite. The worms appear to be related to the cestodes and are not known to be parasitic to man. A third parasite found, also a worm and belonging to the Nematodes, is the *Tricocephalus hepaticus*, which is not mentioned as attacking man. Both these worms or congeners are common among rats everywhere.

Therapeutic Hints.

Arthritis Deformans.—William H. Spencer has noted definite improvement in all cases of arthritis deformans treated by the administration of yeast. The distressing condition of the joints and periarticular structures termed arthritis deformans, and known to the laity as "rheumatism," is now generally considered a result of focal infection. The older hypotheses of nervous and metabolic origin have failed in substantiation, while many are the reports of improvements following the clearing up of some chronic infective process. The teeth, tonsils, nasal accessory sinuses, ear, appendix, gall-bladder, and intestine have individually been incriminated. There may be more than one focus of infection, so that careful study should be made of each case before conclusions are drawn and promises made.

Spencer cites a case in which, after three months of yeast treatment (one yeast cake thrice daily after meals) with active and passive motion of the joints, the patient was able to walk without crutch or cane, the ankle and knee joints recovered, the motion of the right hip-joint became excellent, the wrists became straighter and more mobile, though the right elbow remained unchanged, and the heart returned almost to normal size, while of the murmurs there remained only a systolic roughening at the apex. From an invalid the patient, a boy of seventeen, became a self-supporting member of society. In spite of the tonsillar disease very apparent in this case the real focus of infection was in the intestinal tract, and improvement in all probability resulted from the influence of the yeast on the intestinal bacterial flora. In three other milder cases of arthritis deformans, in older patients, definite improvement in the joint conditions and a lessening of pain on motion was noted under yeast therapy.—*Therapeutic Gazette.*

Acute Follicular Tonsillitis.—The Indian observer, Phanibhusan Mukerji, has found that great benefit is derived by giving pot. chlorate, grs. 5, tinct. ferri perchlor., m. 5, tinct. aconite, m. 1, tinct. belladonnæ m. 5, spirit chloroform m. 10, in water oz. 1, internally, every two, three or four hours, according to the urgency of the case, in cases of acute follicular tonsillitis. Inhalations of steam medicated with compound tincture of benzoin, chloroform, rectified spirit, and oil of eucalyptus with local applications of tincture of ferric chloride in glycerin, must not be omitted. — *Indian Medical Record.*

Tincture of Cockroach for Asthma. — Phanibhusan Mukerji states that tinct. of blatta orentalis (cockroach) in 5 to 15 minim doses can be used successfully as a substitute for lobeliæ etherea to control paroxysms of bronchial asthma. To prepare the tincture, place 4 cockroaches in an ounce of rectified spirit, keep them for a week and strain. —*Indian Medical Record.*

Ulcers of the Cornea. — According to Phanibhusan Mukerji, iodine lotion (iodine 2.4 grs., pot. iodide 2 grs., water 1 oz.) cures ulcers of the cornea when they are of recent origin and do not involve the cornea to any depth.—*Indian Medical Record.*

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Original Articles.

SOME PHASES OF BLOOD CHEMISTRY OF PRACTICAL USE TO THE PRACTITIONER.

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AND
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THE value of blood chemistry to the practitioner depends upon the extent to which it can be accurately utilized for the benefit of his patients. A large amount of work has been done in this field and much detailed information obtained. We feel that within the scope of such information certain practical facts stand out. It is in an endeavor to crystallize in some manner their meaning that the present communicaion is offered. That which follows is based on over four thousand concordant examinations of the blood and urine by us during the past five years.

At the outset we wish to be very definite in regard to a certain point, viz., that these methods have their greatest value in early cases and not to such a great degree in those later types which are more commonly found in hospital wards. In other words, they are more directly applicable to the type of patients seen by the physician in his private practice who come to him before any severe damage has been done. On the other hand, those applying for treatment at hospitals and dispensaries belong to the less well-to-do classes and cannot afford to consult a physician until they are nearly or completely incapacitated for work. It is important that this point be borne in mind in reading that which follows, as we believe a very sharp line of demarcation occurs between these two classes of patients.

From a number of points which might have been chosen for consideration, we wish to present three. These have been taken because they seem to us to be firmly established and also are fundamental and form the starting point from which we think all correct interpretations must proceed. They are as follows:

1. So far as the study of nephritis is concerned, coincident blood and urine analyses, and therefore the coefficients, must be regarded as giving a knowledge of the renal function and not that of an anatomical lesion in the kidneys.

2. An accurate knowledge of the renal function for any given substance is given by means of the so-called renal coefficient for that substance, and cannot be known from a separate examination of either blood or urine.

3. Altered renal functions occur in two forms: First, increased or hyperfunction, and second, decreased or hypofunction.

Renal Coefficients: Coefficient (*con*, together; *efficere*, to produce) is a figure indicating the degree of physical or chemical alteration characteristic of a given substance under stated conditions. This is the definition of coefficient, and it is given here because we have encountered a great deal of misunderstanding as to the nature of the term.

We do not intend to go into a minute description of renal coefficients, but refer anyone interested to the original papers of Ambard,[1] McLean,[2] and Van Slyke.[3] Ambard was the first to introduce a mathematical expression purporting to represent the efficiency of the kidney in regard to urea and sodium chloride. McLean modified his urea formula so that it expressed the result in terms per cent. Van Slyke has recently studied the formula as related to urea and has brought forward a modification which is simpler and, in our experience, more accurate than Ambard's original or McLean's modification. Van Slyke's formula changes the coefficients in about 2 per cent of the cases, some of them becoming pathological and others normal, and these changes of the coefficients would seem to agree more exactly with the clinical condition. We have applied Van Slyke's formula to creatinine, uric acid, and sugar, and believe that it very accurately represents the functions of the kidney for these substances at the time and under the conditions that the examination is made. For chlorides we have used Ambard's original formula, which is remarkably constant.

Van Slyke's formula is $\frac{D}{Bl \times \sqrt{Wt} \times V}$. In this formula D represents the daily output in the urine of the substance in grams. This is calculated from the amount excreted in the examination period, which may last from one hour to two hours, and this is multiplied by either 24 or 12, as the fraction of time may be. Bl is the amount of the same substance expressed in grams per liter, as it occurs in the blood or plasma. Wt is the weight of the patient as expressed in kilograms. This should be the normal weight, exclusive of that gained by obesity or edema, or that lost by inanition. V is the volume of urine as calculated for the twenty-four-hour period from the one or two-hour period used, expressed in liters. A short period is obviously necessary, as the changing relations due to intake in the actual twenty-four hours would be

so large that it would be impossible to calculate a coefficient, so a fraction of the twenty-four hours is taken, and is multiplied by its denominator, so that the figure represents the twenty-four hour output if no change had taken place due to the intake or outgo. The factors used are all variable within certain limits, but, as Van Slyke has shown, they are remarkably constant within these limits.

In the case of urea, the normal coefficient ranges from 4.5 to 10.5. We have found that the coefficient for creatinine ranges from 6 to 15; for uric acid from 2 to 5; for sugar from 0.5 to 2. In the case of the sugar coefficient, we have multiplied the result of Van Slyke's formula by 10, so that it may be in more accord with the values of the other coefficients. In other words, these coefficients are the mathematical expression of the ability of the kidney to excrete amounts of the substances in comparison with the amount of the same substances in the blood or plasma at the time of examination (chlorides, urea, uric acid, creatinine, and sugar). They are influenced to a slight extent by the weight of the patient, to a moderate extent by the volume output, and to a most marked extent by the daily output and the amount in the blood or plasma.

The point we desire to emphasize in this paper is that by the use of these coefficients the functions of the kidney are measured accurately, and this finding can be compared later with the same degree of accuracy that one compares the blood pressure readings as observed on a manometer. We will show that it is impossible to determine the functional capacity of the kidney from a mere examination of the blood alone. We will also show that a kidney may have a lowered function for chlorides and still normal functions for the other substances. Again, there are patients who have lowered functions for uric acid only; still others for sugar; others for creatinine; and also others with only the urea function involved; or else we may have

We do not wish to be understood as claiming that the amount of the substance in the blood gives no information as to the renal function, for, as we have stated, in hospital cases which are far advanced or where there is a marked impairment in function, the blood figures alone do give information that is of value; but, for instance, we may give as an example two of many cases that we have studied. The figures for the urea in the blood are 49 and 40 milligrams per 100 c.c., the first case having almost 20 per cent. more blood urea than the second case. However, when we calculate the daily output of urea from the output in the unit time, we find that the first case has an output of 32 grams, while the second case has only 12; and the renal coefficients for urea are found to be 7.2 and 2.8—the first normal and the second distinctly low. At the time of this examination both patients were on their normal diets, though the diet of the patient with the normal coefficient was higher in protein content than that of the second. These patients were placed on a nonprotein diet for 72 hours, and examined at the end of that period. At this time the first patient had 25 milligrams of urea per 100 c.c. of blood, while the second had 36; the daily output of urea in the first case was 18 grams, that of the second was 10; and their renal coefficients were 7.9 and 2.8, respectively, showing no change in these figures. In other words, the first patient could get rid of his urea with perfect ease, while in the second patient the ability to excrete urea was limited.

Again, we can compare two other cases, both of them on a nonprotein diet at the time of the first examination. Both these patients had a urea of 11 and 12 milligrams per 100 c.c. of blood, being practically the same; the daily output of urea as calculated from the period shows that the patient with 11 milligrams put out four times as much as the one with 12 milligrams, and that the coefficient

TABLE No. 1

Occurrence		Type	Uric Acid Blood mg. per 100 c.c.	Uric Acid Coeff.	Urea Blood mg. per 100 c.c.	Urea Coeff.	Creatinine Blood mg. per 100 c.c.	Creatinine Coeff.	Sodium Chloride Blood Threshold m.g per 100 c.c.		Sugar Blood Per cent.	Sugar Coeff.
Normal			1–6	2–5	5–24	4.5–10.5	.5–1.2	6–15	520.–595.	562.	.05–.10	.52
EARLY	Frequent	Uric Acid	6.15	1.9	12.34	11.2	.61	14.2	493.	487.	.08	1.3
		Chloride	2.4	2.4	22.5	4.5	.6	9.7	660.	610.	.11	.86
		Uric Acid Chloride	5.7	1.8	25.5	5.5	1.5	5.4	680.	614.	.08	1.8
	Infrequent	Urea	2.54	2.6	69.5	1.3	1.	5.9	548.	525.	.09	1.1
	Very Infrequent	Creatinine	2.4	3.2	20.7	5.3	2.1	2.1	590.	560.	.08	.7
MEDIUM	No Special Order of	Uric Acid Urea	6.50	1.08	89.88	.54	.75	5.7	584.	552.	.07	1.4
		Uric Acid Urea Chloride Sugar	6.4	.56	22.	3.7	1.3	8.2	590.	588.	.178	.35
		Uric Acid Urea Chloride	5.08	.97	63.21	1.5	1.2	5.8	512.	596.	.06	1.1
LATER	Frequency	Uric Acid Urea Creatinine	5.55	.58	79.39	.7	2.4	1.06	591.	558.	.08	1.2
		Uric Acid Urea Creatinine Chlorides	6.75	.76	148.6	.47	3.64	3.6	651.	622.	.07	.8
		Uric Acid Urea Creatinine Chlorides	6.70	.09	55.42	1.6	2.56	3.8	680.	666.	.13	.26

of the patient with this high output was normal, being 6.7, while that of the other was 1.2. If the blood urea only had been used to obtain a knowledge of the patients, the physician would have been misled, as it was very low in both cases. In order to test the question raised by this examination, both these patients were placed on a protein diet for 72 hours and the examination repeated. The person with the low coefficient showed the same coefficient of 1.2 as before, while his blood urea had increased to 38 milligrams. In the patient who had a normal coefficient of 6.5, there was a difference of 0.2 between the first and second examinations, while the blood urea was increased to 24 milligrams.

There is, of course, a group of cases who show very high figures for these substances in the blood or plasma, but these are advanced cases of nephritis and the coefficient is simply an index as to the severity of the lesion. In determining the coefficient of early cases it is extremely important to observe three points: (1) That the examination should be made in the period from two to four hours after their normal meals. (2) It should be made during their normal daily work. (3) No therapeusis should have been understaken in the forty-eight hours preceding the test.

Technique.—The patient drinks two glasses of water, half an hour after this empties his bladder, and the test period then commences and it may run from one to two hours, the blood being taken at any time during this period, as we have not found that there is any change in the amount of the substances in the blood to interfere with the working out of the coefficient.

This giving of fluid is necessary, for unless the patient passes urine at a rate of at least 500 c.c. for the twenty-four hours, the coefficients will be changed because of the phenomena of dehydration, that is, the patient will appear to have a lowered function simply due to the fact that he is not secreting enough fluid to carry them off. We prefer to collect the urine between the hours of 11 and 1 or 4 and 6, obtaining the blood at the same time. A night's rest in bed will often give markedly higher coefficients than those taken during the working hours, and they are apt to be misleading. Besides the factor of rest, there is also the factor of starvation. If the damage is severe, moderate starvation shows a heightened renal function.

The priority and frequency of impairment of these functions is extremely interesting. The two earliest and most common are a lowering of the functions for chlorides and uric acid; next most frequent, that for sugar; then creatinine, and lastly urea. We are convinced that the figures given in the literature as being normal are in some cases too high and in other cases too low. It is commonly regarded that 3 milligrams of uric acid is the upper limit in the normal, but these figures are based on at least twelve hours starvation or else in so-called normal individuals working in and about the laboratories. These individuals do not indulge to any extent in rich diets, for the reason that few working for our universities and hospitals can afford more than a very simple dietary. On the other hand, individuals with a greater income indulge in more costly diets and these diets contain a much larger proportion of purins. We have repeatedly found uric acid figures up to 7 and 8 milligrams in patients who have a daily excretion of 1½ and 2 grams of the substance, and yet in the textbooks and current literature it is stated that the normal output for uric acid is between ½ and ¾ grams for the twenty-four hour period.

On the other hand, we are convinced that the greater number of cases showing more than 24 milligrams of urea per 100 c.c. have impaired renal function for urea. Creatinine in normal individuals is seldom above 1.2 per 100 c.c. In the great majority of normal individuals with normal coefficients for sugar, we find the figures for the blood below 0.1 per cent. Changes in the coefficient for sugar are extremely interesting but we will deal with this question in a future paper.

When we come to the question of chlorides, we are on debatable ground, as the chloride content of the plasma may vary very markedly. We do feel, however, (and here we are in agreement with Allen[4]) that chlorides above 0.59 per cent. may give rise to symptoms and we have also found that chlorides below 0.52 per cent. may give rise to various symptoms. Apparently individuals react to varying concentrations of chlorides in entirely different ways. However, there is no question that the greater number of hypertension cases show a high chloride figure in the plasma and in general will have an increased threshold, for, as Ambard and McLean have pointed out, there is a certain concentration in the plasma of normal individuals which, if the chloride falls below, the kidneys cease to excrete it. Ambard has shown that this normal threshold is at or about 0.562 per cent., and from our own determinations we are convinced that this is the normal point, though many people are found who have kidneys which are more permeable to chlorides than this figure would indicate. In other words, they have a lower threshold. Therefore it is a question as to whether or no we are dealing with a true hyperfunction in such cases. It does not seem to us to be remarkable that chlorides should be so often found at fault, for in the wild state animals obtain their chloride only sparingly, while a man has more than ready access to it, and many are addicted to an excessive use as may be seen from the promiscuous use of salt, condiments, sauces, etc.

True hyperfunction for all these substances is found when there is active congestion of the kidneys or where there is markedly increased basal metabolism. It is also found in early diabetics before nephritis has developed. It is found in hyperthyroidism and in the early days of an acute infectious process, except in pneumococcic pneumonia where the chlorides of the plasma drop below the threshold figure. On the other hand, hypofunction may be the result of a chronic passive congestion, poor heart action, under nourishment, anemia, and true anatomical lesions of the kidneys. (See Table II.)

In this work the laboratory man cannot possibly make the diagnosis as to the cause of the altered renal function. That must remain in the hands of the clinician and it is he who must interpret the laboratory findings and decide what is the cause of these alterations. For instance, many cases of lowered function in regard to chlorides are benefited

TABLE No. II.

Uric Acid Blood mg. per 100 c.c.	Coeff.	Urea Blood mg. per 100 c.c.	Coeff.	Creatinine Blood mg. per 100 c.c.	Coeff.	Chlorides Blood mg. per 100 c.c.	Threshold	Sugar Blood per cent	Coeff.	Clinical Diagnosis
Normal 1–6	2–5	5–24	4.5–10.5	.5–1.2	6–15	520–595.	562.	.05–.10	.52	
4.5	1.4	29.96	1.8	.84	6.9	568.	508.	.091	.11	Nephritis
7.5	1.	2.86	15.6	.64	10.4	639.	595.	.16	.06	Nephritis
6.	.59	5.69	4.8	1.57	2.	599.	546.	.08	.14	Nephritis
7.65	1.1	53.50	.25	.85	2.2	612.	587.			Nephritis
2.64	5.8	10.70	6.9	1.35	11.7	664.	622.	.08	.14	Nephritis
8.4	1.	71.91	2.4	.59	.14	618.	579.	.06	.19	Anaemia
4.57	1.9	17.34	5.7	1.07	8.4	518.	480.	.07	.15	Undernourishment
8.64	1.	38.72	3.8	.9	10.5	612.	587.	.13	.09	Cardiac
4.8	1.	70.4	1.6	1.25	3.5	565.	510.	.11	.1	Hypothyroidism
9.52	.81	13.48	2.9	.59	11.3	648.	600.	.09	.13	Chronic passive congestion

by a chloride free diet, as Allen has pointed out. Again, cases of lowered renal function for uric acid are nearly always benefited by being placed on a strict purin free diet. In the early stages of the true nephropathies a rest of the function undoubtedly increases the ability of the kidney to excrete these substances. On the other hand, patients with malnutrition or anemia are made distinctly worse by being placed on low diets, because their decreased functions are due to the poor general condition and they must be built up. In any given case, it is the clinician who must decide as to what is to be done and often he will have to experiment, for human animals are not all alike, there being very marked individual reactions to treatment. In the cases of markedly advanced nephritis of the chronic type with a true anatomical lesion, we have never seen a change for the better in the coefficients; they are continually on the down grade; treatment does not alter the basic condition.

In Table III repeated examinations on various patients showed the effect of treatment on changing the functions. It will be noted that in the cases of true nephritis there is no marked change in the coefficient figures, while, on the other hand, in those cases that are not clinically nephritis, the coefficients have increased, showing that the functions of the kidneys have improved. We could present reports of a large number of such cases, but space forbids it as they would be but a repetition.

Conclusions.—We have shown that by the use of coefficients an accurate measure of the functional activity of the kidney for five substances is easily ascertained; that these coefficients are of value only in the diagnosis of functional condition and early cases; that they are not an indication of a true nephritis and cannot be used by themselves to determine whether there be an anatomical lesion of the kidneys or not; that these coefficients are remarkably constant, as Ambard, McLean, Van Slyke, and numerous others have already pointed out, and that they have not been appreciated because they have been applied in the great majority of cases to hospital or dispensary patients and for the purpose of establishing a relation between them and an anatomical lesion. The functional condition due to poor general bodily tone is paralleled in the case of the heart where we may find signs of a serious lesion, though a good clinician differentiates the two conditions and can as a rule decide whether the cardiac weakness or symptoms are due to a true anatomical lesion or merely to a functional condition.

We think we have shown conclusively that their chief value is not that of establishing an anatomical diagnosis but in indicating a faulty function, and that the clinician can improve these functions by appropriate therapeusis, provided that it is only functional and not due to a destruction of the kidney parenchyma.

TABLE No. III.

Date		Uric Acid Blood mg. per 100 c.c.	Coeff.	Urea Blood mg. per 100 c.c.	Coeff.	Creatinine Blood mg. per 100 c.c.	Coeff.	Chlorides Blood mg. per 100 c.c.	Threshold	Clinical Diagnosis
Normal		1–6	2–5	5–24	4.5–10.5	.5–1.2	6–15	520–595.	562.	
	Sept. 1	6.8	.78	18.7	5.8	.87	6.4	580.	514.	Nephritis
Case 1.	Oct. 3	5.8	.8	9.4	7.2	.88	6.5	570.	502.	Nephritis
	Nov. 8	5.	.9	9.2	7.4	.84	6.9	565.	502.	Nephritis
	Oct. 2	8.4	1.9	37.2	.96	1.	6.1	645.	600.	Nephritis
Case 2.	Nov. 10	3.6	2.	35.	1.	.95	6.4	620.	584.	Nephritis
	Jan. 4	3.4	2.1	34.	1.	.93	6.4	620.	594.	Nephritis
Case 3.	Aug. 3	9.7	1.	38.	1.5	1.1	3.2	575.	513.	Anaemia
	Oct. 28	4.6	2.	26.4	3.9	1.2	5.3	580.	524.	Anaemia
Case 4.	Nov. 20	7.7	1.3	36.2	1.2	.89	3.8	645.	600.	Undernourishment
	Jan. 29	2.4	3.8	17.1	5.6	1.2	5.9	565.	535.	Undernourishment

The methods used for the determination of these substances are as follows:

For urea, the Van Slyke and Cullen method, (5) both in blood and urine.

For uric acid, the Folin (6) method as modified by Benedict.

For creatinine, the Folin (7) method.

For sugar, Benedict's (8) methods.

For chlorides, Van Slyke and Donleavy. (9)

From the foregoing, it will be seen that extremely careful and accurate work must be done if the coefficients are to have any value, as the coefficient may represent a pathological condition in the laboratory and not in the patient if the determinations be not made with the greatest accuracy. And also that to the patient it is more important to know the functional capacity of the kidney, than to think that one knows how that kidney will look at the autopsy table.

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CONGENITAL AND ACQUIRED HEART CONDITIONS WHICH GIVE RISE TO SYMPTOMS; THEIR SIGNIFICANCE AND TREATMENT.*

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BEFORE assuming a more general conception of diseases of the heart it might be well to observe carefully the structures which enter into the formation of the heart, particularly as applied to nerve and muscle. The development of the heart starts with the elementary tube which in its subsequent development divides and subdivides into auricle and ventricle. The primitive tube is the receptive center for nerve impressions and in the subsequent development of the heart this nerve center is practically the channel through which the heart receives its stimulation. There are two theories as to the manner in which heart tissue contracts, the Myogenic and the Neuropathic. The myogenic theory assumes that the muscle fibers have within themselves the power to generate stimulation and an independent action; the neuropathic theory requires the presence of an interlocking nerve plexus distributed throughout the cardiac tissue.

The point which concerns us this evening is that, in spite of the two schools of thought, we must be impressed with the fact that we are dealing with an organ so constructed that it seems able to generate its own impulse and at the same time accept outside stimulation in performing this function. Hearts, like individuals, have tissues which are peculiar to their inheritance. Many individuals are physically strong but have vulnerable lung tissue. Other families show degenerative kidney changes, while still others seem to have a selective weakness in their arterial system. When we speak of diseases of the heart, we cannot confine ourselves to the organ alone, but must include the arteries and veins as well. With this elaboration of the subject, we have to consider, not only heart muscle, but friable veins and arteries whose integrity is just as important as the heart itself. In families where the circulatory system is either of a low grade or is unable to stand the stress of life, we find a tendency to weakness. These types complain of poor circulation, they chill easily, they suffer from hemorrhoids, they show a venous weakness in varicose veins and phlebitis, they bruise easily showing the vessel structure is friable, and they may complain of retinal hemorrhage under slight exposure. In typhoid fever they are poor risks and very apt to develop intestinal hemorrhages, also cerebral hemorrhage is not uncommon as they advance in years.

The effect of early life on the heart is very important. We must remember that all infections which enter the system reach the blood, and, once here, pass through the heart leaving their marks. This is particularly true of such diseases as infection of the adenoids and tonsils, both of which may form pus pockets for active or subacute absorption into the circulation. More than this, the anatomical position of adenoids and tonsils is such that it is an easy matter to infect the mediastina secondarily, where glands thus infected become sources of danger for a long while to come. The particular offenders among the acute infectious diseases are scarlet fever and diphtheria; typhoid fever has also always played a part through its exhaustive duration in laying a foundation for future heart trouble. The latest addition to heart infections, namely, the influenza epidemic, has left a serious effect upon cardiac tissue. This was probably due not only to the severity of the infection, but also to the fact that the suprarenal glands were involved as well. Infection cannot enter the blood current without leaving behind destroyed serous surfaces and degenerative muscle changes which may extend to the valves of the heart. The most serious bacteria are streptococcus and staphylococcus, particularly the viridans. The typhoid bacillus and pneumococcus are frequent offenders.

In spite of all of our pathological studies it is extremely difficult to appreciate what the living heart is doing. We may study the tissue changes in the dead organ, we may find evidences of fatty degeneration, destruction of muscle fiber or valves which show marked destructive changes and incompetence; and yet this same heart in life performed its function and carried the patient along for many years. Pathological specimens are always hardened and contracted and there is no way of proving their elasticity or the ability of dead tissue to functionate; therefore we are in ignorance of the living pathology except to know the destructive tissue changes which may take place, and it makes it all the more important that we study the physical signs and clinical symptoms carefully before making any reference to the pathological findings.

Congenital heart cases are comparatively frequent. The so-called "blue baby" with the unclosed foramen ovale was shown to this Society in a wonderful selection of pathological specimens by Dr. Walsh. If the foramen ovale is faulty and either unable to close completely or leaves a leak of too large a dimension, the patient may die immediately, or if the child survives the second year of life, within a reasonable time thereafter it dies a lingering death in early adolescence. These cases are poor risks.

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The next type of congenital heart is the syphilitic. Too little attention is paid to inherited syphilis in the young. We assume from the air of prosperity, and the evidence of wealth in our patients that the offspring from such people could not and should not come within the horizon of suspicion. This is a great mistake; unless the child shows unmistakable evidences of the rheumatoid group, such as tonsillitis, throat infection, chorea, etc., we should invariably have the blood examined.

Children subject to prolonged labor with trauma to the cord, to the use of anesthetics, and those which are born prematurely from 7 to 8½ months, have the most difficulty in establishing a satisfactory circulation. The field of preventive medicine should include the elimination of all predisposing elements in these cases.

Another thing of importance in the acquired heart conditions is early malnutrition. The pediatrist, if he is fortunate in establishing formulas which agree with the bottle-fed child, secures the amount of nutrition which will take care of the circulation. Experimentation in infant feeding is doubtless accountable and a contributing factor in many cases of weak hearts in children. Those children which show circulatory disturbances should be carefully managed in early life, they need rest and food, absence of excitement, and an avoidance of any of the infectious diseases. As the child grows, it may show a marked tendency for athletics. This is particularly true of the high-strung nervous child, who seems to have a boundless amount of energy and is not ordinarily fatigued. There is, without question, in this type a lack of glandular balance, but, for the purpose of our paper, we are more interested in the fact that the cardiac response is too rapid and the child will run a pulse far above what it should to maintain health. The boys at Eton, a preparatory school in England, are all put out on long runs on the road to develop endurance and strength. It seems almost Spartan in its cruelty if the child only proves its fitness to live by suffering. This is the child who, through parental pride, is allowed to assume an athletic burden which the heart cannot endure. The child at first excels owing to the ability of the heart to respond, but when the musculature of the heart is compelled to stand the endurance or fatigue of competition, valvular trouble invariably results.

After all, too much stress is laid upon heart examinations with their resultant abnormalities in sound, and too little attention is paid to the clinical study of what the heart is actually accomplishing. Of the two, the clinical study of the heart's ability to do its work is of infinitely greater importance. Under the law of economics, the insurance companies have concluded that hearts which have abnormal valvular sounds are not good risks. They have arrived at this conclusion after considering many hundreds of thousands of cases, following their histories through life and then compiling results. This is purely a mathematical computation with them and totally eliminates the personal equation. From this result, the medical fraternity is overwhelmingly impressed with valve sound murmurs, yet many people live to a good old age and never lose their heart murmur. I have in mind now a case who, at the age of 29, was warned to be very careful because he had a mitral lesion, and for thirty years this man literally walked on air for fear he would in some way injure his heart; he subsequently died of cancer of the stomach at the age of 83, never having had any recurrence of heart symptoms.

The organs supplied by the heart should first be examined for cardiac deficiency. Inasmuch as the blood promptly reaches the lungs for aeration, it is in the lungs that we first look for the evidences of stasis. You will find the bases of the lungs will show rales when there is the slightest deficiency or damming back from the mitral valve. Another organ which is prone to show enlargement is the liver; again, in lung conditions, the hacking cough with the slightly blood-stained sputum, so often mistaken for tuberculosis, could be promptly differentiated by a careful examination of the heart. The extremities show early edema, the rings become tight on the fingers, the kidneys show traces of albumin from stasis, while suffusion or exudation in the brain and mental stupor are extremely suggestive of circulatory disturbances. Dyspnea on the slightest effort, faintness, and a peculiar secondary pallor are frequently found to be cardiac symptoms. Far better to recognize the stasis and symptoms of indigestion as cardiac than to continue with digestive remedies which do the patient no good.

Some murmurs of the heart clear up under slight exertion and it is humiliating when a clinical case has been carefully examined, and the mild mitral blow easily distinguished, to find this same case practically normal when brought before an amphitheater of students. I cannot lay too much stress upon the importance of judging the heart by the work it is able to accomplish and not by the sounds. There are serious heart lesions which coincide with clinical findings. When we leave the mitral valve, we inspect the aortic area and the aortic valve which is found oftenest diseased in middle and advancing adult life. The aortitis and high blood pressure are almost synonymous and yet in these cases of aortitis, if we would cease considering the respectability of our patients and have a Wassermann test made, we would more frequently reach the correct diagnosis of syphilis, congenital or acquired. I have seen blowing murmurs over the aortic area, however, which cleared up under prolonged treatment with iron.

The irregular hearts, which compel us for a moment to dwell upon the miogenic and the neuropathic theories, are most interesting. Briefly, the medical profession have accepted the medical theories of Mackenzie, Lewis, and McLeod, relative to the muscle and nerve impulses which are necessary for the normal heart beat. The center which receives cardiac impulses is at the base of the heart, in fact, is generally accepted as the sinus node. The impulse to contract spreads uniformly from the sinoauricular node to the auricular-ventricular node and then to the ventricles where contraction starts in the papillary muscles. It is extremely important to remember the mechanism of contraction if we are to understand the arrhythmias which are very frequent in cardiac disturbance. This theory of contraction was early recognized by Mackenzie. We know that, the channel of nerve impulse being clearly established, it is easy to understand that a

weak or heavy nerve impulse would cause cardiac contraction in proportion to the amount of nerve stimulus which passes through the nodes and eventually reaches the muscle. When complete stimuli do not reach the ventricles we have missed beats. Excessive stimuli cause accentuation of the heart beat and a disarrangement of the cardiac cycle. The so-called irregular heart is one which suffers from faulty stimulation. Carried to the ultimate degree this may become heart block, or it may become bradycardia or tachycardia.

The significance of Heart Irregularities.—Medical men are in general agreement as to the relative seriousness of cardiac murmurs. The mitral valve when stenosed gives the least trouble; next comes the regurgitant mitral. The aortic when stenosed will work under effort for a long while, but, if regurgitation takes place, the last bulwark in the left heart is passed and the right side of the heart is soon involved. This means trouble as visceral stasis ensues.

The questions invariably to be determined are: How much reserve hypertrophy can be developed? Has fatty degeneration started? What is the family history relative to age and demise? What material have we to work with? If the trouble is a valvular leak with a necessary hypertrophy to restore the compensation, then how bad is the leak, and again how much reserve muscle tissue have we to draw upon?

As I stated before, when the aortic has given away and the various viscera show stasis, the only evidence of cardiac improvement must come with a restoration of function on the part of the organ affected. The stomach must digest better, the kidneys must secrete a normal amount of urine with a rational gravity, the liver dullness must abate, edema must subside, and fluid wherever present must either be withdrawn not to return or gradually disappear of its own accord. This is a proper conception of cardiac treatment. A young girl with marked anemia, slight dry cough, with blood-tinged sputum should be carefully examined for mitral stenosis with regurgitation. Congestion of the nasal mucosa in these cases often produces nosebleed. Frequent nasal hemorrhage is suspicious of mitral trouble in the absence of local causes. Again, the patient who presents a basal cardiac murmur covering the aortic valve area and following the arch of the aorta, should invariably have the blood pressure taken. High tension types will show a murmur. Low tensions with an aortic blow are suspicious of specific origin. Verify this before making a diagnosis and, if the report of the Wassermann is not satisfactory, put them on a modified specific treatment and make a diagnosis on the results of treatment. It is a common mistake to waste time over fine points in diagnosis when the suffering patient can be made comfortable by a little experimental medication.

There are a certain number of patients with arrhythmic hearts who are able to live their individual lives with bad sounding hearts but comparatively little discomfort. These are in line with the proven theory of Mackenzie that they are due to an interrupted nerve impulse in the sinoauricular or auriculoventricular nodes. A broken impulse means a poor contraction or a compensating contraction, all of which is interpreted by an irregular and uncanny pulse tracing. Do not spend too much time looking over the terrors of a pulse tracing whether it be an electrocardiogram or a plain tracing. Bear in mind that the technique in all cases plays an important part, and many variations which may appear pathological are merely due to differences in application of machinery.

I have found tracings useful when they offered a comparative test in sequence after periods of observation. On the other hand, I have been embarrassed to find two consecutive readings of the same pulse taken at the same time and sitting, which, due to slight differences in application, have given me different readings. We are never going to be able to reduce the science of medicine to any combination of mechanical tests which will replace the fundamental power of careful observation. Unless we lose sight of the tests and see what the patient is able to do for himself in the way of living we are practising near-sighted medicine.

Now as to *Treatment.*—A congenital heart which shows an open foramen ovale is of bad prognosis and is better off out of the way. Nature provides for this and the bearers of such hearts do not survive much beyond the period of adolescence.

The specific heart needs no comment beyond prompt treatment by mercury and the iodides and the use of rest, and not digitalis. Stimulating a specific heart which has not had mixed treatment first is unscientific and injurious. You are whipping a cripple.

Medicine plays a minor part in the treatment of heart disease. Our first need is to take account of stock: the age, occupation, type of work, and the future must be carefully considered. We must adjust the life of the patient to his cardiac condition. This does not mean impressing him with the fear of heart trouble for life, but rather insisting that his vocation and pleasure shall be along lines which do not produce heart strain. If it occurs in a child, the child should be excused from athletics and gymnasium; it should not be allowed to climb stairs and should be forbidden to run or unnecessarily strain itself at play. The child with a heart murmur should merely be careful and the general physical condition of the child should be carefully studied.

Do not use stimulation when the heart is already taking good care of itself. The murmur is merely a danger signal and not necessarily a deadly menace. The milder mitral disturbances are not prohibitive in child-bearing women. Study carefully how well the heart takes care of the body needs and remember that some functional murmurs disappear after the well adjusted use of iron. The child can get a large amount of iron from a carefully studied cereal selection. When it becomes necessary to use cardiac stimulation, start out with the idea of helping the heart; although the heart needs assistance there is also danger of whipping it too much unless care is used in the selection of medication.

Digitalis is the one drug universally chosen by the profession as specific in heart diseases. Much careful and scientific work has been done in trying to determine the best preparations to meet the need of the physician. Within a few years the demand for a good hypodermic preparation has resulted in

the elaboration of fat-free digitalis preparations. The result has been products offered to the profession under the name of digipuratum, digitoxin, digalen. All are efficacious where a rapid result is desired and the patient is unable to swallow. After all, we find in the standardized tincture results which cannot be questioned, and inasmuch as the digitalis is used here in its entirety, its effect on the heart can be relied upon. It is better to select one preparation of digitalis, such as the tincture, and by combining one of the digestive extracts to secure a preparation which the majority of stomachs will tolerate.

Recently the investigations of some of our experimental schools have given us to understand that the maximum effect of digitalis is not reached until the drug has been administered seventy-two hours. There is also a tendency to give massive doses with the idea of saturating the circulation as soon as possible. I fear I disagree with both of these theories. In the first place the use of digitalis, when once started, must be continued practically for life. The person once compelled to resort to digitalis is rarely able, in chronic heart disease, to discontinue its use for long intervals. If this is so, we then have our problem reduced to a very simple equation; we have about so much heart muscle left, and an equal amount of reserve force which is able to respond to stimulation. If we apply our whip very vigorously we wear out the organ that much sooner, as it is alarmingly certain that the dosage of digitalis always increases and rarely diminishes. In earlier times, it was considered to be a cumulative drug.

I do know from my own experiences that, when giving large doses of the tincture of digitalis, my cases, instead of recovering anything like a regular beat, went into collapse. If it is necessary to resort to large doses, or if we feel that digitalis takes too long to get a quick response, why not use caffeine citrate, or sparteine sulphate or caffeine-sodium-benzoate, or for that matter plain strychnine? Any one of these, if given at the proper interval, will permit the heart to hold out until the effect of digitalis is fully asserted. I believe the wisest way is to give just as little digitalis as the patient can get along with. This cannot be ascertained until the patient has been put to bed and a reasonable period of rest established. We are endeavoring to see what the patient can do for himself; first, without medication, secondly, how little medication he needs in the condition of rest to establish his circulation, and finally, what stimulation is demanded to enable him to carry out a simplified mode of useful activity. This is the rational treatment of heart disease.

Let us get away from the enthusiasm of theory in these cases and study the patients themselves, endeavoring to restore them to modified usefulness, rather than exploiting anybody's theory relative to dosage and rapid restoration of function. Bear in mind that many cardiacs outlive the physician who makes the diagnosis and arbitrarily consigns his cases to the terror of sudden death. This is a grave responsibility and each physician should think carefully before injecting into the life of his patient any further misery and discomfort.

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CONTRIBUTIONS TO THE TREATMENT OF PULMONARY TUBERCULOSIS.

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(FROM THE CINCINNATI TUBERCULOSIS SANITARIUM.)

For the past years our endeavors were directed toward the detection of new means of treatment in this disease in which so many attempts have been made to secure better results than by the routine methods generally adopted. All colleagues by a close clinical study of the cases have reached the conclusion that with an extensive involvement not only affecting the upper lobes but also having encroached upon the apices of one or both lower lobes, very little can be expected for an arrest of the disease. A resigned pessimistic attitude is shared by most professional men.

Any new medication praised and hailed by the non-professional public as a sure cure of the ill effects of the bacillary infection is looked upon askance and for fear that our illusions may early fail to materialize. Instead of "watchful waiting" for results we are early inclined to discard any possibility of ever accomplishing anything in the line of treating the far-advanced cases of the disease. With so many clinical reports published one frequently misses the convincing proof that one or the other of the praised remedies was really the reason for the improvement.

The properly conducted university institutions, aided by a careful study of clinical and laboratory findings, can help a great deal in ascertaining the positive or negative virtues of a recommended remedy. The search for truth, particularly along therapeutic lines in which the profession and humanity have been disappointed so many times, requires extensive and fundamental study for a long period upon extensive clinical material in order to reach useful and truthful conclusions.

Requested to review in a preliminary communication my observations collected in a series of cases treated with vegetable proteins (kindly furnished me from the private laboratory of Dr. A. S. Horowitz), the data contained below may be of educational interest. As a preliminary report it is desirable to mention besides a few typical clinical cases only the salient features and impressions gained while treating the medium and far-advanced cases by the subcutaneous injections, leaving the details of physical findings, technique and changes observed in blood pressure, size and sounds of the heart, the hematological changes, the aspect of the pathological lung specimens, etc., for a later contribution. It may be stated that in the series of twenty cases the results were not uniform. This was partly due to differences in the type of cases, the doses and intervals at which the injections were given, and was also dependent to a great extent upon the cooperation given by the patient himself in the pursuance of the treatment.

Case I.—G. M., colored, age twenty-six, re-admitted to the Cincinnati Tuberculosis Sanitarium on August 17, 1918. History of active, open pulmonary tuberculosis since 1915. Physical findings on admission (August 20, 1918) active, open pulmonary tuberculosis, III, C. 22, diffuse, active involvement of all lobes with cavitation in vertebral, first interspace trunks on either side. Marked extent of moisture, diffuse involvement

of apical and horizontal trunks of both lower lobes, moderate involvement of basal trunks. Beginning involvement of right middle lobe trunk and lingual tip. Sputum positive Gaffky III. Amount of sputum, one ounce positive urochromogen reaction. Diameter of heart R. 7.5 cm., L. 7.5 cm., trans. 15.0 cm., obl. 14.3 cm., height 8.1 cm.; cardiac triangular surface 60.75 cm.^{2}; pulse 104; blood pressure, systolic 128 mms., diastolic 90 mms.; pulse pressure 38 mms.; weight on admission 126; temperature 97.4°, pulse 80, respiration 16.

Patient received the ordinary treatment consisting of rest, cough medication, and ordinary diet up to January 15, 1919. In the course of five months he had gained ten pounds.

Physical examination before treatment was started on January 2, 1919, showed a persistent involvement and active process of all trunks of both upper and lower lobes, with still existent activity throughout left base. Signs of cavitation very pronounced over first and second intercostal spaces on right and left side anteriorily over vertebral and first interspace trunks. Practically speaking, hardly any change has occurred in the physical findings during the past five months. The patient still had a positive sputum Gaffky III with mixed streptococcic infection. Was advised to have a trial treatment with the vegetable protein, proteogen.

From January 15 to May 16 he received 43 injections, beginning with 8 minims, increased gradually to 26, reduced to 14, and increased again to 20 minims. The reactions were noted as 1 or slight up to the last three, which were characterized as quite marked, the arm being quite sore. The appetite and sleep remained good throughout the course.

The patient noticed, as in similar instances, that during the next twenty-four hours following the injection the amount of sputum was decreased, which was followed by an increase in the secretion after the lapse of that period. Before, a considerable tiredness and exhaustion was noticed on the least exertion, which sensation had diminished in the course of the injection treatment. The patient, when asked whether he would prefer if the injections be discontinued, answered in the negative. Afflicted with a chronic laryngitis, during the treatment, no change in the hoarse voice could be noticed. During the treatment the patient's weight had ranged between 136½ to 133. In the space of four months, however, he was able to undertake the work in the laboratory, ranging from four to six and later eight hours, without any particular discomfort. The temperature was in general subnormal, ranging from 96.2° to 98.6°. The blood pressure range was: Systolic, 118-140 mm.; diastolic, 80-100; pulse pressure, 24-48.

The sputum findings one week after beginning the injection treatment were negative. Two weeks later a Gaffky IV could be noticed. Three months later it returned to a Gaffky II, and nine months later a negative sputum was obtained. Eleven months after beginning of treatment, or six months after cessation of the same, it became positive with Gaffky II. A complement fixation in this case was negative for syphilis as well as for different strains of tubercle bacilli when made in November, 1919.

The physical findings in this patient are particularly interesting. Five months and a half after onset of treatment, or one month after treatment had ceased, the sclerosis was particularly conspicuous on the right upper lobe, involving all upper trunks, especially vertebral and first interspace trunks, but no activity could be detected over the entire right upper and right lower lobe. Sclerotic changes also were obtained over apex of right lower lobe on the left side. Activity was slightly noticeable in the lower part anteriorly, particularly in the second interspace and horizontal trunks and lingual tip, with signs of cavitation in the left upper lobe, harsh breathing still prevailing over the left lower lobe, but no activity presented itself. On October 31, 1919, these changes were still more conspicuous, but the cavitary signs over the right upper lobe, vertebral and first interspace trunks were less conspicuous. Posteriorly, only a few crackles were noticed, besides harsh bronchial breathing and increased whispered voice. A hush breathing could be detected in right base posteriorly. The left lung also showed signs of sclerosis in first and second interspace trunks and vertebral trunks anteriorly and posteriorly. The left lower lobe, particularly the upper half, revealed fine moist rales spontaneously and after cough.

It is evident with the exception of the left lower lobe patient's condition appeared somewhat better. Activity was suggested also in the lower lobes. Weight 127 pounds, as compared with 133 pounds when treatment was discontinued, confirming such a suspicion.

Examination on January 13, 1920, one year after the treatment had been started, or eight months after discontinuation of the same, slight activity, but more sclerosis was encountered in the second and first interspaces on the right side, with sclerosis more pronounced throughout the left upper and apices of both lower lobes.

The changes in the heart findings in the size of that organ may be of interest:

Date	1/2/19	6/20/19	10/31/19	1/13/20
Right	5.5	6.8	7.8	7.8
Left	7.5	7.5	5.6	5.3
Trans.	13.0	14.3	13.4	12.8
Height	8.5	10.0	8.1	8.1
Obl.	12.5	15.6	13.7	13.7
Cardiac Triangular Surface	55.25 cm^2	58.6 cm^2	54.27 cm^2	57.60 cm^2
Heart Sounds	Accentuated tricuspid.	Accentuated first tricuspid.	id.	Indistinct deviation of heart to the right with possible dilatation more marked than ever before.

Clinically, the patient was doing better up to October 31, 1919, when, consecutive to a cold he developed sinus trouble in his nose, but he kept on working faithfully without any special complaints. On February 4 he complained of a chill with high temperature, amounting to 102.8°, pulse 112, respiration gradually increasing from 24 to 34 per minute, presenting marked cyanosis, extensive pulmonary involvement, in consequence of which the patient died, notwithstanding all efforts of keeping up his failing circulation and the marked toxemia.

The description of the pathological specimen of his lungs will be given later, as being of particular interest with regard to the extensive sclerosis and shrinking of the affected tuberculous lungs, probably in close connection related to the action of the proteogen treatment.

Although the immediate results of the proteogen therapy were favorable, it is to be regretted that the patient became a victim of an influenzal bronchopneumonia and that his heart did not have sufficient vitality to overcome the marked congestion and toxemia. This case is another illustration of the danger of secondary infections invading the lower lobes when the sclerotic upper lobes are unable to functionate properly in the efficient supply of oxygen for the body.

Among twenty of our treated cases eight are still alive. Part of them while attending faithfully to the treatment were benefited, while others who did not fully cooperate had temporary improvement, as will be discussed later. Twelve of this series of cases died, partly because their pulmonary condition was too far advanced and too active to give any favorable results.

Another illustration may be cited:

CASE II.—A. M., white, male, age thirty-three. Open, active pulmonary tuberculosis of twenty-seven months' duration. Re-admitted five times, repeated spells of pulmonary hemorrhage. Under our supervision since March 6, 1918.

Physical findings on readmission: Active, open case, involving all trunks of left upper lobe, with cavitation, signs, all trunks of right upper lobe and extensive activity over apices of both lower lobes, not excluding a broncho-pneumonic outspread into the right

middle lobe. History of repeated pulmonary hemorrhages in the past two weeks. Pulse rate 112; systolic pressure 125 mm., diastolic 90 mm.; cardiac activity 22,080 mm. pro minute. Weight 125 pounds, height 5 feet 7¾ inches. Positive sputum, Gaffky IV.

Re-examination prior to the proteogen therapy: More marked activity over all trunks of left upper lobe, cavity signs still present anteriorly as well as posteriorly. Right lung, activity present over upper lobe, involving all trunks; active changes still persistent over upper half of right lower, and middle lobe areas. Left base relatively clear. Temperature normal, pulse 88, respiration 22, weight 124¾, remaining the same as on admission. Sputum Gaffky VI 3 ozs. (90 cc.).

Another examination on January 13, 1919, gave similar findings as at the preceding one, but more extensive involvement and activity over entire right lower lobe with signs of bronchopneumonia, and activity extending into upper half of left lower lobe, suggesting positive changes over at least seventeen bronchial trunks. Temperature normal, pulse 100, respiration 22, weight 126 pounds. Sputum in twenty-four hours, four ounces (120 cc.), purulent, containing a number of bacilli. Cough very obstinate, uncontrollable except by repeated doses of codeine and heroine.

Sixteen injections of the vegetable protein were given from January 16 to February 19, 1919, beginning with 8 minims, running up to 16 for six doses, then reduced to 12 minims for the last two.

According to the patient's statements, the amount of sputum was decreased for about forty-eight hours after an injection. After this period there was an increase. The general tiredness, especially in the morning, was less noticeable. There was slight discomfort existing for the first twenty-four hours at the site of injection, where redness and moderate muscular and subcutaneous infiltration could be noticed.

On February 22 the dose was increased to 24 minims, then reduced to 12, and again increased to 16, the course of protein treatment terminating on April 1. On March 20 the patient reported more severe and not very productive cough, while in regard to the general condition no further change could be noticed. So far the injections had been given alternatively in each arm. Following the dose of March 29, while the same precautions in disinfecting the site of injection were carried out, the reaction was more marked, namely intense infiltration, pain, and tenderness prevailing over a large area. The next injection given into the other normally looking arm was equally followed by a similar local reaction. Antiphlogistic application of saturated ammonium sulphate solution to the intensely inflamed areas was not followed by any improvement, pain persisting, with unusually high temperature for the next three days (101°), followed by a decline in the febrile reaction. An incision over the right arm gave the necrotic area an opportunity to empty a yellow, purulent matter, the microscopic examination of which showed staphylococci present. The cup-shaped defect with undermined borders slowly granulated and closed. The same process took place in the left arm, requiring incision and escape of the yellowish, creamy, grumous contents. The increased pulse rate diminished, so did the respiratory rate, while the weight up to April 23 had diminished two pounds.

With the discontinuation of the injections, however, the cough and expectoration of more purulent matter increased, averaging from 150 to 180 cc. daily, and while before the injections were sufficient to check cough and expectoration, the ordinary expectorants and sedatives had to be given.

The blood pressure variations noted were: *Before treatment:* systolic, 120-135; diastolic, 65-80; pulse pressure, 47-65; *during treatment:* systolic, 118-124; diastolic, 64-84; pulse pressure, 36-50; *after treatment:* systolie, 114-130; diastolic, 64-80; pulse pressure, 48-60.

The chest examination made twenty-three days after the last injection revealed the following facts: *Right upper lobe,* anteriorly: No signs of activity, but sclerosis in areas corresponding to vertebral and first interspace trunks. *Posteriorly:* Moderate activity with sclerosis of vertebral trunk, diminished intensity of breath sounds over first interspace trunk, moderate activity over posterior branch of second interspace trunk. *Right lower lobe:* Activity and fibrosis over upper half of that lobe, apical trunk and median basal trunks, dry pleurisy with friction sounds.

Left lung, upper lobe: Marked activity with sounds suggesting multilocular cavities (?) in both vertebral, first, and second interspace trunks. *Lower lobe:* Increased breath sound and whispered voice conduction in upper half of that lobe. Apical trunk, moderately active, persistent rales after cough. Emphysematous type of breathing over left base. Heart relative dullness, slightly increased toward the left side. Sounds decidedly more distinct and vigorous.

The patient's temperature pursued a regular course, pulse maintained a tendency toward irregularity and acceleration. The weight, however, declined. Ten weeks after the injections had been stopped the weight was only four pounds above the one recorded immediately preceding the injection treatment. Five weeks having elapsed without proteogen medication, cough and sputum were remarkably pronounced, a daily average of 180 cc. being expectorated.

Generally speaking, the patient improved. Before the injection treatment he was confined and very weak for even the slightest effort. Five weeks after the last injection he was up and around, started slowly with work not more than one-half hour a day, gradually increasing the same until capable of accomplishing six to eight hours' work daily, helping the pharmacist in his department for over nine months without any inconvenience, except a slight hemorrhage on September 26, 1919.

Physical examination carefully made by our expert resident physician, Dr. C. C. Conn, was *absolute negative* regarding any *trace of clinical activity* (October 29, 1919). *Fibrous interstitial changes,* probably sclerosis, could be noticed over right upper lobe, corresponding to vertebral and first interspace trunks. Right lower lobe suggested fibrosis in apiceal and median basal trunks and thickened pleura. *Left lung, upper lobe,* had also become sclerotic, corresponding to the vertebral trunks not excluding cavitation, with less destructive transformation in the domain of the first, perhaps the second interspace trunks more so anteriorly than posteriorly.

While he was getting over a cold the physical examination on December 21, 1919, revealed diffuse activity over both upper and upper half of right lower lobe; rales after cough. It may be that the protein treatment ought to be resumed after a suitable interval so that its effect will not be limited.

The above cases are cited only as examples of our study, and though their histories may reveal some interesting details for the specialist, but not carry weight with the average practising physician, a brief review of our investigation may be of use.

The cases which may benefit by the treatment must be properly investigated and should not be chosen from clinical material in which the pulmonary process has extended into the apices of one or both lower lobes. Furthermore, the activity should not be so intense, since with an overdose or too closely followed injections, the parenchymatous lung reaction may be more than the patient can stand. The toxemia, vasomotor depression, and myocardial degeneration should not be too pronounced as the reaction of the patient may equally become too strong for the patient to overcome. The dose and the time of injection should be carefully controlled. Institutional treatment in addition would offer the best chances for improvement.

As shown in a number of instances the following possibilities may be, but are not necessarily always to be anticipated: Reduction of cough, expectoration, lessened feeling of general tiredness, while physically a tendency towards sclerosis and gradual decrease of clinical activity may result from a carefully conducted course of injections.

Remembering, however, the frequent instances in which cases of pulmonary tuberculosis are not properly diagnosed as to intensity and extent of the pathological lesions, the warning is justified not to try the medication in doubtful cases in which a correct understanding of the involvement has not been reached, or where the patient's cooperation in submitting without objection to the physician's orders remain doubtful.

The scientific conception upon which the proteogen therapy is based represents a remarkable advance in therapeutics to overcome tubercular infection, as it produces a bactericidal action upon the tubercle bacillus, dissociates its fatty capsulet, and eliminates the toxins so produced.

There seems to exist a possibility of improving not too far advanced tuberculous patients by a carefully conducted series of injections. The dose, however, is individually different and requires a dose supervision which only further studies will ascertain. It cannot be the aim of the scientific clinician to mention only the good qualities a new preparation may possess and pass lightly over the dangers of new methods. The truth, as in any other domain of science, is the first object of the investigator, and as in our progress we learn more, it may help the medical profession and the patients anxious to regain their former health.

THE ROOTS OF EVIL.

By W. B. KONKLE, M.D.,
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FIRST causes are the only real causes. Radical reform is the sole enduring reform. Success in the annihilation of wrong will be commensurate with the thoroughness attained in the destruction of its roots—it is hard to kill it from the top. Error is like the Canada thistle—you can not suppress it by retrenchment; to be done with it you must eradicate it. As assiduously and persistently as the student of language hunts down Greek roots should reformers seek for the roots of evil. Praise and honor to the benevolence that strives to rescue victims from the raging flood. But more sensible and scientific is the philanthropy which from far up the stream along all its course at each point of peril safeguards the treacherous banks. As to disease and vice alike prevention is the master-word.

The social evil, so called, perennially has been scrutinized and combated from every angle of science from which antagonism may be brought to bear. Humanitarians of all classes recognize it as the chiefest bane and scourge of the race. As a source of woe and wreck and ruin it is mankind's mightiest, deadliest foe. Oh! the pain and grief, the disease and degeneracy, the degradation, the despair, the death that constitute the deplorable fruit of this tree of vice! Truly it is right, proper, and a bounden duty to continue direct attack upon the evil as itself a baleful cause. But may there not be some risk of overlooking the pertinent fact that it is as well an effect, a result?—that this tree in turn has roots?

A principal and potent root of the dire evil in question is neglect of timely, adequate, persistent supervision and instruction of childhood. Science would extend her formative and controlling hand even to the domain of genetics, essaying to mould the human stock in its very generation; and that, forsooth, is logical and wise. But in any event, she should meet the child at its entrance into the world, spread over it her aegis, guide it with her hand, walking as a mentor by its side through all its early years. Mastery of forest fire is absolute in mastery of the initial spark.

The fires of vice are lighted and kindled into urgency and dominancy during childhood and youth —usually so. Lamentable to relate, without any counter-protective influence of indoctrination, or persuasion, or discipline in the general case, the flames spread from child to child, filth befouled information, corrupt reflections, besotting imaginations, debasing practices progressively gaining ascendency over the young life until enslavement to them can be broken alone by revolt, robust and resolute, of a personality naturally upright and noble. Though complete and accurate knowledge comes, alas! how often it comes only through bitter experience, and comes too late to save! In a large proportion of instances, albeit the evil may change form, take anon variant departure, manifest development of subtility and refinement, yet will any transformation thereof involve merely questions of guise, taste, and opportunity corresponding to differences of age, culture, and association. The fires once started are prone to burn on while strength and force can be taxed for fuel.

Yes, discouragingly futile, indeed, and baleful to hope, have been the manifold attempts to subdue, or even control, the social evil at its conflagration stage. Contemplating such effort, the skeptic gravely shakes his head, the cynic sneers, the pessimist muffles himself in a mantle of gloom. The optimist perseveres; but his task well nigh matches the task of the Danaïdes, and his labor parallels Sysiphus' everlasting toil. And any restatement of the situation must be sheerest commonplace. In justification of his aforepresented platitudes on the subject the writer would plead alone a desire to again emphasize the expediency, aye, the necessity, of attacking the evil at its source.

To asseverate broadly that childhood and youth should be carefully guided and guarded is merely to utter an axiomatic generality also smacking of triteness. In better form, and more to the point, will be plain, frank particularization.

Beginning with the earliest postnatal period of life, the dawn of infancy, it should be definitely ascertained as to whether the sexual structures are normal and healthy. Any deviation from the norm should be corrected, any focus of disease should be removed. This is of utmost importance. A fault here, in itself perhaps not serious, may originate disastrous disturbance and irregularity in both the physiologic and the psychologic activities. A morbid stimulus transmitted from these parts may be a cause of shocking excesses, obsessions, perversions. Especially do our authorities on andrology insist that superirritability in the male of the tissues in question produces not unfrequently a staggering toll of harm, misery, anguish, attributed ill-advisedly to the operations of viciousness. Parenthetically we presume to remark that such local irritation may account for much of the

lasciviousness sometimes discovered in elderly husbands, and for most of the pruriency ofttimes exhibited by old widowers. Those of the latter class are apt to perform like the writer's five-year-old nephew, who, having been given a dime to spend in the ten-cent store, set his heart upon the first thing that met his eye when he entered, which happened to be a big tin funnel. A prostate on the rampage can be a very Turk of a tyrant. Of course, as to both the mentioned classes, associated head weakness is a determinative co-factor in disgraceful and unworthy conduct. Says La Rochefoucauld, *"En vieillissant, on devient plus fou et plus sage"*; and again, *"Les vieux fous sont plus fous que les jeunes."*

The child should not be allowed to fix its attention upon its private parts. Interest should be so turned in other directions, and amusement so drawn from other things, that such tendency be forestalled. Above all, prevention of habitual handling of those parts is superlatively essential. Stern rebuke and sharp discipline dare not be spared short of unqualified accomplishment of such purpose. As filth eating, or thumb sucking, or the putting of foreign bodies into the ears or nose would be energetically dealt with, so must the propensity under consideration be opposed with concern and vigor proportionate to the potential peril therein implied. In this regard upon the mother devolves a burden of duty which cannot be delegated to another.

Chillren should not commingle by themselves—be together without oversight. An impure child will quite certainly contaminate its companions if given a chance to transmit the poison with which, unfortunately, it has itself been infected. Unclean thoughts and debasing practices are the most contagious, as well as the most pernicious, of the ills to which childhood is peculiarly susceptible. Let the mother discerningly select her child's playmates—that is indeed well. But let her not trust her choice as unerring. Some little sullied life, pathetic, pitiful, and yet terrible, may escape her scrutiny. And then her heart may be made to bleed by stains afterward revealed on the newly expanding soul so closely linked to her own.

The child should be kept busy seeing, and hearing, and doing what he *ought* to see, and hear, and do. That policy will have, truly, great positive value. But it will have a negative value at least equally as marked. It will preclude the seeing, and the hearing, and the doing of that which he ought *not* to see, and hear, and do. Preoccupation of the mind with the good is a sure condition of exclusion of the bad.

The snares of childhood passed, those in the path of youth are to be next shunned or circumvented. At this period of life individual reason and responsibility appear in the foreground as elements in the problem of morals. The young person *finds* himself—becomes conscious, as it were, of self-sovereignty, self-determination. Communing with his inner self, surveying his powers, he feels the thrill of the thought throbbing in Henley's lines:

"I am the master of my fate;
I am the captain of my soul."

Persuasion must now replace dictation as a method of moulding character. As to the aim and form of such persuasion, let our study be confined to the boy alone. In ultimate reaction, good boys keep the girls good.

Upon the youth should be impressed the seemliness and the imperativeness of understanding, respecting, safeguarding his own person. He should be taught to take pride in developing his body to the highest standard feasible of perfection and effectiveness, to maintain his physique in the finest form and condition practicable, to scorn any act that might entail physical debasement and degradation. To this end should be earnestly encouraged clean, sturdy, manly sports, especially those of out of doors. Let ever be held up before him the inspiring ideal of making and keeping himself a fit champion of truth and right, a worthy warrior of the Lord of Hosts.

The lad should be solemnly charged to cultivate and cherish the higher affections. A philosophy grossly materialistic, and hence soulless, has professed to trace all that is purest and best in humanity back to an origin in primal animal instinct. The theory may be well founded, though speculative, far-fetched, foggy, as propositions of the sort usually are. But for the nonce conceding the thesis, still will chivalric gallantry paying homage to woman be noble, heroic, though in the last analysis springing from sex conditions and relations. Even though grounded in the earthly, yet perennially heavenly will be love toward sister, mother, sweetheart, wife. Is a carnation or a rose less fragrant, less beautiful, less stainless because its roots are embedded in the dirt? And unshaken by time's upheavals, untouched by any profaning hand, let home remain earth's holy place forever—home, that consecrated spot, more endeared than *any* other, where fondest affections are enshrined; where, under the enchantment wrought upon the scene by the rapturously breathed names of loved ones, the world's storms are quelled, and Eden blooms again beneath cloudless skies.

The boy should be trained to a sense of honor and veneration for the female sex. He should be advised to half pity and half despise bad girls. He should be taught to treat good girls with knightly deference and regard—that he must defend them—that a Sir Walter Raleigh will always fling his mantle in the mud for a virgin queen to walk over. Obviously this attitude implies looking up to woman as a being something superior. Just how the equalizing, the leveling *down* process, may affect that idea is uncertain. If the writer has any doubt in the matter, he begs leave to protest that his doubt at least comes from reverence for, and not from underestimation of, the mothers of our race. Whatever question there may be about the glory and profit of transforming goddesses into peeresses, however alarming it may seem for woman to descend from her serene dais to the tumultous floor, yet must the boys still be taught to exalt, to etherialize the girls. It may prove strange and embarrassing to them to court on a dead level, but their pluck and resourcefulness will bring them creditably through the ordeal!

Have you hunted bees? We *line* them. We painstakingly, patiently work until we have determined the *line*. That line we then follow unswervingly, though in its forward stretch are thickets

and brambles and morasses and rocks and waterways and bluffs and chasms. In dealing with the social evil the first consideration is to get the *line*. The writer contends that cure is *not* the line—that it will only lead you in a circle, until at last you come back to where you started. He believes that prevention *is* a line—that it is *the* line. A long, hard line, you say. Ah! but that is bee hunting! The eradication of vice is a process, not an act—its promotion should be evolutionary, not revolutionary. Very few evils can be strangulated by eighteenth amendments. Or, rather, the advent of the eighteenth amendment should be not far from the end of the line—it should constitute the *coup de grace* of the evil being run down. Hold on, toil on—that is all there is to do. Meanwhile the bells of progress will continue to peal, ringing out old wrong, ringing in new right. And every step along the true course will be a step nearer the goal. And every step will be a pathfinder's step.

MALNUTRITION FROM UNDERFEEDING IN A TWO AND ONE-HALF YEAR OLD CHILD.*

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April 12, 1919, white, male child, 2½ years of age. Referred to me by Dr. Albert Freiberg. Was brought to my office in his father's arms because he could not walk. The child was malnourished; from the time he was eight months of age he had suffered more or less from intestinal fermentation, and for that reason had been underfed.

Five weeks ago he commenced to limp in his right leg, and the lower portion of the leg, especially about the ankle, became tender and swollen. This condition rapidly increased so that the child was unable to walk.

Previous History.—The mother nursed the child from birth until he was eight months of age; at this time he was weaned and placed upon modified milk. He soon developed a gastrointestinal fermentation, which has continued from that time until the present. To overcome this condition he was given skimmed certified milk and Mellin's Food. Soon after orange juice was added to his diet. From the age of fourteen months until the present time his diet has consisted almost exclusively of three pints of skimmed milk daily, beef juice, zwieback, rice, and cream of wheat. He never could take oatmeal or eggs. The mother states that other foods were tried from time to time, but that any deviation from the above diet always produced loose, foamy, and offensive stools, and even when taking the above-named foods it was necessary to give him intestinal antiseptics, and at times bismuth in some form, to prevent loose bowel movements.

Six weeks ago he had an attack of influenza, which increased the intestinal disturbance, produced a slight cough, and an elevation of temperature from time to time. These symptoms had continued up to the present time.

On physical examination I found the child to be rather poorly nourished. He was pale and anemic looking. He was rachitic; his chest, arms and legs were rather undeveloped; the rachitic rosary could be felt; his abdomen was very much distended (pot-belly), and there was a flaring of the lower portions of the ribs. The superficial lymphatic glands were not noticeably enlarged, except the posterior cervicals, which were slightly increased in size. The superficial veins of his face were quite noticeable. The urine was normal. The heart and lungs were normal. He had good movement of every portion of his body except his right leg, which, below the knee, was swollen and painful to the touch. The swelling and tenderness above the right ankle were quite marked. The right foot was held in marked valgus. The prepuce was irritated, red and swollen, and had been so for a number of months.

Blood examination.—Hemoglobin 75 to 80 per cent.; red corpuscles 4,730,000; white corpuscles 13,400, polymorphonuclears 35 per cent., small lymphocytes 41 per cent., large lymphocytes 23 per cent., mononuclears 1 per cent., eosinophiles 0, basophiles 0 per cent.

Treatment.—A dose of castor oil, this to be repeated once a week, if necessary, to clear the intestinal canal of mucus. Three grains of saccharated carbonate of iron, and 1½ grains of iodonucleoids to be given in a teaspoonful of maltine, and hypophosphites three times a day after eating.

Diet:—One quart of peptonized milk daily, rice, cream of wheat, baked potatoes, new peas, and string beans. Vegetables to be well-cooked, mashed, and put through a colander.

April 17. A Von Pirquet test was negative. An examination of the stool showed the above foods were well digested; no parasites were found. On this date slightly cooked scraped beef was added to his diet.

April 22, 25 and 29 an examination of the stool showed fairly well-formed intestinal discharges, with little or no evidences of undigested food.

April 29. A second Von Pirquet was negative. At this time the child's general appearance was greatly improved. His pallor had begun to disappear. He had a good appetite, and with the aid of a small leather brace, prescribed by Dr. Albert Freiberg, he had begun to walk. The swelling and redness of the prepuce noted on his first visit quickly disappeared.

June 14. The child now with the aid of his brace was walking fairly well. The swelling, pain and tenderness in his right leg and ankle, which began to improve almost at once, after he was put under treatment, had now almost entirely disappeared. There was only a slight suggestion of puffiness above the ankle. The improvement in his general condition was very great; apart from his slight lameness and the abdominal distention, his appearance was that of a normal child.

The blood examination made at this time was as follows:—hemoglobin 90 per cent.; red corpuscles 5,550,000; white corpuscles 8,200, polymorphonuclears 30 per cent., small lymphocytes 34 per cent., large lymphocytes 22 per cent., mononuclears 9 per cent., eosinophiles 3 per cent., basophiles 2 per cent. This blood examination, as compared with the one made two months before, showed a marked increase in the hemoglobin and in the number of red blood corpuscles. There was also a very marked decrease in the number of white blood corpuscles with a decrease in the relative percentage of lymphocytes.

At this time the boy was on the same medication prescribed above. The castor oil prescribed at his first visit was given only a few times. The iron, iodonucleoids and maltine, which he was still taking, were ordered continued through the summer. His food now consisted of one quart of peptonized milk daily, meat every day, either lamb, chicken or beef, almost all kinds of fresh vegetables, orange juice, apple sauce, cereals, bread and toast.

December 29, 1919. He went through the summer without illness, except for a slight intestinal disturbance, which lasted for a few days. During the fall he had a cold once or twice, which did not disturb his digestion.

The boy to-day is apparently as well and strong as any child of his age. His skin is rosy, his body well-formed. There is no longer any evidence of trouble in the right leg. He has perfect action of all parts of his body. He ran about and played "catcher" through my office with the activity of a normal boy. His mother, however, reports that he is not yet able to take milk in any form except peptonized milk, of which he still continues to take a quart a day.

His diet at the present time, in addition to the peptonized milk, includes orange juice, cooked fruits, vegetables, cereals, bread, beef, lamb, chicken and desserts containing egg, but raw milk and ice cream are still excluded from his diet.

*Read by title at the annual meeting of the American Pediatric Society, May 31-June 2, 1920.

His urine is normal, his bowels move once a day without laxatives. Blood examination: Hemoglobin 80 per cent.; red blood corpuscles 4,937,000; white blood corpuscles 9,060, polymorphonuclears 49 per cent., small lymphocytes 23 per cent., large lymphocytes 12 per cent., mononuclears 11 per cent., eosinophiles 5 per cent.

On dismissing this patient I advised his mother to discontinue the peptonized milk gradually and add eggs to his diet.

From the time this boy came under my observation until his discharge, I was very much interested in his rapid progress toward recovery, and especially in the blood changes here recorded. On my first examination his previous history, his general appearance and the blood picture were strongly suggestive of tuberculosis, but I now believe that tuberculosis played no part in his malnutrition. I think that not only the blood changes but the whole clinical picture above recorded were due to malnutrition from intestinal fermentation and insufficient and improper food.

I also believe that the prompt recovery which resulted in this boy's case was largely brought about by the use of peptonized milk, which enabled him to take meat, vegetables, fruit, and cereals without causing intestinal disturbance. I make this note because I feel that the prejudice among the profession against peptonized milk, in the treatment of malnutrition, is unjustified. It makes not only the giving of milk in many of these cases possible, but it also greatly increases the range of the child's digestive capacity for other foods.

LIVINGSTON BUILDING,
SEVENTH AND RICE STREETS.

DREAMS AS THE CAUSE OF DEATH AND DISEASE.

BY MAURICE CHIDECKEL, M.D.,
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WHETHER dreams are divinations or predictions, foretelling events to come, is no concern of this paper. The object is to show the baneful effects of dreams in individuals afflicted with cardiac disease and hypertension, leading to acute dilatation, rupture of a cerebral artery, and death; and that in many diseases of the nervous system dreams are the etiological factors, caused in most cases by gastrointestinal disturbances.

The man who composed the book of Daniel must have had some conception of its emanation from the brain. The king speaks of the "visions of my head upon my bed." We know now that dream is the predominance of the motor over the sensory side, and, that it is as a whole an expression of clouded consciousness with disorientation in whole or in part. While the sleeper is tormented by a terrifying dream, making distressing inspiratory noises, the cortical sense areas are irritated, the inhibitory center becomes disarranged, and the individual will awaken exhausted from his exciting experience, his heart beats and pulse rate doubled. If the irritation continues he will keep on running or walking in a mental fog. In one case it has taken three strong men to keep a perfectly normal individual from committing violence when awakened from a dream that he was being attacked by a highwayman.

If a patient with a moderately dilated heart will drop dead during a fit of excitement from acute dilatation, or one with a hypertension from a ruptured cerebral vessel, why cannot other patients suffering from the same diseases die from a similar cause in their sleep?

A man with a compensatory mitral leak and moderately dilated heart climbs up nightly three flights of steps to his bedroom, having only slight dyspnea, and one morning he is found dead in bed. If exertion did not kill him why has rest done it? The only plausible answer is that he died from acute dilatation caused by the excitement of a terrifying dream.

The vagus has a deep motor origin, and is primarily an inhibition nerve. The motor side always predominating in dreams, the rôle of the pneumogastric in dreams is self-evident. As the deep cardiac plexus, a tributary of the vagus is situated in the concavity of the arch of the aorta, and as the anterior and posterior coronary plexuses also originate from the vagus, the effect of an exciting dream on the heart cannot be exaggerated.

Repeated tormenting dreams mean repeated cortical irritations, and must necessarily do damage to the cortex and impair permanently the nerve fibers and nerve cells. The cortex is now known to represent a complex mass of sense centers, known as the somasthetic area, extending in front of the central fissure, being directly connected with the fissures of Sylvius and Rolando. Hence any damage in any area, any irritation or injury to any part must have a direct or indirect effect upon the whole make-up of our patient.

A man with a chronic nephritis and a compensatory hypertension of 170/110 led a quiet life and felt fairly well. His next door neighbor was killed by robbers during one night. A few days later he was heard to scream in his sleep, articulating the word "police" distinctly. By the time his bed was reached he was dead. The excitement of his dream led to an enormous increase of his pressure rupturing a large cerebral artery and killing him.

Numerous cases observed within the last ten years, dispensary and private, have brought the conviction that many nervous ailments in children and adults have originated from dreams, resulting in pavus nocturnus, narcolepsy, melancholy, and epilepsy, due to continuous cortical irritations, caused by dreams that were tormenting and exciting.

The majority of such dreams in infancy and adolescence arise from disturbances of the alimentary tract. Gastrointestinal disorders, as is well known, are the chief exciting causes of convulsions in children. The reason why intestinal worms and improper food cause these cerebral manifestations is due to the visceral sensory distribution, causing motor disturbances. In adults these motor irritations will show themselves in a lesser degree—exciting dreams.

Repeated convulsions in a child, damaging the cortex, lay the foundation for future epileptic seizures. Repeated tormenting dreams in adults, damaging the cortex, will lead to many and various nervous manifestations in later life.

In a study of 21 cases of epileptic seizures in children, a definite history has been obtained in 14. In all of these 14 the mothers related that the children would jump and cry out from their sleep in early infancy. Nine of the 14 were bottle-fed

babies with no system of feeding and no preparation of the milk. Six were breast-fed children who were never nursed regularly, all having practically nursed the whole of the night. At the ages ranging from 18 months to 3½ years, 18 of the 21 had night terrors. Only 2 of the 21 had enlarged adenoids and 4 had enlarged tonsils. Convulsive seizures began at 5 in the youngest and at 8 in the oldest. Twelve had nocturnal and 9 had diurnal convulsions. Physical examination was negative in all but one, whose thyroid was palpable and who had a soft systolic blow. None had albuminuria or casts except when the urine was examined soon after the seizure. The conclusion drawn was that, owing to faulty digestion and abuse of the alimentary tract, these children had vague, terrifying dreams in their early infancy, causing a steady and gradual irritation of the cortex. The irritation having continued and with the increasing age of the child the dreams having assumed a more definite form, the cortical cells were sufficiently damaged to cause night terrors. With the continuation of these terrors enough damage was done to the motor area of the brain to lead to convulsions.

In cardiac disease in its various forms and in hypertension with and without renal trouble, the emotional effects were observed in 70 of the first and 38 in the second. In each case the cardiac dullness increased, the murmur, if present, became louder and in some cases the cardiac cycle became so disturbed that the nature of the murmur could not be made out. In each case of hypertension the rise in pressure was from 10 to 125 mm. One case will be cited as an example:

A patient came to the office taking his little son with him, but leaving him outside to play. He had a chronic interstitial nephritis, a relative mitral insufficiency, and a pressure of 160/100. While the reading of the pressure was taken, a child run over by an automobile was brought in, with the usual commotion that accompanies such cases. The reading immediately rose to 290. It went back to its previous reading on learning that the child injured was not his. The area of his cardiac dullness has increased considerably, and his mitral murmur became loud and kept on for some time. If this man is to dream that his child was run over, he most likely will die, either from acute dilatation or apoplexy.

The following case is illustrative:

A woman with a marked mitral stenosis was awakened from a dream that the house was burning. She was exhausted, short of breath, but went to sleep again. She soon screamed and was again awakened, having had a repetition of the same dream. The third time she went to sleep she expired after a few suppressed loud grunts she attempted to make.

In all the cases of exciting dreams a history of dyspepsia or an overloaded stomach is given, no terrifying dreams occurring on a fasting stomach.

Inquiry in a thoroughly digitalized patient who was worse every morning after a night's rest elicited the information that she was tortured by dreams. Every morning the amount of the dilatation was more, sometimes considerably so, than at night. Food was forbidden four hours before bedtime, and an enema was given one hour before sleep; her dreams then ceased and she immediately showed signs of improvement.

Résumé: Dreams in children are caused by faulty digestion.

They are possible causes of serious cerebral lesions due to irreparable damage to the cortex.

Dreams in adults are mostly due to the same cause.

Repeated tormenting dreams will cause even cortical injury in adults leading to cerebral lesions of a serious nature in later life.

Patients with heart disease and high blood pressure may be killed in their sleep by a terrifying dream.

That patients suffering from cardiac trouble or hypertension due to any cause shall not be allowed to eat at least four hours before sleep.

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THE CAUSE OF X-RAY BURNS.

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DURING the early days of Roentgenology, when the gas *x*-ray tube was all there was, we were especially warned against the use of any factors with very low voltages, for the reason that low voltages produce an immense number of rays of low penetration which are absorbed by the skin and hence more liable to cause an *x*-ray burn than the high voltages whose rays are of high penetration and not absorbed by the skin.

The above theory has been handed down from year to year and it is only within the last few years that the fallacy of it has been realized.

Soon after the announcement of Saboraud and Noire method of treatment of ringworm of the scalp, many attempted to carry out the procedure with an *x*-ray coil instead of a static machine as used by the originators. This resulted in overdosage and permanent baldness in many of the cases. The reason for this was the failure of the operator of the coil to maintain a constant high voltage for any length of time as compared with the tube maintained by the static machine.

This drop in voltage in the gas tube no doubt increases the number of low penetrating rays, and it was naturally concluded from the theory of absorption that they were the cause of the permanent alopecia or *x*-ray burn. In order to test out this theory, the following experiment was made with a Coolidge Tube and reported in the June issue of 1917 of the *American Journal of Roentgenology:*

Four areas of a patient's back were treated with the following factors for each area:

MA Sp. G. T

No. 1. $\frac{3 \times 3 \times 5}{8D \times 8D} = 1¼$ skin units = 5H;

No. 2. $\frac{3 \times 6 \times 2½}{8 \times 8} = 1¼$ skin units = 5H;

No. 3. $\frac{3 \times 4½ \times 3⅓}{8 \times 8} = 1¼$ skin units = 5H;

No. 4. $\frac{3 \times 9 \times 1⅔}{8 \times 8} = 1¼$ skin units = 5H.

The photograph (Fig. 1) of the patient taken ten

days after treatment demonstrates that all areas coincide, yet in two of them, namely No. 2 and No. 4, the spark gap was doubled and one-half the time taken for exposure that was given in No. 1 and No. 3, respectively. It therefore follows that if the spark gap is doubled and the time reduced one-half, the same degree of erythema will be produced, other factors remaining constant.

From the standpoint of quality of *x*-ray in the above experiment, the formula with 6-in. and 9-in. spark gaps (No. 2 and No. 4) should give a very large percentage of penetrating rays as compared with the 3-in. and 4½-in. (No. 1 and No. 3), and hence one would expect that these penetrating rays derived from the higher spark gaps, 6 and 9 (No. 2 and No. 4) would pass through the skin and take much longer to produce the same degree of erythema as that followed by the use of 3 and 4½-in. formulæ (No. 1 and No. 3). Exactly the reverse proves true. For it took just one-half the time for the same biological effect in the doubled spark gaps (No. 2 and No. 4) as it did in the 3 and 4½-in. (No. 1 and No. 3) formulæ.

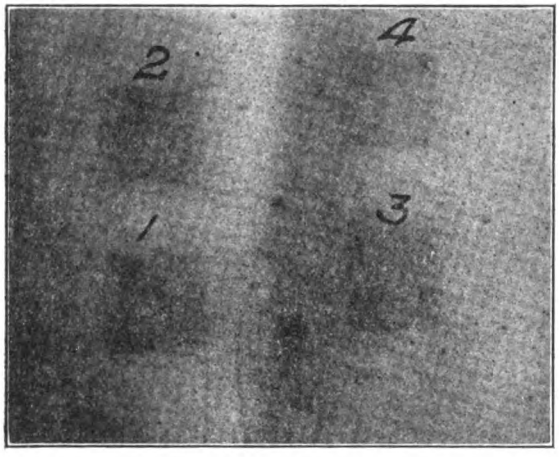

FIG. 1.

It is, therefore, apparent that the quality of the ray and the absorption of those of long wave length have little to do with the biological effects in the skin. On the other hand, it seems that the factor which determines this effect is solely the quantity of *x*-ray reaching the skin, for it is obvious that a high spark gap produces more rays that reach the skin than the same dose with a low spark gap.

Recently we have tried out the following factors on the skin of a patient's back:

$$\frac{\text{MA Sp. G T}}{5 \times 9 \times 9/16 \text{ min.}}{6 \times 6 \text{ D}} =$$

33¾ sec. = 1¼ skin unit = 5 H.

Tris is an erythema dose without a filter.[1] The filtered erythema dose using 3 mm. of aluminum is as follows:

$$\frac{\text{MA Sp. G T}}{5 \times 9 \times 7.7 \text{ min.}}{6 \text{ D}} =$$

2½ skin units = 10 H.

In the photograph (Fig. 2) both areas of erythema are identical. No. 1 was produced by the unfiltered erythema dose; No. 2 by the filtered erythema dose. Biologically, to all appearances, the erythema produced in 33¾ seconds by the unfiltered ray is the same as that produced in 7 minutes and 42 seconds by the filtered.

If the voltage determines the quality of the ray, then in this experiment the voltage is the same in

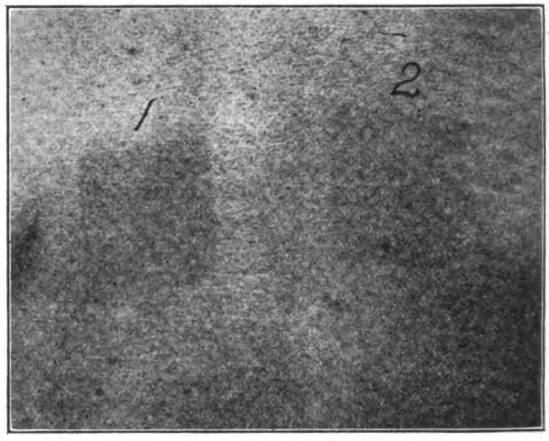

FIG. 2.

both instances; the only difference is the interposition of 3 mm. of aluminum and about ten times longer exposure for the filtered dose as the unfiltered. Here again the quantity of *x*-ray reaching the skin is materially lessened by the aluminum, thus making the enormous difference in the time of exposure.

This dose with 3 mm. of aluminum takes a little over ten times as long to produce an erythema as it does without aluminum. In speaking of this dose some writers would say that they gave ten erythema doses. This statement without qualification is misleading. In reality the effects, so far as the skin reaction is concerned, are identical. If then the filtered and unfiltered erythemas are the same, the only difference being in the number of rays reaching the skin, thus increasing the time, why is it that a filtered dose is five or ten or any other number of erythema doses? The fact remains that biologically filtered and unfiltered erythemas are identical, as exemplified in Experiment No. 2, illustrated in Fig. 2; that 1¼ skin units unfiltered = 5 H or one erythema dose, also that 2½ skin units filtered or one filtered erythema dose.

By increasing the thickness of the filter and decreasing the spark gap the time necessary for a filtered erythema dose, namely 2½ skin units can be progressively increased. Although decreasing the spark gap in unfiltered dosage lengthens the time of exposure for an erythema dose, the time ratio between the lower voltages and the thickness of the filter is many times greater than those of the higher voltages. Therefore, one might select a formula with a very low voltage and be able to say that one gave forty or fifty erythema doses.

If then, in describing the *technique of filtered dosage*[2] we adopt 2½ skin units as the standard for an erythema dose, we can use it with the same degree of accuracy as we have the erythema dose of unfiltered dosage.

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A SUGGESTION FOR A DIETETIC PRESCRIPTION BLANK.

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THE dietetic prescription blank here presented is designed especially for the purpose of making easy the computation of the food values of definitely prescribed diets. A representative list of commonly used food stuffs is given, sufficiently extensive to meet the dietetic requirements in a large proportion of invalid conditions, and with it, conveniently arranged for easy reference, is given the protein, fat and carbohydrate content and caloric value of thirty-gram or one-ounce portions of these articles. Spaces are provided for stating the quantities of prescribed articles in relation to times of feeding or meals, and also of the protein, fat and carbohydrate content and caloric value of the day's rations of each article prescribed and of the whole prescription. In the case of articles which are prescribed to be taken not every day, but a specified number of times a week (for the noting of which limitation a space is provided), the amounts of the food principles involved require adjustment to the daily ration scheme; and it is advisable to draw a line around the figures relating to the quantities and food values of such articles; and a similar circumscription may be used to isolate the quantity and value figures of articles allowed in alternation.

The hour of feeding may be specifically designated, or, if regular meals are given, the letters B, D and S or L (for breakfast, dinner and supper or lunch), may be written in the spaces for hours of feeding; and if regular meals with additional feedings between meals are prescribed, the hours for the additional feedings may be written in the spaces after the B, D and S or L, or in chronological order.

If more than eight feedings in twenty-four hours are desired, the quantities of food and number of times of feeding daily, with the intervals or the hours, may be stated on the same line as the food article; as for example, *Milk*....8 oz., q.2.h between 7 A. M. and 9 P. M., and at 1 A. M. and 4 A. M.; or these extra directions may be written in the blank space at the bottom of the page, and always so if the article is one not on the printed list; as for example, *Orangeade*....7 oz. at 10 A. M., 2 P. M., 6 P. M. In the majority of cases the number of feedings required daily will not exceed eight, for which spaces are provided.

Quantities may be ordered in grams or ounces, by drawing a line through the contrary word. Articles in a group may be excluded by scratching. Adjacent groups may be included by a bracket to form a field of choice; as for example, the four lines of milk preparations in the first "compartment" may be bracketed to mean that the feeding

DIET FOR DATE

30 grams, 1 oz. Prot. gm	Fat gm	Carb. gm	Calories	ARTICLES OF FOOD	No. days in week allowed	HOURS OF FEEDING oz gm	oz gm	oz gm	oz gm	oz gm	oz gm	oz gm	oz gm	Tot oz gm	Prot gm	Fat gm	Carb. gm	Calories
1	1	1.5	20	Milk, plain, lactacidized, peptonized														
1	1	1	15	Milk, diluted with one third barley water														
1	0	1.5	10	Milk, skimmed, buttermilk														
1	1	1.5	20	Milk soup: cream of celery, corn, asparagus, carrot, potato, spinach, tomato, oyster plant														
6	.5	1	35	Cottage Cheese														
8	11	0	130	American Cheese														
6	6	0	75	Egg (One)														
8	5	0	75	Beef, mutton, lamb, chicken, lean, (cooked)														
6	0	0	25	Fish, lean, (cooked)														
5	15	0	150	Bacon, (fried)														
0	25	0	225	Butter														
1	6	1	60	Cream, 20 per cent														
0	30	0	270	Olive Oil														
3	0	18	90	Bread, wheat, whole wheat, graham														
3	3	20	125	Crackers, soda, graham, oatmeal														
1	.5	3	20	Oatmeal, (boiled)														
1	0	4	20	Wheat cereal, (boiled)														
.5	0	7	30	Rice, (boiled)														
1	0	5	25	Maccaroni, spaghetti, (boiled)														
1	0	6	30	Potato, (boiled, baked)														
.5	0	1	5	Spinach, string beans, celery, asparagus, chard, beet tops, cabbage, cauliflower, brussels sprouts, (boiled)														
.5	0	2	10	Carrot, squash, beet, onion, green peas, parsnips, (boiled)														
.5	0	1	5	Lettuce, cabbage, celery, endive, tomato, (raw)														
0	0	1	5	Grape fruit, lemon														
0	0	2	10	Orange, peach, pineapple, muskmelon														
0	0	3	15	Apple, pear, huckleberry														
0	0	5	25	Apple, (baked), prunes, (boiled), banana, grapes														
0	0	0	0	Tea, coffee, cocoa shells														
0	0	0	0	Broth of beef, mutton, lamb, chicken, clam														
0	0	1	5	Barley water, oatmeal water, rice water														
1	1	9	50	Puddings: Rice, tapioca, bread, custard														
														Total				

directions on the line opposite the apex of the bracket apply to any of the articles included by the arms of the bracket.

It may be found convenient, before filling in the details of the prescription, to write in the column for totals the total quantity of each article to be given in the twenty-four hours, and then distribute that quantity among the different hours of feeding as called for.

After the prescription has been constructed on this blank, the quantities and times of feeding may be copied out in ordinary form, running the eye down the vertical columns to get the articles of food given at each meal or feeding time; and vice versa, dietetic prescriptions which have been constructed in the ordinary form, may be transferred to this blank for convenience in computing their food value.

The food values in the tables are given in "round numbers."

1218 Pacific Street.

ALCOHOL: ITS STATUS QUO ANTE, NEVER!

By D. NATHAN, M.D.,

NORRISTOWN, PA.

Alcohol, which has come down to us from the remotest of antiquities, will descend soon by crisis into a well deserved obscurity as a beverage. Pharmacological experimentation in *vitro* and *intra vitam*, along with the clinical and pathological evidence which has been available to any physician, have made the therapeutics of alcohol standard, albeit in the hands of *empirics* it has a therapeutic value in all diseases.

Authors need not be quoted as to its action on tissues, liquid, solid, or gaseous. All who have authority to speak are at one as to its effects—deleterious is putting it mild—destructive in the main is its subtle action; its good qualities, if any there be, are as rare as the gates of Thebes.

In no part of the body is the action of alcohol more manifest than in the central nervous system, acting less upon the supporting structure, but more and sooner upon the cells which have evolved the latest and which in dissolution perish first. The inevitable depression following its use makes the user readier for bed than for work. What need we care who is sponsor for prohibition? Whether he be one who has attributed to others his own weakness, whether he be a mattoid, paranoiac or Pharisee—in this case the end has justified the means, and sobriety, against which no one dare argue, is enforced on many who otherwise are a menace to any successful social scheme and a liability to the race. Prohibition, in itself, can hurt no one but the egoistic or self-centered who accumulated hordes of this world's goods by the manufacture or sale of alcohol. Many who would never have voted for prohibition, as it appeared to be undemocratic and to disregard personal liberty, would never think of voting for its repeal. It will take some years to dampen the taste of man for beer, wine, or spirit, but the alcoholic has no more right to indulge such taste than the morphine-eater has to indulge his—two dishes to the one table; only a question of degree, not kind; separate them, though, in favor of morphine whose therapeutic value no one will deny.

The therapeutic worth of alcohol is a debatable one. When I was in Europe some months ago I was told that Sir Victor Horsley wouldn't take alcohol because of his anti-liquor tendencies and on that account he died—he didn't die drunk. As senior medical officer of a transport upon which we had over forty deaths in a few days from the "flu," I tried the only cure (according to some authorities), brandy, and I must confess I never saw one case get better which wouldn't have gotten better without it. When in the tropics some years ago, it was notorious how alcoholics perished and non-alcoholics survived. I was instructed when going to the west coast of Africa: "Leave booze alone and take quinine." Some alcoholics lived but most of them died. There can be no dispute about alcohol's responsibility in the production of insanity; some psychoses may be due to an alcoholic environment in early childhood. I have seen several epileptic fits follow, in epileptics, the taking of a drink—cases in which there had been no fits for many months before. Take notice of the scholar and gentleman under the influence of alcohol—his behavior belies the man as the world wants to see him or nature created him. Many times I have remarked that this or that physician wouldn't enjoy the patronage he does did his patients see him as he was when intoxicated. Alcoholic neuritis will leave us for ever. The steady drinker makes a fearful showing when attacked by acute infectious disease. The tragic, melodramatic, and seriocomic results of its use have been sung by the bards of all nationalities; all strata of society have worshipped Bacchus; but few in their sane moments or a lucid interval recommend the use of alcohol. Its debtors are many of those who fill the jails, insane asylums, and almshouses. The physician, and especially the neurologist, ought to be the last one to champion alcohol. As a body we have long since sung its requiem, and yet there are those who cling affectionately to its use, saying that they require it to cure what the vis medicatrix naturæ can do well without it. Others of the laity who speak for a moderation in its use fail to state definitely what is a moderate amount, making allowance for individual peculiarities. Does not alcohol affect the tissues of one man as it does those of the other, irrespective of his bulk or individual difference in matters of morphology? Some sponges absorb more than others. Who is going to regulate the quantity taken by each person? The psychology of the alcoholic is morbid, at first while under its influence, later because of its effects upon the organs, especially the vascular system, and directly and indirectly upon the central nervous system. It leaves upon all its users a trail of irreparable damage—an everlasting stain. Those who take alcohol as a beverage are alcoholics; it is only a question of degree between the ataxic or reeling, staggering gait, disordered speech, exalted Ego, loss of moral sense of the "drunk" and the increased emotional tone of primary inebriation. Alcohol, *per se*, is not the only cause of crime, insanity, and immorality, but it is one of the most potent factors, and it accounts

for millions of days lost by men who without it will accomplish more and greater things.

If prohibition, as we find it, is not the ideal method of ridding us of such a pest, at least it is a step in the right direction and because of it, in the fullness of time, we can expect a sober nation with all that means. Let us hope that the cachéd supply will soon have run its Godless race, that alcohol be not the prerogative of the rich at any time and that the lawless who traffic in it be dealt with as is their desert. A drug whose abuses are so manifold and whose uses so negligible may well suffer the sentence which has ever been its due.

617 WEST MAIN STREET.

Medicolegal Notes.

Osteopaths Not Entitled to Register Birth and Death Certificates Under Maryland Statute.—The Maryland Court of Appeals holds that osteopaths are not required and entitled to register births and deaths with the local registrar of vital statistics or to furnish him with certificates of births and deaths, under the Maryland statutes which charge physicians with such duties; osteopaths not being physicians. The section of the statute providing that state and municipal officers are not authorized "to accept from any osteopathic practitioner any birth or death certificate," is within the scope of the police power of the state, and must be sustained unless so discriminatory as to be plainly arbitrary and without perceptible relation to the object sought; all reasonable presumptions being in its favor. The court said: "The certificates of birth and death to which the statute refers are required to contain such 'items of information as the state registrar of vital statistics shall deem important or necessary,' in addition to such facts as the date and place of a birth or death, the name, sex and color of a child reported born, the name, age, color, occupation, condition and birthplace of a person reported to have died, the cause of death, duration of illness, and the name and address of the attending physician. It was the evident theory of the Legislature that some of the information which the law directed, or the state registrar of vital statistics might deem necessary, to be included in the birth or death certificates, could be furnished more satisfactorily by a physician having the qualifications demanded by the statute of practitioners of medicine and surgery than by those who were licensed to practice osteopathy exclusively. As to the real necessity for making such a distinction, this court has no right to decide. The only inquiry we are authorized to make is whether the action of the Legislature in restricting the means and agencies by which vital statistics are to be obtained is clearly unreasonable. * * * In our opinion the discrimination we are considering in the present case is not so clearly arbitrary as to justify the court in declaring it void. It relates solely to the collection of vital statistics. The Legislature has the undoubted right to determine as to the methods to be employed in obtaining such information for the use of the public. Its designation of certain agencies for that purpose, in the statute under consideration, is not such an obvious abuse of its discretion as to authorize the court to substitute its own for the legislative judgment and to refuse to recognize the provision as a valid enactment." —Keiningham v. Blake (Md.) 109 Atl. 65.

Physician's Right to Sue Employer for Services Performed at His Request for Employee Not Affected by Workmen's Compensation Act.—A physician's right to resort to the courts to enforce by action his claim against an employer for whom the physician has performed services in caring for an injured employee at the employer's request is not affected by the provision of the Wisconsin Workmen's Compensation Act giving the Industrial Commission exclusive jurisdiction to pass upon the reasonableness of medical bills of the employee. The act deals exclusively with the matters growing out of the relation of employer and employee. Its provisions are binding upon employers and employees electing to be bound by them, and upon no others.

All except employers and employees are strangers to the act, and their usual lawful rights and remedies are unaffected by it. True, it is made the duty of the employer to provide certain medical attention to its employees, but the act does not provide that he who renders such medical services at the request of the employer must submit the reasonableness of his charges in that behalf to the Industrial Commission for its approval and allowance. The physician rendering such services is no more deprived of his right to resort to the courts for the establishment and collection of his claim than though the services had been rendered to the employer personally. The fact that neither employer nor employee, those for whom the act was primarily designed, are affected by its provisions against their consent, coupled with the further consideration that no method is provided by which a physician may consent to be bound by the terms of the act, would strongly negative the inference that the act was intended to have the effect of preventing the physician from suing at law to recover for his services. His remedy in the courts is left unimpaired by the statute, and he may maintain his action therein for the value of his services as he conceives them to be.—Noer v. G. W. Jones Lumber Co., Wisconsin Supreme Court, 175 N. W. 784.

Quarantine Regulations.—The California Court of Appeal, Second District, holds that it may be assumed that under the laws relating to public health, inspection and quarantine may be made of persons upon reasonable ground that the persons so subjected to inspection or quarantine are afflicted with contagious or infectious disease. Where sufficient reasonable cause exists to believe that a person is afflicted with a quarantinable disease, there is no doubt of the right of the health authorities to examine into the case and, in a proper way, determine the fact. But such preliminary investigation must be made without delay, and, if quarantining is found to be justifiable, such quarantine measures may be resorted to only as are reasonably necessary to protect the public health, remembering that the persons so affected are to be treated as patients, and not as criminals.—*Ex parte* Dillon (Cal.) 186 Pac. 170.

Implied Promise to Pay Reasonable Value for Physician's Services.—In the absence of an express agreement as to amount, the law implies a promise to pay for a physician's services as much as they are reasonably and ordinarily worth on the professional market. Where a physician seeks to recover for such services, he has the burden of proving the value thereof.—Huntley v. Geyer, North Dakota Supreme Court, 175 N. W. 619.

Dying Declarations Not Admissible in Civil Cases Before Medical Boards.—It is held that hearsay evidence is inadmissible in a proceeding before the California Board of Medical Examiners to revoke a license ,to practice medicine, under section 14 of the California Medical Practice Act, as amended in 1915, and that dying declarations are not admissible in such a proceeding, or in any other proceeding than criminal cases of homicide.—Thrasher v. Board of Medical Examiners (Cal.) 185 Pac. 1006.

Hospital Records as Evidence.—The Maryland Court of Appeals holds that in a personal injury action a hospital record offered in evidence by a medical witness, not made by the witness, who could not tell by whom it was made, he having found it among other records, is not admissible without further showing.—Zipus v. United Rys. (Md.) 108 Atl. 884.

Testimony as to Physical Condition of Patient Excluded.—In direct examination with respect to her physical condition before the accident, the plaintiff in an action against a common carrier for personal injuries testified that she never had any venereal disease or taint, nor had she taken treatment for any ailment of that sort. It was held competent thereafter for the defendant to offer testimony tending to show that the plaintiff called upon and was examined by a physician, but such physician cannot testify as to the result of his examination.—Livingston v. Omaha & C. B. St. Ry. Co., Nebraska Supreme Court, 175 N. W. 662.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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PARENTERAL MILK INJECTIONS.

SOON after Koch had announced his specific treatment for tuberculosis Matthes claimed that the same result could be attained from tuberculin-free albumose. This view, which has since been greatly elaborated, undoubtedly goes much too far, but there is no reason to doubt that alongside of the specific action one of a general character may be seen. As far back as 1893 Rumpf claimed that pyocyaneus vaccine was of benefit in typhoid fever, and numerous similar claims have been made in more recent years. Old tuberculin has been of apparent service in paresis, a gonococcus vaccine in various nonspecific infections, and so on. Finally ordinary horse serum and other nonspecific sera have been used for a variety of infections. Deuteroalbumose and certain commercial peptones have been given, especially in typhoid fever. Milk has also been used, since first recommended by Schmidt in 1916, for a variety of affections, including hemophilia, paresis, chronic arthritis, and infections in general. It has also been used for provoking the Wassermann reaction. A favorable result has been seen in various eye infections and in otitis media, where in some cases the benefit has been startling. Milk injection causes more or less elevation of temperature and leucocytosis. Ryhiner, writing in the *Correspondenz-Blatt für Schweizer Aerzte* some months ago, speaks of the nonspecificity of this form of parenteral protein therapy, and sums up the benefit of the treatment from his own experience. It is, he says, of no apparent value in sterilizing diphtheria carriers or in cases of hemorrhage, anemia, osteomyelitis, sepsis, Barlow's disease, erysipelas, gonorrheal vulvovaginitis, or hemorrhagic nephritis. No reaction follows the injection of milk known to be fresh and sterile. Hence any reaction must be due to the bacteria or other impurities of the fluid. Mother's milk is also devoid of reaction. In repeated injections anaphylactic phenomena have been very rare. This may be due to the protective effect of milk taken per os. Fever and leucocytosis are produced, but no therapeutic effect results. The injections are subcutaneous and the single dose is 0.3 c.c. per kilo of body weight.

Many of these conclusions regarding intramuscular lactotherapy were reached some time ago by Dr. Gerda Uddgren of Stockholm, in a work treating especially of milk injections in the treatment of various diseases of the eye. The book gives the results of this treatment in one hundred cases, including various forms of conjunctivitis, keratitis, iritis, optic nerve disease, and paresis of the extrinsic eye muscles, and also in a number of cases of lupus and of syphilis. The fever, pain, and other outward symptoms seemed to be traceable to the toxins or living bacteria in the milk, but the curative effect is not dependent upon these reactions. The following were the conclusions formulated by Uddgren regarding treatment when practically sterile, nonpasteurized milk was injected: (1) The injection excites a leucocytosis; (2) the general health is usually improved and a gain in weight is observed; (3) in many cases apparently latent syphilis or a provocative Wassermann is noted; (4) tuberculous individuals often respond quickly by a local and general reaction; (6) milk injections have no specific effect, but are therapeutically valuable in provoking absorption and reducing inflammation. Uddgren inclines to Weishardt's theory in explanation of the favorable results of milk injections, namely, that they activate the protoplasm and increase its vitality. She has never seen any anaphylactic shock after repeated injections, though she advises care in the avoidance of such a possibility.

OPERATIVE TREATMENT OF MALIGNANT NEOPLASMS OF THE MAXILLARY SINUS.

THE operative treatment of malignant growths of the maxillary sinus can be effective only if the entire neoplastic mass is removed surrounded by a barrier of healthy tissue. This excision of the tumor *en bloc* is practically possible only in cases where the neoplastic production is still confined to a portion of the sinus. Now, during the period in which these growths are still localized they give rise to no symptoms or at least very few, but there are some warning signs to which value must be attributed. An obstinate suborbital neuralgia without apparent cause and accompanied by anesthesia in the territory of the nerve should invariably excite suspicion. Intractable dental neuralgia which nothing explains, coupled with an expulsive alveolar periostitis is yet another indication of the presence of these tumors. And lastly, very painful and stubborn sinusitis, giving rise to repeated hemorrhage, is almost pathognomonic.

In these cases an exploratory trephining of the antrum is indicated and is to be followed by an histological examination of the neoplastic tissue removed. When the phase of clinical certitude has been reached, much importance is to be attributed to the data obtained by physical means of exploration, diaphanoscopy, and radiography in particular. In the case of a tumor an opening into the antrum will show that the neoplasm is limited to the floor of the sinus, in which case partial resec-

tion of the upper jaw, including the maxillary plate and walls of the sinus, only leaving the roof, is to be done. If the tumor is confined to the nasal wall —ethmoidomaxillary group—a partial excision of the upper jaw is still in order, including a segment of the anterior wall and all the nasal wall of the sinus, the ascending branch, unguis, and the ethmoidal os planum. When the growth is on the roof of the sinus a classical total excision of the upper jaw is indicated. Total excision, with free removal of the surrounding structures, is to be preferred in all cases of malignant growths of the maxillary sinus when they have reached the stage of exteriorization, without, however, placing too much hope on the outcome. Of course the jugular chain of lymph nodes is to be removed, even should they show no evidence of involvement.

In all these operations the protection of the respiratory tract against blood must be assured by Rose's position and plugging of the pharynx after temporary intercricothyroid laryngotomy has been done, but ligature of the external carotid, which has been advocated by some, appears to be unnecessary. There is every advantage in giving a general anesthetic directly by the laryngotomy tube. Among the postoperative measures insufflation of boracic acid in powder and daily irrigations with a borate of sodium solution give excellent results. A prosthesis should be applied, excepting in cases of excision of a growth of the nasal wall of the sinus, in which operation the vault of the hard palate and malar tuberosity are preserved. An immediate prosthesis, which opposes cicatricial contraction, is often preferable to a late one. Finally, the success of the operative treatment of malignant growths of the maxillary sinus depends above all on an early diagnosis, followed by free excision.

CHRONIC TUBERCULOUS ENDOCARDITIS IN CHILDHOOD.

TUBERCULOUS endocarditis is not exceptional in children, and a number of cases have now been recorded. In a recent case published by Nobécourt there was mitral insufficiency—confirmed by radioscopy which also revealed the presence of a mediastinitis as well. There was, in fact, dilatation of the right cardiac cavities, mitral insufficiency, tracheobronchial adenopathy, and mediastinitis in a tuberculous subject who did not offer any stigmata of syphilis or any antecedent infection, but in whom the intradermic reaction was distinctly positive. The case, therefore, was in all probability one of tuberculous endocarditis, anatomically characterized by the usual renal lesions of either simple or ulcerating endocarditis. The last named lesion has been well studied by Braillon, Vaquez, Oettinger, and others. Lesions identical with those of rheumatismal endocarditis usually are seated on the mitral valve and often simultaneously on the tricuspid and aortic valves. They develop at two to three centimeters from the free edges of the valve, presenting a ridge of small, friable, grayish granulations, and are formed by a fibrinous coagulum and vascular and connective tissue trabeculæ coming from the endocardium. No trace of tuberculous follicles can be detected, but Koch's bacilli may be found, while guinea pig inoculation is frequently positive. These lesions have, for that matter, been experimentally produced by Bernard and Salomon.

Besides this secondary endocarditis, the primary lesion has been described by Braillon and is met with in subjects who do not offer the appearance of tuberculous persons; it has the character of simple endocarditis and assumes an acute or subacute evolution. It acts like a local tuberculosis with an attenuated virulence, comparable to tuberculosis of the serous membranes and particularly to that of the pleura. These forms of endocarditis are tuberculous, as is made evident by the presence of Koch's bacillus in the blood of the patients. Clinically this form of endocarditis is marked by rather high fever, lasting for weeks or months, with more or less pronounced remissions, by emaciation, polypnea, dull valvular sounds, and an orificial murmur. Asystolia appears rather early in the process, it is progressive and leads to death. A pericarditis or pleurisy may sometimes develop. These cases of endocarditis, although etiologically specific, are anatomically and clinically commonplace and they do not necessarily terminate in death; they may recover spontaneously, as in a case published some time since by Nobécourt and Dane.

The chronic forms of tuberculous endocarditis must not be overlooked. Braillon has shown that the inflammatory lesions of tuberculous endocarditis have a tendency to undergo an evolution toward cicatrization and sclerosis if their duration is sufficiently long, resulting in the production of thickening, adhesions, and retractions. They can also assume any of the anatomical forms of chronic endocarditis, but at this stage the cicatrices are devoid of any virulence, while bacteriological examination and guinea pig inoculation remain negative.

It is by these processes that not only pure mitral stenosis is produced, but certain mitral and aortic insufficiencies as well. These morbid changes follow primary tuberculous endocarditis, which is frequently latent and curable in so far as it is an acute lesion. Tuberculosis is, consequently, responsible for numerous so-called cryptogenetic valvular cardiopathies in young subjects. A demonstration of this fact is not obtained by the clinical study of the case, but by pathological anatomy as is proven by the coexistence of tracheobronchial adenopathy, mediastinitis, and symphysis of the pericardium. These tuberculous endocarditides, usually marginal and mild, remain localized and are in every way comparable to tuberculous pleurisy or pericarditis.

The treatment appropriate for tuberculosis of the bones is indicated in these cases. An attempt should be made to act directly on the mediastinal process by resorting to radiotherapy, for example. The ordinary general treatment of tuberculosis should be prescribed—rest, fresh air, and judicious feed-

ing. Digitalis is not indicated and its efficiency would hardly be appreciable when asystole had developed.

The "Criminal" Types of Frontal Convolution.

The literature of criminal anthropology contains a number of papers by Lombroso, Benedikt, and others which deal with an alleged splitting of the foot of the second frontal convolution (and to a less extent of the first and third) in those who commit crimes of violence. Pitres and Lande (*Journal de Médecine de Bordeaux*, April 10, 1920, xci, 7) have performed an autopsy on a farmhand who was executed for the crime of rape, pederasty, and suffocation committed on the six-year-old daughter of his employer. The criminal had no bad record, was of fair intelligence, confessed and admitted full responsibility for the crime, showed neither remorse nor fear of consequences, and should by all rights have shown structural abnormalities. There were a few insignificant stigmata of degeneracy, but in general there were no abnormalities found at autopsy, save what was technically termed "incomplete fission of F2." But not only is the anomaly of split frontal convolution found in various types of criminality; it is not uncommon among honest men. Giacomini, who studied the brains of 164 respectable citizens, found incomplete or partial fission of one or another convolution in 47, while in 56 actual criminals the proportion was less instead of greater than the preceding. The anomaly occurs in any of the three frontal convolutions, but is more common in the medial one. The splitting of the convolutions may be said to increase the number of frontal convolutions from three to four or five so that authorities sometimes speak of the "four convolution type" and "five convolution type," according as one or two of the primary convolutions is split. Thus despite the fact that robbers, violators, sadists, and others have repeatedly presented these anomalies, cold statistics tend to negative the significance of such finds.

Is There a Neurotropic Syphilis?

This question is asked and answered by Page in *La Presse Médicale* for April 24, xxviii, 24. The possibility was suggested by Collin in 1914, and in the same year Levaditi and Marie began work on the subject, the results having only recently been published in book form. Their testimony goes far to show that a dualism of the spirochete does exist, although there are clinical facts which do not sustain the view. However, it is possible to harmonize discordant views. Thus the banal spirochete itself may cause a meningoencephalitis, although in most cases this is the work of the neurotropic spirochete. Sanguinetti claims that the banal form causes a special type of cerebral disease in which the arteries are attacked while the "neurotreponema" alone is responsible for the typical paresis, which is an affection of the grey matter of the cortex. The author, for the sake of convenience, calls the banal spirochete the "dermotreponema" because its seat of election is the skin; as already stated it causes only an atypical paresis. The neurotreponema is very benign to the skin and other organs save the cortex, and the subject also on this account escapes proper treatment. Predisposition on the part of the neurons may be a factor. It is possible to foretell the likelihood of meningoencephalitis through early study of lumbar punctuates, and to institute proper and timely treatment.

Martyrdom of Armenian Physicians During the European War.

Vitoux contributes an article on this subject to *La Presse Médicale* for April 17, 1920, xxviii, 23. As is well known the Turks saw in the great war an excellent opportunity to persecute the Armenians to the point of wholesale massacre. The medical men were included, either on general principles or to prevent them from rendering aid to their wounded and suffering countrymen. Since the close of the war the remnants of the medical corps combined in the Armenian Medical Union have made a formal report of the victims. Among the accusers of the Armenians were professors in the University of Constantinople and Turkish army surgeons. All who went before the tribunals were found guilty of some offense and death was the sole penalty. The number of medical men massacred was 67, to which number should be added 54 pharmacists, and 10 dentists. To these should further be added 86 victims of typhus contracted through the responsibility of the accused. The total loss of the Armenian Sanitary Corps was therefore 221 individuals. A number of Greek medical men also suffered the same fate, but that is another story. The extreme barbarity of this persecution is accentuated by the fact that all of these medical men were willing in the interest of humanity to act as surgeons to the Turkish forces and to give their professional services to the civil population.

News of the Week.

Soldiers' Homes as Sanatoria for Disabled Service Men.—Plans are being made for the disbursement of the $48,000,000 appropriated by Congress for the hospital care and medical treatment of disabled ex-service men and the War Risk Insurance Bureau. At a conference recently held between General Wood, president of the board of managers of the National Homes for Disabled Volunteer Soldiers, Dr. Salmon representing the mental hygiene committee of the Rockefeller Foundation; Dr. Pattison representing the National Tuberculosis Association, and Director Cholmeley-Jones of the War Risk Insurance Bureeau, it was decided to convert two of the national homes into sanatoria for the exclusive treatment of tuberculosis and one of the homes into a sanatorium for the exclusive treatment of mental cases. Each of the tuberculosis sanatoria is being equipped to care for 1,000 hospital patients and the sanatorium for the treatment of mental cases will also accommodate 1,000 cases. There are already approximately 17,625 war risk patients in hospitals, of whom 7,980 are in United States Public Health Service hospitals, and 9,645 in hospitals and other institutions not owned or operated by the Government. About 900 hospitals

in the United States are now caring for war risk patients.

Bad Bread or Too Much Bread?—The shortage of American flour for white bread is blamed by the Paris health officials for the sudden increasse in gastric diseases which are filling the hospitals of that city. Professor L'Abbe of the Academy of Medicine, on the other hand, holds that, despite the flour shortage, the bread is better than that which has been obtainable since 1914, and the public is therefore inclined to eat too much of it.

"Ouija" Taken Too Seriously.—Dr. Marcus A. Curry, chief executive officer and medical director of the New Jersey State Hospital at Morris Plains, is quoted as predicting an increase of patients in hospitals for the insane unless the popularity of the ouija board or the present interest in occult and psychic phenomena diminishes soon.

Women Ill After Luncheon.—Physicians are said to be puzzled over the serious illness, with symptoms resembling those of typhoid fever, of thirty-eight women and the milder illness of three score others of two hundred society women of Cleveland, Ohio, following luncheon about a month ago at the home of one of the number. The health commissioner has ordered an examination of samples of food from the catering establishments which supplied the luncheon. A typhoid carrier is believed to have been the source of infection.

Health Record for New York State.—Commissioner R. M. Olive of the Michigan State Health Department has prepared tables from the recently issued Federal Census reports for thirty States, from which it is seen that in preventing death from the seven most costly communicable diseases—typhoid, smallpox, scarlet fever, measles, whooping cough, diphtheria, and tuberculosis—New York State ranked eighteenth in 1918 among the thirty States whose reports are complete enough to be used for comparison. In fighting typhoid and smallpox deaths it ranked seventh; in preventing diphtheria deaths it ranked twenty-sixth.

Increase for Disabled Soldiers.—Under the Darrow bill, which was passed by Congress as a rider on the Deficiency Appropriations Act on June 5, and by the action of the central office of the Federal Board for Vocational Education in approving men in the New York metropolitan district and the city of Buffalo for the fullest benefits under this act, more than 4,000 of the disabled soldiers in training in New York State will receive an increase of twenty dollars per month in their maintenance pay. The base pay for a single man will be $100, while a man with dependents will receive an additional $20 for the support of each. Under the new order the men will receive the increase beginning with July.

New Kind of Endless Chain.—A Chicago doctor recently admitted to the district prohibition officer that because of the endless chain of seekers after whiskey prescriptions he had had time neither to sleep nor to eat. Between February 11 and March 24 he issued 7,435 whiskey prescriptions, an average of 175 a day. He received from fifty cents to two dollars a prescription. On one occasion, he said, he had to call the police to disperse the thirsty mob that gathered about his office.

Monkey Farms Suggested.—Dr. Serge Voronoff, "interstitial gland" fame, who has come to the United States for the purpose, it is stated, of conducting experiments which are forbidden in France, is quoted as urging the establishment in this country of large farms for the breeding of monkeys from which to secure glands for transplantation purposes.

Clinic for Poor Children.—The American Free Milk and Relief for Italy has opened a free clinic and dispensary for poor children of the lower East Side, New York City.

"Movie" of Convalescent Camp Opening.—Moving pictures were scheduled to be taken for distribution throughout the United States on the opening of the convalescent camp for wounded soldiers provided by Mr. C. W. Chapin at Towners, Putnam County, N. Y. It is hoped that the "movie" will stimulate other cities to establish similar camps.

"H. C. L." Strikes Hospitals.—It is announced by the United Hospital Fund that it costs fifty cents a day more to care for each patient in the New York City hospitals than it did one year ago. This is a fifteen per cent increase.

Petition for More Whiskey Blanks Denied by Court.—A practising physician in New York City obtained an order recently requiring Charles R. O'Connor, Federal Prohibition Director for the State of New York, to show cause why he should not issue additional whiskey blanks to the doctor, who claimed that the hundred blanks every three months allowed by the Government was not a sufficient number. When the case came up before Judge John C. Knox in the Federal District Court, the judge held that he had no jurisdiction, and stated that the only way for the doctor to obtain relief was to file a suit in equity and if this warranted it the court could then grant the request. Counsel for the physician said he would follow the suggestion.

Vaccination Urged in New York City.—Dr. Royal S. Copeland, Health Commissioner of New York City, urges that every person who has not been vaccinated against smallpox in the last five or six years be vaccinated at once. This is a part of the campaign of prevention which the Commissioner is instituting with respect to infectious diseases now prevalent in Europe, for the conduct of which the Board of Estimate appropriated $80,000.

Appeal for Nurses.—The New York Health Department, through the Bureau of Child Hygiene, has issued an appeal for nurses. Applicants must be citizens and residents of this State, and they must be registered nurses. The salary after August 20 will be $1,144 a year.

Anthrax Not Always Fatal.—The recent discharge from Bellevue Hospital, as cured, of a well-known polo player who had been treated in that institution for anthrax, has called forth the statement from Dr. Douglas Symmers, Director of the Pathological Laboratories of Bellevue and Allied Hospitals, that a cure is practically certain if begun early. This is the fifth case to be cured in Bellevue with the serum prepared by the United States Department of Animal Industry.

Jewish Memorial Hospital Buys Inwood Prop-

erty.—Announcement has been made of the purchase by the Jewish Memorial Hospital of the Inwood House, an institution for unfortunate mothers and infants. The property, which is situated between 208th Street and the Hudson River Railroad front, will be taken over by the hospital December 1.

"Negro Health Week" in Texas.—The Texas Public Health Association recently conducted a "Negro Health Week" throughout the State.

School for Colored Nurses.—The Piedmont Training School for Colored Nurses, which is conducted as a part of Piedmont Sanitarium, under the auspices of the Virginia State Board of Health, will graduate its first class this month. The nurses will take up the work of combating tuberculosis among negroes.

A New Medical Journal.—*The Medico* is the latest recruit in the ranks of medical journalism. It is edited and published monthly by Dr. Thomas W. Ross of Portland, Ore.

"T. B. Shrapnel."—The South Carolina Tuberculosis Association has issued an official publication under the name *T. B. Shrapnel.* It is to appear monthly, will contain national as well as local data concerning tuberculosis, and will be sent free of charge to anyone desiring copies.

United States Civil Service Examinations.—The United States Civil Service Commission announces examinations, to be held August 24, for Associate in Clinical Psychiatry and Psychotherapy at St. Elizabeth's Hospital, Washington, D. C., at a salary of $2,500 a year and maintenance. Applicants should apply for Form 2118, stating the title of the examination desired, to the Secretary of the Fourth Civil Service District, Washington, D. C., or to the Secretary of the local United States Civil Service Board.

Bacteriologists Wanted.—The United States Civil Service Commission has announced examinations, to be held December 1, for bacteriologist at $130 to $180 a month, associate bacteriologist at $90 to $130 a month, assistant bacteriologist at $70 to $90 a month, junior bacteriologist at $70 and junior bacteriologist, part time, at $30 to $50 a month. Applicants should apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C., or to the secretary of the local United States Civil Service Board.

Pharmacologists Needed.—The United States Civil Service Commission announces an examination, to be held August 31, for pharmacologist. A vacancy in the United States Public Health Service, Washington, D. C., at a salary of $3,000 a year, and other vacancies at higher or lower salaries, are to be filled from this examination. Applicants should apply for Form 2118, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C., or to the secretary of the local Civil Service Board.

General Gorgas to Be Buried in Arlington.—The War Department has announced that the body of Major-General William C. Gorgas, who died recently in London, will be buried in Arlington National Cemetery at Washington, D. C.

Sentenced for Manslaughter.—A New York physician, recently found guilty of manslaughter in the first degree in connection with the death of a patient following curettage, has been sentenced to serve from three and a half to fifteen years. Execution of the sentence was delayed until July 26. Judge Louis D. Gibbs, of the Bronx County Court, in passing sentence, denounced "the insidious and uncalled-for propaganda" which had been conducted in the physician's behalf by certain of his colleagues, participation in which was formally denied some time ago by the Bronx Medical Society.

Obituary Notes.—Dr. THEODORE RAYMOND PARKER of Willimantic, Conn., died July 20, at the age of sixty-seven. He was graduated from New York University Medical College in 1880.

Dr. ELIAS LESTER of Seneca Falls, N. Y., died July 18, in his eighty-fourth year.

Dr. HUGH S. KINMOUTH, member of the Asbury Park (N. J.) City Commission, committed suicide at his farm on Shark River, near Belmar, July 21. He was seventy-three years old. Despondency over ill-health is supposed to have caused him to take his life. Dr. Kinmouth was graduated from the College of Physicians and Surgeons, New York City, in 1870, and settled in Asbury Park in 1872. He opened the first pharmacy at Asbury Park, which he continued to run until the time of his death.

Dr. GEORGE F. PITTS of Warwick, N. Y., died July 23 at the age of seventy-one. He was graduated from New York University Medical College in 1877.

Dr. VICTOR PARSONNET, president of the medical staff of Beth Israel Hospital, Newark, N. J., dropped dead recently as he was leaving his home to go to the hospital. Dr. Parsonnet, who was forty-nine years of age, was born in Russia and came to this country when a young man. He was graduated from Long Island College Hospital in 1898 and was a member of the American Medical Association and State and local societies.

Dr. JOHN J. KENNY, who was born on Prince Edward Island thirty-seven years ago, died at Roosevelt Hospital, New York City, July 24. He was graduated from the College of Physicians and Surgeons and was an interne at Roosevelt Hospital. He served for three years as senior medical officer of the Twelfth Regiment, N. Y. N. G., with the rank of Captain.

Correspondence.

THE QUESTION OF COMPULSORY SUBSCRIPTIONS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR: When a busy practitioner of medicine takes the time to write a letter to a medical journal, and it apparently receives no further consideration than prompt consignment to the waste basket, he undoubtedly must feel both disappointment and vexation, if only for the reason that it requires a greater effort on his part than for one accustomed to writing for the public press and proficient in the use of the typewriter. It is usual when a physician writes a letter to one of the newspapers, that the courtesy of an acknowledgement is accorded him, even though for any reason his letter may not be printed. It is equally discourteous to print a letter with its

errors of the typewriter or of hasty composition uncorrected or even emphasized.

The foregoing has particular reference to a letter of criticism of the *Journal of the American Medical Association* from Dr. Jacob Weiss, which appeared in the July issue of the *New York State Journal of Medicine*, and which undoubtedly was hurriedly written by one but little practised in the use of the typewriter, as evidenced by the typographical errors common to every letter written under like circumstances. It goes without saying that all communications should be properly written, but it likewise is clear that had the editors of the *Journal* been actuated by a proper sense of fairness, they would have either corrected or overlooked these typographical discrepancies and addressed themselves to the question of merit or demerit as affecting the conditions complained of in the letter referred to, instead of evading the issue by merely printing the letter with the obvious purpose of discrediting the writer.

I feel there are many physicians who are in sympathy with Dr. Weiss in the complaint he makes and who will agree that in justice to the members of the medical profession two courses should be open to the fellowship of the American Medical Association, namely, one similar to the present arrangement and the other providing for a membership on the basis of one or two dollars a year without the *Journal*. The members would then be free to elect whether they would or would not take the *Journal*, and the latter would then have to stand or fall according to its own merits.

JOHN D. COGHLAN, M. D.
137 EAST FIFTY-SECOND STREET, NEW YORK.

THE FUNCTIONS OF THE HOSPITAL.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Your editorial on "The Functions of the Hospital," in the July 10 issue of the MEDICAL RECORD, has impressed me deeply. It is an evidence of the trend of medical opinion on this subject, and I hope will be commented on by other medical journals, so that thoughtful lay periodicals may reverberate their commendation or criticism of this matter.

It is the plan and policy of the new Beth Israel Hospital of New York City to functionate as a medical center for the physicians of the vicinity. The various departments of the hospital will be at their service. They need not bring a patient to a bed in the hospital to have him thoroughly studied. If the patient is ambulatory, he may call to his assistance the various branches of the department of laboratories, the Roentgen-ray expert, the cardiographist, as well as the various clinical chiefs to help him with his "case." For the hospital owes a duty to the community, and must consider all ailing individuals as potential resident patients of the institution, whom it is more economical and more hygienic to cure or help cure in the incipiency of their disease than to wait until the individual is bedridden and must be forthwith brought into the wards.

In certain cases, where the physician desires scientific help at the home of a bed-ridden patient, it should be the function of the hospital staff to place at his disposal assistance, both clinical and laboratory, at the bedside. The hospital should provide itself with portable *x*-ray, etc., should be ready to perform transfusions, etc., if necessary, in the homes of the patient.

The hospital will also be a teaching center for the neighborhood physicians, where they can come and "brush up"; but the hospital will not take upon itself, or duplicate, the duties of the medical society meetings. In these meetings the physicians, if they are attentive, may learn something that is new to them. In most instances the lecturer speaks altogether not like a Demosthenes or a Cicero and his subject is presented in such a hurried and condensed manner that the general practitioner gains little and the specialist—not in the same field—altogether nothing from the lecture. In the hospital, on the contrary, the individual physician will come with his individual query and will be practically given an answer, if possible, to his problem.

The time is passing when a hospital is considered a hotel, with an operating room attached. It is more. It is an operating room, a laboratory, a social service department, a diagnostic clinic for ambulatory and bed-ridden cases, a teaching institution, etc., with bed space conveniences. If this opinion prevails, I believe that the true evolutionary function of the hospital will be realized.

L. J. FRANK,
Superintendent.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, July 2.

Disease and the Birth Rate Commission.—A matter of considerable interest just now is the presentation of the report to the Minister of Health of the National Birth Rate Commission, which was handed in on June 25 last. The Bishop of Birmingham presented the report and said in part that the war had deprived Great Britain not only of a large number of its male population, but of those of the highest and best quality. It was necessary to take all right measures to restore British citizenship to its normal and even to an improved position. To accomplish that, the marriage of young people in the prime of adult life should be encouraged, but the social state was such that to embark on matrimony was recognized as a rash procedure for those who were not in fairly easy financial circumstances. This was probably most gravely the case among less wealthy people of the middle classes, from whom they might expect the very best type of children. With regard to illegitimacy, the Commission felt that the child must be properly reared and believed that in the vast majority of cases the mother's care would be the best for the child. It was not thought that that would be an encouragement to loose living, but would rather be calculated to inspire a higher idea of existence. The Commission had been met at every step in its inquiry by the painful proofs of the way in which venereal diseases had contributed to sterility, to diseased humanity and to the degradation of the sexual association. The deepest gratitude was felt at the work done by the Royal Commission on Venereal Disease, and it was hoped that it would be possible to find some solution of the debatable

points, especially those in which there would seem to be conflict between the religious judgment of the nation and some advocates of certain methods of safeguarding those who were likely to have immoral sexual relations. The Bishop was persuaded that with sanctified common-sense the apparent differences could be harmonized. Indeed, at the Health Congress at Brussels a few weeks ago, when speaking on this subject, he found that he and Lord Dawson were able to reach almost perfect agreement. He begged Dr. Addison to continue his efforts, as, for the future of the country, it was essential that venereal disease should be throttled. Mrs. John Clay, representing the Mothers' Union, said that more use should be made of women to advise the Ministry of Health. Dr. Addison, the Minister of Health, said that any government must be deeply impressed with the importance of the work under consideration and do what it could to aid it. It touched subjects, however, of a very personal character and people were apt to resent outside interference. The nation was very much indebted to the commission for the valuable work it had done without cost to the state, a particularly good feature in these days, when so much was heard of economy and extravagance. It was an encouragement to know that the birth rate was now rising progressively each quarter and that the effect of the war on the birth rate was to some extent passing off. Mrs. Clay had asked him to seek the help of women to advise the Ministry. In some directions he had anticipated that request, and he was now endeavoring, with the assistance of the Board of Education, to train a supply of well instructed workers. There were on the staff of the Ministry of Health six lady doctors and six midwives, who were aiding them to improve the maternity centres. There was a great need for more maternity homes, and these were now being provided in different parts of the country. The local authorities were also pushing forward the provision of better maternity accommodation. The Ministry of Health had not been backward in research, and in spite of the financial difficulty the government had granted £120,000 for that work. He would consider whether he could make any statement as to policy of the Ministry with regard to the prevention and treatment of venereal disease. The importance of the work done for the prevention and treatment of venereal disease could not be overestimated. It might be that at some centres the work had not been done as efficiently as modern experience showed it could be done, but a number of members of his staff were now devoting themselves exclusively to the increased efficiency of the centres. If the work of the centres was to be really successful and they were to get people to go there promptly they must take every means in their power to ensure that the work was confidential. Certain cases in the courts of law recently had given some misgivings about the confidential nature of the work of medical men. The Ministry of Health was now investigating the position, and he was perfectly certain that, whatever the legal judgment might be, it would be necessary to secure the confidential character of their work, which was essential to the continued success of the campaign against venereal disease.

Medical Men and Secrecy.—At the meeting of delegates to the Congress of the British Medical Association which took place at Cambridge on Friday, June 25, and at which 200 delegates were present, the main matter for discussion was that of the confidential nature of matters which might come to the knowledge of a medical man by reason of his calling. It was moved that, having considered the question of professional secrecy, more particularly with regard to venereal disease, the representative body reiterates the opinion that a medical practitioner should not in any circumstances disclose voluntarily, without the patient's consent, information which he has obtained from that patient in the exercise of his professional duties." Dr. Langdon-Down contended that the medical profession should not shift from the position they had always taken upon this matter —namely, that secrecy should be maintained. There are cases, he said, in which one receives from a court of law an order to divulge professional confidence that is a recognized thing. There are also cases in which the professional man will defy the order of the court and take the consequences. If that is done in a sound case the punishment should not, and will not, be unduly severe. There are also cases when one may feel it one's duty to divulge a secret received in a professional way in order to prevent the commission of crime. The question is, the speaker said, whether the rule would be weakened by satisfying these exceptions. He believed if one began to open the door one took away the great anchor upon which our professional work is based. If there ccurred a breach of confidence between the doctor and the public untold damage would be done, and he thought we should do well to adhere to our old rule of secrecy, leaving the doctor in those cases in which there is doubt and difficulty to decide whether there is compelling reason for him to break his confidence or not. Dr. Sheahan of Portsmouth proposed as an amendment "That the representative body express the opinion that the medical profession should be placed on the same footing as to professional secrecy as clergy, barristers and solicitors, and that the Association take every means to bring this about." Dr. Sheahan contended that a medical man should not disclose any confidence in any circumstances without the consent of his patient. We are supposed, he said, to be state machines without a conscience. There is no reason why we should not maintain our privileges in the same manner as the other learned professions, and retain the dignity, quality, and ancient privileges of our profession. The solicitor to the Association, by request of the members, stated the legal position. He said that so far as the legal profession was concerned, secrecy was not recognized by law, under act of Parliament. So far as secrecy in the Church was concerned, it was on sentimental and not on legal grounds. In America there was an enactment that no doctor should be compelled to disclose any information he may have received in his professional capacity, and in Scotland he found a record of the Court of Session in which it was judicially decided that

secrecy was an essential part of the contract between the medical man and patient. Secrecy had grown up by custom and strong common sense as regarded solicitors. It appeared to him that they would be aiming at almost the impossible in endeavoring to get an Act of Parliament to establish that if a medical man knew that secrecy was going to make a crime possible he would be justified in telling. Dr. J. A. Macdonald of Taunton proposed an amendment to the resolution. "That a medical man should not, without the patient's consent, disclose information unless compelled to do so by a court of law." Dr. Macdonald's amendment was defeated. After discussion the original resolution, redrafted by the solicitor was carried.

State Medical Service.—The Representative Body of the Association, on June 28, was chiefly concerned in discussing matters arising on the interim report dealing with the future provision of medical and allied services issued by the Medical Consultative Council of the Ministry of Health. On a motion that the representative body express a general approval of the report, Dr. C. Buttar, London, proposed a resolution declaring that the Representative Body should define the general principles contained in the report and that those principles be submitted to the divisions for an expression of opinion. Sir James Barr, Liverpool, in seconding, said his estimate was that if the scheme were to be carried out as it should be the cost in the first five years would be 100 million pounds a year and in the next ten years 150 million a year. He had heard it said that this was an ideal scheme, but an ideal scheme must be practical. In his view the State should be entirely engaged not with the treatment of disease but with its prevention. Adenoids was a perfectly preventible disease; pneumonia was also preventible; chronic disease of the heart was also altogether preventable. If one dealt with preventive matters in the proper way, one would not have a consumptive dying before he began to be treated. Dr. Fothergill of Brighton warned the medical profession to be careful, as otherwise they would be jockeyed into a scheme as they were jockeyed into the insurance business some years ago. Lord Dawson said the report only pretended to give the broad outlines of the direction in which the medical profession should move. It was time they asked themselves whether they were going in for individualism or for something of the nature of State action. The scheme might take twenty years to materialize. The medical profession stood higher to-day than ever before in the estimation of the public, who were looking to it for guidance as to the form medical practice in the future should take. Finally, it was resolved that the gathering should consider the general principles contained in the report and that the whole question should be considered at a special representative meeting. A resolution was proposed and carried affirming that the establishment of primary health centers was the pivotal idea of the changes recommended. Dr. Turner, London, proposed a motion , which was carried, reiterating that whole-time salaried State medical service would be detrimental to the best interests of the public and medical profession.

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 15, 1920, clxxxiii, 3.

1. Specific Aortitis. William D. Reid.
2. Renal Calculus with Negative *X*-Ray Findings. A. Hyman.
3. Observations on the Agglutinating Titre of the Blood Serum in Typhoid Fever. Dwight O'Hara.
4. Prostatectomy (Concluded). Henry G. Bugbee.

2. Renal Calculus with Negative X-Ray Findings.—A. Hyman reports four cases which illustrate the following facts: (1) Negative radiographic findings in renal lithiasis are not infrequent, four such cases being observed within a period of a few months. (2) Latent kidney stones are also not uncommon; in two cases there were no symptoms referable to the side on which calculi were found. (3) The chemical analysis showed urates to be the predominating constituent in all four cases. (4) The passage of a ureteral catheter unobstructed into the pelvis of the kidney does not prove the absence of a ureteral calculus. (5) The wax-tipped bougie is of value; it will every now and then demonstrate the presence of a stone when other means fail. (6) Conservation should be the watchword in all operations upon the kidney. Nephrectomy should be practised as a last resort, for despite negative radiograms and absence of symptoms, the opposite kidney may be the seat of cancerous disease.

4. Prostatectomy.—Henry G. Bugbee, concluding his discussion of this subject (see MEDICAL RECORD, July 24, p. 155), reports an experience covering seventeen years, the first three years, observing and assisting in such prostatectomies as occurred in a general surgical service, and for fourteen years, in operating. His early prostatectomies, performed when the crystallizing stage of the evolution of prostatic surgery was not far advanced, were done by the blind perineal method of intraurethral enucleation. In a four-year experience in this operation, while in charge of an active general surgical service, although there were no deaths, and the operation was looked upon as not difficult, the good results were oversadowed by the few who are now doubtless still going about wearing a urinal and cursing their existence. This was followed by one-stage suprapubic operation, with occasional open perineal prostatectomies, and latterly by an infrequent open perineal operation, but all others by a suprapubic drainage followed by removal of the prostate when the patient's condition warranted. He has had 147 cases, with three deaths, but, incontinence nearly as bad a mortality characterized three of the perineal cases, a perineal fistula persisted in two, constriction of the vesical neck in two, nodules of prostate were left about the vesical neck in two. One death resulted in a one-step suprapubic prostatectomy from hemorrhage when a continuous irrigation was used, one from renal insufficiency, and one of the two-stage cases from uremia. From observation and from results obtained in the two-stage suprapubic prostatectomy, the real grasp one has upon the situation at all times, the possibility of progressing step by step, and the excellent results obtained, lead the writer now to advise prostatectomy in some borderline or early cases in which formerly he would have employed palliative measures. He advises it as a radical cure for a condition which will probably progress, may become malignant, and is a constant menace to the patient, limiting his activities. While he does not advocate one operation for all cases, he believes that the suprapubic two-stage prostatectomy is the safest, is based on the best principles from the anatomical and physiological and pathological standpoints, involves fewer complications, and gives the best functional results of any method of procedure.

New York Medical Journal.

July 17, 1920, cxi, 3.

1. Reports of Unusual Cases with Anatomical Diagnosis. Nellis B. Foster.
2. Observations on the Stigmata of Degeneration as Found in the Feebleminded. Martin W. Barr.
3. The Types of Carbonated Brine Baths (Nauheim)—a Discussion of Their Comparative Values. N. Philip Norman.

4. Peptic Ulcer Clinically and Röntgenologically Considered (Continued). Joseph S. Diamond.
5. The Results of Operation in Gastric and Duodenal Ulcers. George Woolsey.
6. Gastrointestinal Disturbances in Affections of the Ocular Mechanism. I. Winfield Kohn.
7. Diseases of the Right Upper Quadrant. M. B. Kunstler.
8. Treatment of Tuberculosis. Clinical Case Reports (Continued). Benjamin S. Paschall.

5. The Results of Operation in Gastric and Duodenal Ulcers.—George Woolsey bases this paper on a study of the results of operation in gastric and duodenal ulcer in 109 cases, operated on mostly during the last five or six years, up to December, 1919. Acute perforating ulcers are not included. A few of these 109 cases, principally those of gastric ulcer, for which gastroenterostomy or excision was done, date further back, but are included for a comparison of results, as the writer has done relatively few operations of these types in recent years. In the group of gastric ulcer cases treated by gastroenterostomy he included all private records going back to 1902. There are eighteen cases in this group, with no postoperative deaths, making a mortality of 2.6 per cent. for all cases of peptic ulcer in which a gastroenterostomy only was done. The late results in these eighteen cases are known in fourteen, being excellent in eight, satisfactory in three, making 78.5 per cent. of good results. In the three cases marked unsatisfactory one patient when last seen four months after operation, gave an excellent report, but three months later wrote that she was hopelessly sick, without specifying in what way. Another patient was well for eight months when he began to have stomach symptoms at times, especially vomiting, but no gastric pains. He was operated upon again sixteen months after the first operation and the pyloric end of the stomach resected. Since then he has been free from gastric symptoms, but is still neurotic and has a peculiar pallor, though the blood examination is quite satisfactory. The third patient was entirely well for nearly three years, when gastric symptoms, with hematemesis, returned. On resecting the pyloric end of the stomach the stoma, made at the first operation, was found entirely closed, the only case of the kind the writer has encountered. In a group of twenty-six cases of gastric ulcer treated by resection of the stomach four patients died, a mortality of 15.3 per cent. Of the remaining twenty-two patients sixteen have reported the late result. Of these six gave an excellent result, seven a satisfactory, and three an unsatisfactory one, making 81.2 per cent. of good results. In gastric ulcers situated at or near the pyloric end he performs resection, preferably by the Poly-Reichel technic. If the antrum is normal and the ulcer is three to four inches or more proximal to the pylorus he does a mesogastric resection. Where the ulcer is so far from the pylorus as to make this operation quite difficult, an excision, or the Balfour cautery method, with a gastroenterostomy, is preferable. This group includes eight mesogastric resections with no deaths. Only five cases have been heard from and, after reoperation in one case and addition of a gastroenterostomy, the satisfactory results comprise only sixty per cent.

6. Gastrointestinal Disturbances in Affections of the Ocular Mechanism.—L. Winfield Kohn considers it evident from his observations that subjective gastrointestinal complaints often result from eye disturbances, and it would seem that almost any eye disturbance is capable of producing enough irritation to reflexly bring about these complaints, but those most common are anomalies of accommodation, refractive errors and disturbances of the eye movements. It would also seem, here, that a reemphasis of the importance of looking into the question of declination of the meridians of the eyes is indicated. Many eyes are constantly being examined by specialists who seldom look into the condition of the meridians, and as a result a very important factor in the probable creation of reflex disease is overlooked. Many patients, again, owing to the fact that they subjectively experience no trouble with their eyes, often lead the physician away from his path of proper diagnosis. The writer applies the term unconscious ocular disease to this condition in which ocular anomalies give rise to no subjective eye symptoms. Eyestrain, conscious or unconscious, is a rather common condition and by all means requires attention, for through its removal or mitigation the general welfare of the patient can be decidedly improved. Eyestrain so conditions the reflex visceral arcs as to result in the establishment of many untoward body symptoms, and these symptoms often show a predominating relationship to the vagus, hence the condition is spoken of as a vagal neurosis.

Journal of American Medical Association.

July 17, 1920, lxxv, 3.

1. The Rights of the Child. James A. Hayne.
2. The Treatment of Obstinate Occipitoposterior Positions. Joseph B. De Lee.
3. Noninterference in the Treatment of Puerperal and Postabortal Infections. E. L. King.
4. Cysts of the Pancreas. John J. Gilbride.
5. Treatment of Diabetes Complicated by Pulmonary Tuberculosis. N. W. Janney and R. R. Newell.
6. Mistakes in One Hundred Thyroidectomies; with Description of a New Method of Thyroid Cauterization in Treating Exophthalmic Goiter. J. Tate Mason.
7. Diagnosis and Management of Intrathoracic Goiters. Frank H. Lahey.
8. Advantages of Local Anesthesia in Thyroid Operations. Joseph Rilus Eastman.
9. An Emergency Technic for Thyroidectomy. Willard Bartlett.

2. The Treatment of Obstinate Occipitoposterior Positions.—Joseph B. De Lee. See MEDICAL RECORD, May 22, p. 891.

3. Noninterference in the Treatment of Puerperal and Postabortal Infections.—E. L. King. See MEDICAL RECORD, May 22, p. 891.

4. Cysts of the Pancreas.—John J. Gilbride. See MEDICAL RECORD, May 22, p. 893.

5. Treatment of Diabetes Complicated by Pulmonary Tuberculosis.—N. W. Janney. See MEDICAL RECORD, May 8, p. 811.

6. Mistakes in One Hundred Thyroidectomies; with Description of a New Method of Thyroid Cauterization in Treating Exophthalmic Goiter.—J. Tate Mason. See MEDICAL RECORD, May 29, p. 932.

7. Diagnosis and Management of Intrathoracic Goiters.—Frank H. Lahey. See MEDICAL RECORD, May 29, p. 932.

8. Advantages of Local Anesthesia in Thyroid Operations.—Joseph Rilus Eastman. See MEDICAL RECORD, May 29, p. 932.

9. An Emergency Technic for Thyroidectomy.—Willard Bartlett. See MEDICAL RECORD, May 29, p. 933.

The Lancet.

June 26, 1920, cxcviii, 26.

1. Hunterian Lecture on the Influence of Nerve Impulses on Visceral Disorders. H. Tyrrell Gray.
2. Treatment of the Convalescent Soldier. T. E. Sandall.
3. Post-Salvarsan Jaundice. Rupert Hallam.
4. Surgery of Congenital Hypertrophic Stenosis of the Pylorus A Series of Twelve Cases. Richard Warren.
5. Fistula of the Parotid: An Improved Method of Cure. Henry Curtis.
6. The Assessment of Hand Injuries. J. J. Scanlan.
7. The Enterococcus as a Factor in Certain Types of Dysentery. S. M. Ross and C. F. Peckham.
8. Soluble Lead in Casseroles. Helen Masters.

3. Post-Salvarsan Jaundice.—Rupert Hallam presents this study for the purpose of calling attention to the prevalence of jaundice occurring during the treatment of syphilis with arsenobenzol preparations, and also to show that it is relatively more frequent with some preparations than with others. He reviews the statistics of other observers and tabulates his own observations in forty-seven cases. With such evidence before one, he concludes, it is necessary to consider whether an infection resembling Weil's disease may not be the excitng factor in the causation of the post-salvarsan jaundice which occurs in what, perhaps, may be termed epidemic form. The grouping of cases has been described by other observers, and although there can be no definitely positive deduction in favor of an infection being responsible for the occurrence, he thinks the possibility is worthy of further consideration. He summarizes his views as follows: (1) That a considerable number of patients suffer from jaundice following the injection of 606. (2)

That it occurs relatively more frequently after the 914 group of arsenobenzol preparations (neosalvarsan, neokharsivan, novarsenobillon, etc.). (3) That it may occur in epidemic form. (4) That the causation is as yet undetermined.

4. Surgery of Congenital Hypertrophic Stenosis of the Pylorus.—Richard Warren holds that most cases of congenital hypertrophic stenosis of the pylorus die if treated medically. Surgical measures, including cases which have become debilitated by overlong expectant treatment, have cured at least 60 per cent., whether by gastrojejunostomy or Ramstedt's operation (Gray and Pirie). Where the diagnosis is reasonably certain from finding a small tumor, presumably the pylorus (with the other signs of pyloric obstruction), operation should be undertaken without delay, and should be regarded as the normal treatment. Where the diagnosis is not absolutely decided medical measures (gastric lavage and small feeds) may be continued for a few days while careful frequent examinations are made for the pyloric tumor. If projectile vomiting persists, feces remain abnormal, or the weight does not increase, a laparotomy should be done high up in the abdomen and the pylorus hooked up through a small incision and examined. Although there is not much difference between the percentage recovery of the cases in the series treated by gastrojejunostomy and the series treated by Ramstedt's operation, the latter will probably be the operation of choice in the future on account of its less severe character. If employed early in all cases the results could probably be considerably improved. There is a great disturbance of metabolism in these infants, rendering the after-treatment a problem in feeding to be solved in each case individually.

British Medical Journal.

June 26, 1920, i, 3104.

1. A Lecture on the Early Symptoms and Diagnosis of Diseases of the Spinal Cord. Sir F. W. Mott.
2. The Labyrinthine Reactions of Experienced Aviators. David Ranken.
3. The Effects of Radium Treatment on War Injuries in the Neighborhood of Nerves. Walter C. Stevenson.
4. On Poisoning by Arsenobenzol Compounds Used in the Treatment of Syphilis. Alexander G. R. Foulerton.

1. A Lecture on the Early Symptoms and Diagnosis of Diseases of the Spinal Cord.—Sir F. W. Mott states that the two subjective sensory symptoms which are the earliest evidence of disease of the spinal cord are pain and paresthesia or dysesthesia. They may be the sole symptoms, at first, of severe spinal cord disease, and it should be recognized that a patient who comes to a doctor complaining of localized pain or numbness, tingling, pins and needles, formication, or other abnormal sensations, presents the possibility of early signs of spinal cord disease. Considering the objective disorders or sensibilty, he states that total anesthesia in disease of the spinal cord occurs only in cases where there is a complete transverse lesion, such as occurs in fracture dislocation, bullet wound, or severe meningomyelitis caused by compression or disease; the prognosis is always grave. In meningomyelitis the subjective sensory symptoms and hyperesthesia precede the anesthesia in all cases arising from focal myelitis, or radiculitis, or diffuse myelitis. Dissociated anesthesia is more frequent and more important as a diagnostic sign than total anesthesia in the localization of lesions, by dissociation meaning that all modes of sensation are not affected, or not affected to an equal degree. Superficial sensibility to a light touch with a wisp of cotton-wool, to pricking, and to heat and cold may coexist with unimpaired deep sensibility. An anesthesia to light touch may be associated with the preservation of pain sensibility, and even so exaggerated that touch sensations are only recognizable as painful (anæsthesia dolorosa). This sensory dissociation may be met with in peripheral neuritis and in cases of compression and irritation of roots. In syringomyelia and hematomyelia, where the grey matter is disorganized, pain, heat and cold sensation are not felt, but tactile sensations are. He emphasizes the importance of anatomical diagnosis in prognosis and in cases where surgical interference may be contemplated. It is necessary to decide by examination: First, whether the case is functional or organic. Second, if organic, in order to form a correct judgment regarding prognosis and treatment, it is essential to diagnose the pathological nature of the lesion and its anatomical situation.

2. The Labyrinthine Reactions of Experienced Aviators.—David Ranken presents an investigation undertaken in order to ascertain the difference, if any, between the labyrinthine reactions of experienced pilots and those of the average individual of the same age who has done no flying. From these studies he draws the following conclusions: (1) Experienced pilots have, if anything, a slight tendency toward diminished labyrinthine reactions. (2) Disturbance, present or past, of some other system of the body may affect labyrinthine reactions. (3) Where deafness is present no medical examination of a candidate or pilot is complete without a careful investigation of the functions and reactions of the semicircular canals of both sides. (4) In the absence of a discovery of present or past signs or symptoms pointing to an aural affection, routine examination by means of the Bárány tests is superfluous, provided that a thorough general medical examination is made.

Indianapolis Medical Journal.

June, 1920, xxiii, 6.

1. Local Affections of the Genitalia of Non-Venereal Origin. Noah E. Aronstam.
2. The Course of Chronic Ascending Pelvic Infections. Carl Habich.
3. Echinococcus Cyst of the Liver with Report of Case and Operation. B. Friedlaender.
4. The Genesis and the Meaning of Tics. H. Laveson.

1. Local Affections of the Genitalia of Non-Venereal Origin.—Noah E. Aronstam calls attention to the fact that not all local lesions involving the genitalia are of venereal origin, and discusses briefly those resulting from local invasion, namely, furuncular infections of the genitalia; those caused by scabies; eczematous lesions; psoriasis, the results of local applications, or contact with chemicals or substances used in industries; lesions due to pediculi invading the pubis and adjoining parts.

Bulletin of the Johns Hopkins Hospital.

April, 1920, xxxi, 350.

1. Venous Thrombosis, Pulmonary Infarction and Embolism Following Gynæcological Operations. H. H. Hampton and Lawrence R. Wharton.
2. Presentation to the University of the Portrait of Dr. John Whitridge Williams. William H. Welch (Stenographic report).
3. The Fate of Bacteria Introduced into the Upper Air Passages. IV. The Reaction of the Saliva. Arthur L. Bloomfield and John G. Huck.
4. Pyelitis et Ureteritis et Cystitis Cystica. Victor C. Jacobson.
5. An Apparatus for Measuring the New-Born. Adolph H. Schultz.
6. An Unusual Case of Tuberculous Salpingitis. J. P. Greenberg.

4. Pyelitis et Ureteritis et Cystitis Cystica.—Victor C. Jacobson calls attention to the fact that cystic disease of the renal pelvis and ureter was first recognized by Morgagni, who described the autopsy findings in the bodies of two aged men. No new cases came to light until sixty years later. Johnson, in 1816, reported the case of a female who after pregnancy twice suffered with retention of urine, and in whom the condition was found at autopsy. Following the contribution to the subject by Litten, in 1876, and the report by him of one case, over fifty cases of ureteritis cystica have accumulated, the greater percentage from the experience of European pathologists. Not until 1902 does it appear in American literature, when Harris studied three cases from the Johns Hopkins pathological series. All three were in aged persons, one a woman. Stow, in 1907, added a fourth case, and Hibbs, in 1919, contributed a fifth. Recently Jacobson, in doing routine autopsies at the Peter Bent Brigham Hospital, Boston, encountered three cases in as many weeks. Detailed studies of these cases are given. From this study the following summary is drawn: 1. The condition described is a cystic inflammation of the pelvis, ureters and bladder. 2. It occurs in persons of either sex, in

95 per cent. of cases in senile, arteriosclerotic individuals from whom a history of previous urinary inflammation or other disturbance can be obtained. 3. Three typical cases are reported in detail, all in aged men, two of whom had a history of prostatic trouble and the third bilateral pelvic calculi. In one a double ureter was present. 4. The pathogenesis may be epitomized as follows: (a) In the aged, arteriosclerosis of the ureteral and vesical arteries occurs and is followed by muscular atrophy, fibrous myositis and loss of elastic tissue leading to atony of the ureter and bladder. (b) By the marked infolding of the mucosa which follows, with fibroplasia in the tunica propria, many cell "nests" of Von Brunn are formed. (c) An inflammatory irritant, usually from the pelvis or bladder, causes the formation of granulation tissue which heals over apposed tips of mucosal folds to produce more cell "nests" (this being probably their only source in young individuals). (d) The same irritant produces proliferation of the isolated epithelial cells, followed by central degeneration and fluid transudation, thus giving rise to microscopic and macroscopic cysts. 5. In view of the large number of cell "nests" of Von Brunn in the ureter and bladder of senile individuals and the high incidence of urinary tract infections in the aged, the writer believes that cystic inflammation of these organs is relatively common in this class of patients.

American Journal of the Medical Sciences.

July, 1920, clx, 1.

1. Carcinoma of the Pancreas. Kellogg Speed.
2. The Therapeutic Use of Oxygen. R. D. Rudolf.
3. A Case of Splenomegaly with Polymorphonuclear Neutrophil Hyperleukocytosis. E. L. Tuohy.
4. A Comparative Study of the Trypanocidal Activity of Arsphenamine and Neoarsphenamine. Jay F. Schamberg, John A. Kolmer, and George W. Raiziss.
5. Contraction Waves in the Normal and Hydronephrotic Ureter: An Experimental Study. Wilder G. Penfield.
6. Diets for the Ambulant Treatment of Diabetes Mellitus. Herman O. Mosenthal and Herbert J. Wiener.
7. Acute Infectious Enteritis with a Polyneuritic Syndrome. Frederic J. Farnell and Arthur H. Harrington.
8. Functional Blood-Pressure. Robert Franklin Ives.
9. A Study of the Blood after Splenectomy: With Special Reference to the Leukocytes. Milton W. Hall.
10. Modern Individualized Dietary Treatment in Diabetes. Marius Lauritzen.
11. Roentgen-Ray Studies of Bronchial Function. Jesse G. M. Bullowa and Charles Gottlieb.
12. Heteroplastic Bone Formation in the Fallopian Tube. Goichi Asami.
13. Mercury Bichloride Intravenously. Carl H. Bastron.

2. The Therapeutic Use of Oxygen.—R. D. Rudolf believes that if oxygen be properly given there is no doubt of its value in suitable cases. He says properly given, for if the administration consists in merely holding a funnel connected with the oxygen tank in front of the patient's face then the results will naturally be *nil*. In this way one cannot raise the oxygen in the alveolar air by more than two per cent., and, further, the patient probably objects to the apparatus, which interferes with his normal breathing. When the oxygen is given by the tube in a nostril great relief can usually be given. During the epidemic of influenza and pneumonia in England last year the writer frequently saw military patients who were breathing badly and cyanosed (even although being treated in the open air) improve visibly in a few minutes under this form of administration. Not only does the cyanosis lessen or disappear and the breathing tend to become slower and deeper, but again and again he heard the patients express their great satisfaction at the relief given, and in such a definite disease as pneumonia the subjective improvement is of much significance and value. In some cases the cyanosis is relieved and yet the breathing remains rapid, while in others the opposite is the case; but in most instances the cyanosis is lessened and the respiration slows. It may be objected that oxygen insufflation is only symptomatic treatment and that the patient will soon relapse, but very often he may not do so for hours or not at all, and the treatment can always be repeated as required. Oxygen should be employed in all serious cases of anoxemia. Its administration should not be delayed and used only as a last resort, but should be employed early, before the vital tissues have been much damaged by the want of oxygen.

La Presse Médicale.

April 7, 1920, xxviii, 7.

Benign Typhus in France.—Legris, Courcoux and Lermoyez refer only to cases imported during the war. It had been shown that cases not unlike Brill's disease have been seen in Paris before the appearance of the military epidemics, but the authors make no allusion to such cases. The introduction of typhus from infected countries during the latter years of the war has been easy, but apparently in every case the affection was held in check. The danger has somewhat abated, for refugees and imported laborers no longer flock into France, but that danger is still present is shown by an experience last January when a Polish workman was interned in Charity Hospital with headache, prostration and typhoid ensemble. The entire picture was that of marked typhoid of slightly atypical character. The suspicious point was the character of the exanthem which was in several respects unlike the rose spots of typhoid. This broke out all at once like a true rash. There was a pronounced meningeal component but negative lumbar puncture and negative blood culture excluded both typhoid and epidemic meningitis. Inferentially the Widal was also negative. Five similar cases were soon admitted to the clinic and owing to the intensity of the general symptoms and the presence of influenza in the hospital this malady was also considered and excluded. There remained only spotted typhus as a possibility. The patients were all lousy. Certain alleged biological tests employed in typhus countries such as the Weil-Felix reaction and inoculation of a guinea pig with the patient's blood gave negative results. The patients all recovered and in 6 or 8 days after admission were out of danger, although a fortnight more of exhaustion remained. The focus did not extend perhaps, because of the rigorous antilouse measures practised. The diagnosis was not in doubt, and the failure of the laboratory tests was due purely to the advanced stage of the disease on admission, for these tests must be applied at a very early period, otherwise they cannot be relied upon.

Gazette des Hôpitaux.

May 1, 1920, xciii, 41.

Anorectal Gonorrhea.—Barthélemy gives a brief but monographic account of this subject which occurs by preference in females and is not always of infamous origin. Direct autoinoculation is seen in women only, while indirect or mediate autoinoculation is more common in the males. It is related that in 1874 a physician in the interest of science and perhaps very sceptical as to innocent transmission, deliberately conveyed some pus from a gonorrheal ophthalmia into the patient's rectum. The infection took in the anal canal, but the rectum proper escaped. Rollet reported the case of a man who to facilitate his stools was in the habit of dilating the anus with the finger. Having caught a gonorrhea of the urethra he managed to infect himself in the anus with a soiled finger. Transmission by pederasty is less common than should be the case, and appears to indicate that the anorectal canal is much less susceptible than the urethra, conjunctiva, etc. Among women the presence of this malady is no evidence whatever of pederasty and Baer believed that but two cases of 67 women treated were of this etiology. The absence of anorectal stigmata of this vice should decide the question. With men it is the reverse, the presumption being in favor of the vice. The stigmata in question are more apt to be present than absent. In an epidemic of pederasty in a school for boys in which gonorrhea was a complication, only the active participants showed much disease in the form of urethritis. The passives escaped infection. The lesions in anorectal gonorrhea may be very slight so that the presence of the gonococcus must be shown in addition to the presence of stigmata. The latter clearly cannot be produced by isolated acts, however, and should also disappear sooner or later, after abandonment of the vice. Hence diagnosis may be most difficult save in the acute, florid case and in the confirmed addict.

Book Reviews.

CHORIOEPITHELIOMA MALIGNUM. Kliniske og Pathologisk Anatomiske Studier. Med Bidrag til Belysning av Blaeremolaens Overgang til Chorioepitheliom. Summary in English by ANTON SUNDE. Kristiania: Emil Moestue a/s Boktrykkeri, 1920.

THIS volume is made up largely of 38 personal case histories of chorioepithelioma with a tabulation of 122 cases of vesicular mole, but 6 of which appear to have undergone malignant degeneration. The author shows that chorioepithelioma is by no means so fatal as is commonly taught, for of his 38 cases 12 are known to have remained free from relapse after operation for a period of from 3¼ to 15 years. The total number of cases of vesicular mole controlled is much larger than the tabulation, amounting to 240 cases. The book is almost wholly personal and the material came from the local Rikshospital and other Scandinavian clinics.

CUNNINGHAM'S MANUAL OF PRACTICAL ANATOMY. Revised and Edited by ARTHUR ROBINSON, Professor of Anatomy in the University of Edinburgh. Seventh Edition. Volume First. Superior Extremity; Inferior Extremity. With 203 illustrations, many of which are colored. New York: William Wood & Company; Edinburgh, Glasgow, and London: Henry Frowde and Hodder & Stoughton, 1919.

CUNNINGHAM'S Practical Anatomy is so well known that it is hardly necessary to say more than that a new edition has appeared. The text shows a few changes, and many new illustrations have been inserted. The work now appears in three volumes, instead of in two, as heretofore. For the benefit of any readers who may not be acquainted with this book, it may be well to say that it is not a mere dissection guide, nor is it a textbook on anatomy; but it includes almost all the anatomy that a physician is likely to want to know or to need to make use of in the course of his professional work.

PIONEERS OF BIRTH CONTROL IN ENGLAND AND AMERICA. By VICTOR ROBINSON, Ph.C., M.D., Author of Pathfinders in Medicine, The Don Quixote of Psychiatry, etc. Formerly Editor of the *Medical Review of Reviews*. New York: Voluntary Parenthood League, 1919.

THIS little book—it is scarcely more than a pamphlet—contains a summary of the various steps in the Birth Control movement from the time of Malthus to the present day. Among the advocates of the movement will be found the names of Malthus, James Mill, John Stuart Mill, Bradlaugh, Annie Besant, and A. Jacobi. The book, though slight and sketchy, makes easy reading, and contains illustrations of some of the more prominent among those who have written on behalf of Birth Control.

DISEASES OF NUTRITION AND INFANT FEEDING. By JOHN LOVETT MORSE, A.M., M.D., Professor of Pediatrics, Harvard Medical School; Visiting Physician at the Children's Hospital; Consulting Physician at the Infants' Hospital and the Floating Hospital, Boston; and FRITZ B. TALBOT, A.B., M.D., Instructor in Pediatrics, Harvard Medical School; Chief of Children's Medical Department, Massachusetts General Hospital; Physician to Children, Charitable Eye and Ear Infirmary; Consulting Physician at the Lying-In Hospital and at the Floating Hospital, Boston. Second Edition, Revised. New York: The Macmillan Company, 1920.

THE second edition of this work shows little change from the first. The scope of the work remains the same. It is intended to give modern views on physiology, the digestion and metabolism of fat, carbohydrate and protein. The influence of salts on the metabolic process forms an interesting chapter. There are many pages of bacteriology and chemistry which are well adapted for the chemist; so for instance on page 213 the polycarbohydrates are discussed. Caloric studies are included in the chapter on energy metabolism. The bacteriology of the gastrointestinal canal and stools forms also a small part of the book.

A debatable question is whether or no the heating of milk, the steaming of milk, or the boiling of milk gives best results. These authors advise the cooking of milk. They state: "Granting that cooking of milk does make it somewhat less digestible and that its continued use does predispose to the development of the diseases of nutrition, it is evident, nevertheless, that the disturbances which it causes are slight and insignificant in comparison with the diseases caused by milk contaminated with bacteria. All milk except the cleanest should therefore be cooked before being used as a food for infants." In the following paragraph we find the statement, "The higher the temperature at which milk is heated, the greater are the changes in its composition. * * * Pasteurization is therefore preferable to boiling. Clinical experience supported by abundance of literature warns against the indiscriminate boiling of milk because the antiscorbutic factor is destroyed and because rachitis and scurvy are more often encountered after the use of boiled milk than otherwise.

PERSONAL BEAUTY AND RACIAL BETTERMENT. By KNIGHT DUNLAP, Professor of Experimental Psychology in the Johns Hopkins University. St. Louis: C. V. Mosby Company, 1920.

THIS essay consists of two parts; the first deals with the significance of beauty, and the second with the conservation of beauty. The former part was originally delivered as an address before various gatherings, and was published in the *Psychological Review*. The second part appears, presumably, for the first time. The author states his views with little or no argument; indeed, as the views expressed are those generally accepted, no argument is needed. The book may serve as an introduction to the study of eugenics and other sociological problems of the day.

GRUNDRISS DER PHYSIOLOGIE für Studierende und Ärzte. Erster Teil, Zweite Auflage, Biochemie von Prof. CARL OPPENHEIMER, Dr. phil. et med., München. Zweiter Teil, Biophysik von Prof. Dr. OTTO WEISS, Dir. des physiol. Instituts Konigsberg i. Pr. Leipzig: Georg Thieme, 1919.

THIS work appears in two volumes, of which the first is in its second edition. The first part might be called physiological chemistry, and contains a fairly complete presentation of the subject. There is nothing strikingly new, either in the material or the manner of its presentation. Secretions and excretions are given comparatively little space, and the bulk of the volume is devoted to the chemical aspect of metabolism. The second part, under the title of biophysics, corresponds more nearly to the ordinary physiology with the chemistry left out. Physiology of the nervous system, of the general subject of movement and of the organs of special sense form the chief part of the work, and but little outside of these receives consideration. The physics of the eye are discussed in detail, and there are some fifteen pages devoted to the mathematical aspects of refraction. The work as a whole contains much that is valuable, and is well written, but the divisions do not correspond to courses as they are given in the schools in this country. While the first would do fairly well in a course in physiological chemistry, the second would be inadequate for a course in physiology unless supplemented by other works. Neither would be considered as satisfactory substitutes for standard works which have appeared in this country.

ANLEITUNG ZUR FUNKTIONSPRÜFUNG DES OHRES (Prüfung des Gehör—und Gleichgewichts—apparates). Von Dr. A. SONNTAG und Dr. H. J. WOLFF, Zweite verbesserte Auflage. Berlin: S. Kurger, 1920.

THE first edition of this work appeared in 1912, and before the declaration of war in 1914 a revision was already in progress which was naturally much delayed in consequence. The first section on tests for hearing remains unchanged, but the section on the equilibrium apparatus has been completely rewritten and the article on tests of the cerebellar functions is quite new. The present edition is made up of 76 pages, with 23 illustrations. A singular omission is the absence of any allusion to tests of the labyrinth for aviators which forces the belief that the book is essentially an *antebellum* affair.

Society Reports.

MEDICAL SOCIETY IN THE COUNTY OF NEW YORK.

Stated Meeting, Held May 23, 1920.

THE PRESIDENT, DR. CHARLES H. CHETWOOD, IN THE CHAIR.

THE program of the evening was contributed by the American Society for the Control of Cancer.

The Relation of the Medical Profession to the Campaign for the Control of Cancer.—Dr. ROBERT B. GREENOUGH of the Harvard Cancer Commission, Boston, Mass., delivered this address. He said, in part, that the last ten years had brought many new duties and responsibilities to the medical profession in the way of public service. In connection with the control of cancer the responsibility which had come to the medical profession brought also a great opportunity. Statisticians told us that there were from 80,000 to 100,000 deaths from cancer in the United States each year and that it was one of the most common causes of death of persons over forty years of age. There was no cure except by radical surgical operation, and a relatively large proportion of cases presented themselves for treatment too late to be cured. At the Massachusetts General Hospital of 519 cases of all varieties of cancer entered as operable only 44 per cent. were suitable for cure by radical surgical operation. The operative mortality further increased the mortality rate so that only 38 per cent. stood a chance of radical cure. The expectation of failure in operation on cancer in certain regions of the body was greater than the hope of success. There was no question as to the duty to endeavor to gain control of the cancer situation. As a means of accomplishing this the public must first be educated to recognize the early symptoms of cancer; the medical profession must be instructed as to the absolute facts in connection with cancer; there must be a knowledge and promotion of the best methods of treating cancer, and laboratory work must be carried on in the effort of finding methods other than surgical for the treatment of cancer. During the last ten years the attitude of the public had changed greatly toward public health matters as a result of the work of the many agencies that had undertaken to educate the public for its own good. As evidence of the recognition of the importance of public health work might be noted that many subjects not formerly mentioned were now discussed by the lay press. Public health propaganda was being spread by many agencies, the newspapers, magazines, pamphlets, lectures, etc. The facts in reference to cancer that had to be impressed upon the public mind were few and simple. The facts that had to be taught were that delay was dangerous; that it was the early and not the late case that was cured by operation, and that early operation could and did cure many early cases. The public should be taught that pain does not occur with cancer in its early stages, and that any lump that was painless, especially if it bleed, was suspicious and should be investigated. Much had been done to teach the public these facts, but much more remained to be done before the work was finished. Articles in the newspapers and magazines might arouse the interest of a patient but it was to his own physician that he turned for definite information. In their series of 519 cases there was a delay of 5.4 months after the growth was noted before a physician was consulted. That was far too long in any case for the best interests of the patient. The patient must be induced to consult his physician earlier if the disease was to be combatted successfully. The figures did not indicate that much progress had been made as yet in checking this disease. By instructing the public they hoped to bring the cancer patient earlier to the physician, but this added to the responsibility of the physician. If he wished to secure to the patient the opportunity for cure to which he was entitled we must abandon the textbook description of cancer, which described the disease in its well established form, and teach the earlier symptoms. No sense of false modesty on the part of the patient and no indifference on the part of the physician should be allowed to interfere with a thorough and proper examination. A Fabian policy of delay in many cases meant death. An average delay of three months occurred in their series of 519 cases after the patient consulted a physician before the patient was presented for operation. An investigation showed that as a rule the patients had presented themselves for operation almost immediately after they were advised by their physicians to do so. This average delay of three months was far too long in a disease that progressed as rapidly as cancer did at this stage. With reference to the removal of tissue for pathological examination, the trend of opinion was opposed to this procedure. This risk varied with the location of the tumor; there were some tumors that could not be diagnosed in any other way. The frozen section with immediate microscopical examination was the method generally approved. Conditions termed precancerous, such as keratoma, papillomata, leucoplakia, lacerated cervix, pigmented moles, etc., conditions which were known in many instances to have developed into cancer, should be removed by surgical methods. This served as prophylaxis against cancer and permitted microscopical examination of the tissue removed. If for any reason it was not expedient to remove these pre-cancerous conditions they should be treated with radium or the *x*-ray. If these agents were used it should be by one radical exposure, inasmuch as small doses might be merely irritating, and since it was acceded that chronic irritation might give rise to cancer. The surgical teaching of wide excision in all cancerous growths was universally accepted, and standard operative procedures for cancer located in various parts of the body had been collected by the Society for the Control of Cancer, published in pamphlet form, and issued to state health boards which distributed them to every physician. The prospect of recovery in a case of cancer was determined by the anatomical situation of the growth because it was this which limited the amount of tissue that could be excised. It was to be hoped that in the future surgeons would be enabled to remove cancer from locations which had not been open to attack thus far. The development of combined treatment by operation and radium was an advance that must be accepted. While there were many problems in connection with research work in cancer that had not been brought to solution, it had been shown by experimental work in the transplanted tumors of mice that there were certain dangers connected with *x*-ray and radium treatment. Experimental confirmation had been obtained showing that rough handling hastened the spread of cancer and that a clean incision was the safest method of making a diagnosis where it was otherwise unobtainable. Cancer research institutions and other institutions and individuals had from time to time proposed methods, some biological and some chemical, supposed to cure cancer, and while none of these had thus far proven successful it was the duty of cancer institutions to continue the search for any remedy that held out promise. Radium and the *x*-ray were of the greatest value and a place in the treatment of cancer had been found for each of them, and in those places they were productive of the greatest good. In closing, Dr. Greenough said that in this communication he had tried to show that the situation at present was very serious; that it demanded the best there was of all the medical profession towards its relief; that more should be done to help the physician recognize the disease in its early stages; that we must teach that the precancerous disease justified and demanded treatment as a prophylactic measure, and that they should encourage investigation on the part of laboratories all over the world with the aim of improving the treatment of this insidious disease.

The Aims and Methods of Cancer Diagnosis.—Dr. JAMES EWING presented this contribution in which he said that it was not necessary to wait for the results of cancer research to suggest methods for the early diagnosis and control of cancer. The medical profession was occupied with cancer when, for instance, there was a lump in the breast and several in the axilla and the patient had the very obvious symp-

toms of the disease. When a woman had a palpable lump in her breast and enlarged axillary glands she had one chance in twenty-five of being cured. In cancer of the uterus, when there were a discharge, pain, and local discomfort, cancer was well established and the chances of recovery were very slight. In the stomach, if there was a palpable tumor and the symptoms indicated that the cancer had surrounded the pylorus and ulcerated, the chances of cure by any method available at the present time was so slight that it was not necessary to speak of them before an audience of medical men. Cancer in these three situations constituted over 70 per cent. of all types of cancer. Looked at from the point of view of statistics, it was estimated that 85,000 to 90,000 deaths occurred in the United States annually from these three groups of cases. All statisticians were convinced that there was a steady and alarming increase in the incidence of cancer. From the statistical standpoint the medical profession was not making much impression so far as the problem was concerned. In spite of improved methods of diagnosis and treatment as many persons appeared to die of cancer as before and the reason was that the diagnosis was not made early enough and the physician was dealing with the disease after it had reached a stage when there was no hope. At the present time the surgical treatment of cancer was not of much economic importance. In view of these facts the representatives of actuarial societies had established a national organization to bring about a greater knowledge of cancer and of its early diagnosis, and that was also the object of the American Society for the Control of Cancer. It was most important at the beginning of this movement to increase our knowledge of cancer vastly beyond anything thus far attempted. There was a tendency to slur over cancer and speak of it as malignancy, and to assume that if once malignancy was established it was then the part of the surgeon to remove the growth. That was a very incompetent point of view, because cancer in different parts of the body differed enormously. There were certain rapid-growing cancers that could not be tampered with, while, on the other hand, there were slow-growing types of cancer that ran along for years. In order to distinguish these types the physician must demand much more accurate knowledge than was commonly possessed today. It was not sufficient to recognize malignancy; it was necessary in addition to determine the type of cancer and the course that type of malignancy ran. For instance, an innocent-looking mole on the toe might excite no particular attention until nodes appeared in the groin. By the time the character of the condition was recognized the physician realized that he was face to face with a fatal disease. In many instances the total duration of this type of cancer was twelve months; in a few cases it might be two or three years, but the prognosis was always fatal. A rodent ulcer on the other hand, might begin on the nose as a small scale or scab, which every time it was removed re-formed. The physician might tell such a patient that the lesion was a trival one. Later the patient might drift into the hands of a quack who applied a little nitrate of silver. After this the patient might appear to improve a little, and would go along for perhaps five or six years when the condition would become more serious and a surgeon would excise the ulcer. In the course of ten years the lesion would have become really serious, and by the fourteenth year nerves, bones and blood vessels would be involved. Twenty years might elapse in such a case between the beginning of the lesion and the fatal termination. In the breast an acute carcinomatosis might prove fatal in three or four months, while there was a type of cancer of the breast occurring in elderly women that might run along for twenty-five years, and death might occur from some other cause. Unless a physician was able to differentiate between different types of cancer in different parts of the body and different types occurring in the same organ, he was unable to deal efficiently with them. Mammary cancer had attracted more attention than any other form of cancer and its treatment had been less satisfactory than that of any other type. Dr. Ewing said he had found the statement in the literature made by an old English pathologist that mammary cancer did not arise from the gland tissue but from abberrant sweat glands. Experience had shown that this statement was correct, and it was conceivable that this information might prove useful. Certain types of sarcoma in the long bones, occurring usually in younger subjects, was most destructive and often caused the sacrifice of life and limb. On the other hand so-called benign was often mistaken for giant-celled sarcoma and limb unnecessarily sacrificed. The subject of tumors of the long bones was in almost complete chaos. Instead of the term benign sarcoma it might be advisable to substitute the term hemorrhagic osteomyelitis, for certainly the condition was benign and did not require amputation. The majority of cases of giant-celled sarcoma, if submitted to *x*-ray examination at the time of operation would show metastases in the lungs. Then there were tumors from the blood vessels of the long bones that were difficult to distinguish from ordinary myeloma. Before we could hope to deal successfully with tumors of the long bones we would have to learn to differentiate between the various types. Again, considering tumors of the peripheral nerve trunks, VonRecklinghausen's disease affected the whole neural ectoderm, with all sorts of peripheral, cutaneous neurofibromatoses. Over against this condition subcutaneous neurofibroma, a painful, hard, elastic tumor under the skin. If a tumor of this kind occurred in a limb and was excised it was likely to recur higher up. In one case coming under his observations this had occurred repeatedly until twenty-two operations were performed in the course of a few years, yet no one had told that patient that his conditions was serious. In neurosarcoma of the skin unless the physician knew more about the changes that were going on than he generally knew he was incompetent to recognize them in the early stage or to deal with them in any stage. In speaking of precancerous lesions, Dr. Ewing said he agreed with everything Dr. Greenough had said. He recalled having heard discussions on this subject in which it was declared that there was no such thing as a precancerous lesion—that a disease was either cancer or it was not a cancer, that cancer sprang into being full-fledged. As a matter of fact there were certain diseases capable of producing changes which were followed by cancer. For instance, lupus vulgaris was followed by epithelioma of the skin in 30 per cent. of the cases, not immediately but at the end of twenty-five or thirty years. If during this period one examined the lesion no trace of cancer could be found, so that it could not be assumed that there was anything essentially cancerous about lupus vulgaris. Histologically and clinically syphillis of the tongue was often followed by cancer, so that we had a right to consider it a precancerous condition. Excessively pigmented and atrophic skin and rodent ulcer developed into precancerous lesions which misroscopically might show some of the histological features of beginning cancer. Lesions in this precancerous stage could be removed by slight operations, or they might be cured by radium and the *x*-ray, though he would not recommend these agents. The diagnosis of cancer by serum methods was, in the speaker's opinion, of no definite value, and was at best on a very unstable theoretical basis. He based more faith on clinical methods, carefully applied by a skillful person than on other means of diagnosis at the present time. It was a strange fact that the clinician always insisted that laboratory methods be applied to diagnosis, while the laboratory worker favored clinical methods, palpation, inspection, and observation over a period of time. He had spent a great deal of time in the laboratory and preferred to base his diagnosis upon careful clinical methods. There was, he supposed, a common ground where laboratory worker and clinician would some day meet. While he would not depreciate the accuracy of biopsy, he thought that where a tumor was visible to the eye it permitted of diagnosis and the surgeon should not wait for the laboratory to come to his help, but should make the diagnosis on his own responsibility. A physician did not impress other physicians or the public by his knowledge of cancer by applying a blanket rule to all breast tumors and insisting that every lump in the breast be excised. In distinguishing between

malignant and benign tumors of the breast it was important to take into consideration the age of the patient, location of the tumor in the breast, the consistency of the tumor, the history of the organ, and all features of the case, and in that way one could usually reach the diagnosis. The failure to recognize cancer was often due to lack of proper physical examination. It was estimated that 70 per cent. of rectal cancers were treated first as piles. At the Memorial Hospital they were surprised at the frequency with which the presence of a positive Wassermann reaction led to the treatment of a cancerous condition with salvarsan, mercury, or the iodides. A physician should not be deceived into the idea that cancer could not coexist with syphilis. As to the frozen section, he felt that this idea was being badly overworked. Unless the pathologist was a good enough diagnostician to pick out a cancerous nodule, it might easily be overlooked, and the examination of a frozen section then availed nothing. If, on the other hand, the pathologist was a good enough diagnostician to pick out cancer in the gross then the microscopical examination was unnecessary. Every surgeon who undertook to deal with cancer should familarize himself with the gross characteristics of cancer so that a frozen section would be unnecessary. The whole question of cancer control reduced itself to one of medical education. Unless students were turned out from the medical colleges with a knowledge of the scope of this problem, and were acquainted with the early signs of cancer they would be more or less incompetent and negligent. He believed the medical school had the largest responsibility for the future control of cancer and the largest accountability for present negligence. In the undergraduate curriculum students should be taught much more than they were taught to-day, and until that time came the American Control Society would not have results fully satisfactory.

Dr. JOHN P. DAVIN congratulated Dr. Greenough and Dr. Ewing and said that Dr. Ewing had emphasized the right point in his postscript when he spoke of medical education and of the responsibility of the medical schools. The ignorance of physicians about things they should know was appalling. Some one had said that the bill posters put out in connection with this campaign were a reflection on civilization. Before the medical profession gave support to a publicity campaign it should look to its own knowledge on this subject. The great accomplishments of the medical profession had been effected without money or advertising and he thought this would be true of its achievements in the future. With the education of the medical man the people would follow his advice.

Dr. BOLESLAW LAPOWSKI said that in the present state of our knowledge it was impossible to make a definite correct diagnosis of beginning carcinoma upon the tongue. Unless one excised every suspicious lesion he was liable to make mistakes. Neither could the pathologist help the clinician in many doubtful cases, especially in lesions of the tongue in syphilitic patients. Even in advanced cases of the disease, it was not always possible to make a definite differential diagnosis between carcinoma and syphilis and the position of the clinician as regards the treatment in such cases was a very trying one. One could not force mercurial treatment, owing to the fear of increasing the amount of salivation, which was always in a more or less degree present and undesirable in such cases. Even salvarsan did not give good results and the opinion of a good many clinicians was against the use of iodide of potassium in such cases, and thus the hands of the clinician were tied. No lasting results could be obtained in such cases from surgical interference.

COMMANDER WILLIAM SEAMAN BAINBRIDGE said he was sure he voiced the unanimous appreciation of all those who had heard the two splendid papers read before the Association. There was such valuable material and so much of interest in them that he was anxious to go over the papers again when they were published. Frequently one's own experience pressed home facts more forcibly than anything else could do, and his experience recently in several cases of cancer had brought home some important points with special emphasis. A few months ago a boy fifteen years of age who had enlisted in the naval service eight months previously was attached to the receiving ship at New York. The boy had had for over a year a small spot on the dorsum of the base of the second toe which was supposed to have been caused by pressure against a shoe. It had remained about the size of the tip of the little finger; there was no change in color, and it caused no symptoms. A week before he entered the Brooklyn Naval Hospital he stubbed his toe, and there appeared to be an acute inflammation starting three days before his entrance to the hospital. At the dispensary the mass was incised, as it was believed to be cellulitis. No pus was found. Three days later he was brought to the hospital and a diagnosis made of probable sarcoma. With a red hot cautery the mass was removed and sent to the laboratory. The laboratory diagnosis confirmed the clinical diagnosis. Further operation was refused at the time. Three weeks later there were enlarged glands in the groin on the same side and rapid extension took place into the abdomen and other parts of the body; three months later he died of general sarcomatosis. It would seem from the history and conditions found in this case that at the time the incision was made into the growth there was no evidence of any trouble higher up, and three days later, when the cautery was used to remove the entire mass and block off the extension was the time when the sarcomatous cells had already passed upward. The second case was that of a young man, twenty-six years old, a sailor, who had had a pigmented mole on his back for many years. This was irritated and the area became somewhat indurated. The nodule was removed; it was about the size of the end of the finger and proved to be melanotic sarcoma. Inside of six months the man was unable to get out of bed, the extension had been so rapid starting a few days after the surgical operation. The man was still alive, but his death was only a question of a very short time, as the disease was practically universal throughout the body. Another point which he was very glad to hear Dr. Ewing emphasize was the importance of not being too radical in relation to every lump in the breast. We had a period of the massacre of the ovary, then the massacre of the appendix, the tonsils, and more lately the teeth. Now it seemed that the dictum of some was that every woman with a tumor in her breast should have the tumor or the breast removed within forty-eight hours after it is discovered. This, he believed, in many cases was altogether too radical. We should demand of the public that they come to us early, but we should demand of ourselves and the students that came after us a sounder knowledge and especially a better ability to make a well poised diagnosis.

Dr. GEDIDE A. FRIEDMAN called attention to the fact that in carcinoma of the stomach or intestine the services of a pathologist were not needed; a diagnosis could be made without the pathologist and the same was true of cancer of the esophagus. Some again spoke of the value of the *x*-ray in diagnosis. The *x*-ray was very good and would make the diagnosis when the condition was well developed, but in early diagnosis the *x*-ray was of no use. The clinician was the man who made the early diagnosis of carcinoma of the stomach. Dr. Friedman cited a case coming under his observation several years ago, in which carcinoma of the sigmoid was suspected. The patient was proctoscoped and a specimen of a small growth in the rectum taken and sent to the laboratory for examination. The report came back carcinoma. The man was opened and nothing found. Later on another proctoscopic examination was made and a growth found in the rectum and cut out. It was found to be a benign polyp. The man came under observation three years later with symptoms pointing to the stomach. A diagnosis of ulcer of the stomach was made and the man operated upon. The pathological report was carcinoma of the stomach. Dr. Friedman said he did not understand this case. The question suggested itself whether the condition previous to finding the carcinoma of the stomach was a precancerous stage, or whether a mistake was made in the pathological examination. As Dr. Ewing had pointed out the surgeon should familiarize himself with the gross pathology of carcinoma and then he would recognize carcinoma in those organs which were accessible to inspection.

Dr. EDWARD WALLACE LEE said that when he came to the meeting this evening he felt very confident of his knowledge of neoplasms of malignant character, but when he came to a medical meeting he always had someome tell him something altogether different from what he had learned before, so he often went away from a meeting very much discouraged. The one point impressed upon him was that the medical profession should be taught because they were constantly making errors in diagnosis. When he looked back thirty-five years he could remember having told a woman that she should have her breast removed because it had a lump in it, and today that breast gave her no trouble. In another case he could recall having said that lump was only a little cyst and could be opened, and the woman had followed that advice and had died from cancer. How was one to know what to do?

Dr. EDEN V. DELPHEY said that in his school days the Latin fables always ended with "Hæc fabula docet." What these papers taught were not fables but facts and the teaching was very applicable to the present time in the endeavor to control the ravages of cancer. Cancer should be diagnosed and operated on early, and the way to do this was to educate the public to go to the physician as soon as any abnormal lump presented itself or any other abnormal condition was manifest, and then to do just exactly as the physician directed; to educate the physician to make a true and just diagnosis of the condition when presented and then to send the patient to the surgeon as soon as possible if the condition were cancer. Most unfortunately according to the papers presented tonight the condition was present for 5.4 months before the patients went to the physician and were therefore frequently hopeless at the time of diagnosis, even though some palliative operation might be done which would make the patient more comfortable and perhaps lengthen his life. Sometimes the physician waited before advising operation, being influenced by the results of former experiences in sending the patients to the surgeon. He, himself, had sent a patient to a surgeon for operation for a carcinoma encircling the left ureter immediately on making the diagnosis; the surgeon had made a very extensive extirpation of the neoplasm, the operation lasting two hours and fifty minutes, and the patient promptly died two hours later from shock. Not only did he lose the patient but he lost all her friends and relatives. Although such an experience would not deter him from sending patients for operation, he could very easily see how others might consider that the patient might live longer without than with an operation. In another case, a young woman 35 years of age, with a small lump in the breast, he watched it for six months and although it had not increased in size, he advised its removal. The patient refused and now it had disappeared. This latter was evidently a benign tumor. To recapitulate: We must educate the public to go to the physician early and to do as he advised; we must educate the physician to make a diagnosis and send the patient to the surgeon early; and we must educate the surgeon when to cut, when not to cut, how much to cut, and when to stop cutting in order to get the best results for the life and comfort of the patient.

Dr. LOUIS FAUGERES BISHOP said that it seemed to him that the gist of public health education and public health inspection, and the drift of medical economics and public health economics was toward the periodical physical examination of the whole population. That was what would relieve us of the futile attempts to make people submit to examination to detect cancer or any other one disease. Periodical physical examinations would serve not only to reveal carcinoma, but cardiovascular disease as well, which was equally fatal with cancer and which was much more preventable.

Dr. GREENOUGH said that he quite agreed also that instruction should be given in our medical schools on the early diagnosis and other problems connected with cancer, but it would be a mistake to wait for that to bring about the desired result, because it would be ten or fifteen years before the men in medical schools today would be doing the work that the practitioners of medicine were doing now. In regard to biopsy, there was no doubt that surgeons as a class were opposed to cutting into cancer tissue, yet a surgeon hesitated to remove a whole tongue or perform some other very serious operation without a pathologist's report. It must be admitted that the problem was going to be made more difficult by bringing the patient early to the physician, and it must also be admitted that the surgeon needed further resources, and that there would be cases in which biopsy was necessary. Dr. Greenough said that they had found, as Dr. Wood had found, that a clean incision was less dangerous than any other method by which one could obtain definite justification for radical operation.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Stated Meeting, Held May 13, 1920.

DR. CHARLES HENDEE SMITH IN THE CHAIR.

A Study of the Socially Maladjusted.—Dr. L. PIERCE CLARK presented this subject. (See MEDICAL RECORD, July 3, 1920, xcviii, 1.)

Social Treatment.—Dr. BERNHARD GLUECK discussed this phase of the subject. He said he had not understood that Dr. Clark was going to confine himself to a consideration of a fairly well defined class of the constitutionally inferior. He agreed in the main with Dr. Clark as to the care of these patients and thought there was need in the management of some of them for an institution such as Dr. Clark had outlined. He had been using the George Junior Republic for this purpose. In thinking over the subject he had in mind none of the clearly defined socially maladjusted but rather those less clearly understood and medically not wholly definable individuals concerning whose management one was not justified to speak with such definiteness. The treatment of these individuals was still in the experimental stage and progress rested in the main on a better understanding of those environmental factors which contributed so largely to their social maladjustment. A fuller realization of the tremendous rôle which environmental contacts and influences played in the shaping of character and personality and in determining conduct emphasized the constant necessity in the management of the socially maladjusted of treating other members of the family besides the individuals directly concerned. Even progressive psychiatry leaned altogether too far in the direction of a fixed static concept of the personality, and difficult and hampering traits and characteristics were assumed to be, without much warrant, inborn fixed attributes which predetermined conduct. The case for this assumption was not very strong since we had constant proof of the fluidity and changeability of human characteristics and traits. Social treatment, therefore, embraced as a first step a clear recognition of the importance of the social setting and the social heritage in shaping character and in conditioning conduct. The socially maladjusted, far from being entirely definable on the basis of innate characteristics alone, would continue to constitute the most difficult problem with which psychiatry had to deal until we learned to estimate more accurately social values. Psychiatry in stressing the concept of man as a biological unit had ignored altogether too freely man as a social being. One of the manifestations commonly met with in the socially maladjusted was a feeling of inferiority and a sense of having lost the esteem of one's fellow-beings which rendered adequate social adaptation, if not impossible, certainly very difficult. Medical approach in the strict sense of the term could do very little where the individual must be led by means of social measures such as education, appropriate outlets in his work and play life, cultivation of fellowship, etc., to either a rational acceptance of his inferiority, if such existed, or to an overcoming of it, if that was possible, through the cultivation of such assets as he possessed and through obtaining a gratifying sense of personal worth. Man in his craving for self expression and self realization endeavored to break through the Western Front along some sector of it and it was the object of social treatment to help him discover the sector appropriate to his needs and capacities and to make victory possible. Many of the socially

maladjusted owed their difficulties to a too pronounced discrepancy between personal equipment and aspirations and while this frequently constituted the bridge that made progress possible it frequently meant ruin to the personality if the discrepancy was too wide or the environmental obstacles too serious. Another important task of social treatment was to help man find his proper niche in the scheme of life. A medical approach would continue to be relatively not important in the management of the problems of social maladjustment until it recognized fully the value of the social approach both in the diagnosis and treatment of these cases.

Sex Conflict in Adolescence.—Dr. C. O. CHENEY stated that poor adjustment to society, as shown in bad behavior or misconduct, was the outward manifestation of internal maladjustment or mental conflict. There were no doubt many causes for mental conflict, but one of the most frequent and important causes was the difficulty of adjustment in the sex life. There was a universal and strong inner force demanding the satisfaction of the sex instinct, but there was likewise an almost universal and strong repressing force exerted by society against this satisfaction particularly in children and adolescents. This situation was thus an almost perfect one for the formation of a conflict. Healy in his "Mental Conflicts and Misconduct" had brought out that instances of stealing, truancy, vagrancy, running away from home, mischief making, and cruelty might be the outlets for emotion that had been previously aroused by sexual feelings, or by the acquirement of sexual knowledge. These young people tried to force these feelings and knowledge out of their minds, but as the ideas recurred, to the discomfort of the sufferers, these emotional states resulted in misconduct. This misconduct might be of an impulsive uncontrollable nature and not understood by the individual until analyzed. Finding the trouble, removing the conflict, and aiding in the prevention of its recurrence by change of associates or environment resulted in cessation of the misconduct if the latter had not become a fixed habit. This study of Healy, which could only be briefly mentioned here, was extremely illuminating as to the bearing of sexual conflict, upon delinquency, and was strongly stimulating for further study along the same lines. More familiar to most of us as peculiar manifestations of adolescence were the restlessness, general dissatisfaction with things, irritability, moroseness, shyness, increased religious activity, or interest in socialism, philosophy, or new thought. There was good reason to believe that these were very often merely symptoms of the sex conflict and mental uneasiness, with an attempt at some form of satisfaction and adjustment. There was no means of knowing in how many instances these attempts at adjustment were satisfactory, but those who were continually in contact with maladjusted persons in mental clinics and hospitals did know that there were many adolescents who either had very much difficulty in handling their sex conflicts, or who, never making an adjustment, needed care throughout their lives. They were those types who, finding an outlet only in their own bodies, with the presentation of various physical complaints, made up the psychoneurotics or who, living in sexual phantasy, daydreaming and unreality, showed the symptoms of what was called dementia praecox. The question might have arisen in the minds of his hearers, "Of what concern was all this to the pediatricians"? This could be answered by saying that those in the mental hospitals saw the late or end stages of sexual maladjustment when the habit from conflict had become fixed. In these stages they found from trial that often attempts at helping adjustment were fruitless; they believed the time for help was best afforded in childhood and adolescence and that the pediatrician as the physician of these young people might be of immense help to them. The question might be asked, "What was to be done?" To this certain suggestion might be offered based upon frequent experience with what had not been done. In the first place parents should be disabused of the smug idea that sex was not to be mentioned or thought of until marriage and show them that it was natural for children to have curosity about their own bodies or how they came to be in the world; that evidence of this curiosity should not be met with the proof that it was bad or naughty, but met in a frank straightforward way by explanation. If this policy were carried out there would be less of the antagonism, contempt, or hatred of parents by the grown children when the latter found they had not been played fair with. When children or adolescent patients were brought to the physician with the report that they were nervous or cranky or disobedient, or were otherwise showing that they were not happy in their lives, it would pay to get their confidence, go into their worries and conflicts, advise them and their parents and, if seemed best, change their environment. The older adolescent persons would benefit by some advice about their sexual physiology and be saved from resorting to quacks who would terrify them with horrible tales of the results of self-satisfaction. Attempts to repress and stop an unhealthy sex habit would result only in more conflict if nothing of healthy activity or interest was given the adolescent.

The Inferiority Complex in the Child.—Miss EDITH R. SPAULDING, speaking on this phase of the subject, said that in the reconstruction which was necessary in the lives of the children with whom she had come in contact, the feeling of inferiority from which they suffered seemed to be one of the most important points of attack. She cited two cases in detail which she was seeing at the present time in which this factor was an exceedingly important one. Both of these cases showed many elements and possible points of attack for the process of reeducation. The element to be emphasized in both was the feeling of inferiority, which, in accordance with Adler's theories, appeared to be based on an actual physical or nervous inferiority. It was this weakest point that must be discovered and constructively built up if the child's energies were to be turned into constructive and socialized channels.

Dr. M. A. HARRINGTON said that Dr. Clark had described very adequately the kind of an institution needed to care for this type of person, so he would simply cite a few cases which showed the necessity of individual care in their treatment. The first case described was that of a boy who was incapable of distinguishing between what was his and what belonged to another person. After having committed a number of thefts he was taken to the police station and while there stole the captain's gun. He was sent to the Children's Court and then to Ward's Island, where he came under the speaker's care. He seemed to be a model boy in every other way but simply could not keep his fingers off of what did not belong to him. After he was on the island for a time the people in the office said they would like to have him for a page. They were told of his failing, but were willing to take him for a trial. He was there but a short time when they requested that he be taken away because he was acquiring too many things that did not belong to him. Finally the boy was put in a shoe shop where there was little or nothing to take and in this environment he got along beautifully. He illustrated the type of individual who if left out in the community became a burden to himself and to society, for he was the kind of individual who made the criminal, but under supervision he would get along all right. The second case cited was quite different. In this instance the trouble was not misdirected energy but lack of energy. This boy got along pretty well in school but when he went to work he soon grew tired of it and gave it up. He held several positions with intervals of idleness, and finally gave up work altogether, became discouraged and depressed, and was finally brought to the hospital. There the energy which was lacking in him, was supplied from without, and under steady pressure he got along well. After a time his family thought he could get along outside the institution and he went out, but soon fell back into his old habit of idleness. He was followed up and put into the Y. M. C. A. He was not able to get along outside of an institution. The third case illustrated not misdirected energy, or lack of energy, but poor control. When this boy started in to work he worked hard all day, took work home and worked at night, working eighteen hours a day. He kept it up about three months, then lost heart, gave up his position, and sat about indifferent to everything. He was taken to an institution where

he was treated and put in shape, and when he got out he did the same thing over again. At the hospital he was given work with regular hours, his time was carefully regulated for him, and he was getting along well, but if he went out there would be trouble again. These were three types of individuals who needed institutional supervision.

School Children Who Through Lack of Emotional Control Develop Habits of Truancy.—Miss ELIZABETH FARRELL disagreed with the statement that the maladjusted needed institutional care. She recalled that a few years ago in speaking of the mentally defective and feeble-minded groups, she had stated that there was no one particular adjustment for the normal individual and so there could be no one particular adjustment for the feeble-minded individual, and this same statement held true of the socially maladjustd individual. There could be no blanket system for the management of the socially maladjusted or constitutionally inferior. As there were personal idiosyncrasies so education must be personal and individual. This principle had been applied to physical ills and it was equally applicable in dealing with mental conditions. There was an idea prevalent that this plan of individual prescribing might be applied in private schools but that it could not be done in public schools. This was an erroneous impression; the private schools did no better than the public schools in individual training. Training must be individual, courses of study must not be ironclad, and the effort must be made to adapt the environment to the individual as well as to fit the individual into an environment. Miss Farrell cited cases in which the environment was such that it impinged upon the personality and in which adjustment was made by modifying the environment. There were many ways of caring for the socially maladjusted but it could not be done by any cure-all, be it institutional or extra-institutional. One way was by breaking down inflexible barriers and by doing personal and individual teaching.

Some Medical Aspects of Childhood Delinquency.—Dr. SANGER BROWN said one thing that must have occurred to all while the speakers were discussing adult and child delinquency was whether after all there was not something inherent in the personality either hereditary or constitutionally inherent which made for just these things. He had spent several years with adult personalities such as were described and thought that in children he would find the same traits and qualities, but he must say that he had been unable to find the same traits in children as in adults. In speaking of static personality there was much to be said of the development of the personality in the first ten or fifteen years of life. It developed from the situation in which the child found himself and from the maladjustments and mismanagements to which the child was subjected. All these things went to form character and to make the personality. These things which were minor at first and perhaps open to correction for the first few months, after they had continued for years became traits of character and the emotional reaction became established and formed the adult personality. This pointed the definite indication for treating and modifying such traits in childhood so that many could be saved from adult delinquency. In reviewing the causes of these maladjustments, perhaps one-third were cases of minor neuroses and got into conflict with teachers who did not understand what the trouble was and disciplined the child. The nervous child could not stand discipline and he became a truant, got into bad company and started in the wrong way. If such a child had a special aptitude it should be found and the child given the opportunity to develop it as this might be the means of making a social adjustment. Dr. Glueck said he would like to have more study of the physiological side of these cases. It might be of interest to those present to know that at the Neurological Institute a plan was being outlined for a diagnostic clinic for adolescents where cases showing various maladjustments to life should receive thorough investigation from every possible point of view—physiological, psychological, mental, and physical.

Social Maladjustment as Seen in the Children's Clinic in the Department of Psychopathology at Cornell University.—Dr. L. BLUMGART described the work being done at the Children's Clinic which was started in 1917 in response to need for such a clinic, so that the State Charities Association of New York and the public schools would have a place to bring children for psychiatric advice. The clinic was open one morning a week for just as many hours as the psychiatrist and social worker could spare. The new cases were limited to two a morning in addition to old patients for whom appointments were made. Children were seen from three or four years up to and through adolescence, and in the course of their experience children were met who had committed every antisocial act possible except murder; theft, arson, forgery and bad sex habits were not infrequent. As the work of this clinic became known other institutions sent children for advice. An important aspect of the work was carried on by having a social worker and this side of the work should be emphasized. They had a Smith graduate. One could not carry on this kind of work without a social worker any more than he could practice medicine without a stethoscope or a thermometer. The problems of maladjustment were handled from both angles, the environment or social background and the child itself. The child did not come to the clinic until the complete history was obtained. The history was taken by following an outline taken from Dr. Healy's "The Individual Delinquent" slightly modified to meet the needs of the clinic. In making the mental tests they followed the Terman modification of the Binet-Simon test, and such other tests as Dr. Healy had suggested. These were used to bring out certain qualities or show their absence. The child received a physical and psychiatrical examination and such other examinations as were indicated. The advice of the internist or specialist was available if needed. The child was then interviewed, likewise the parents. The case was then gone over in consultation with a social worker. In this clinic a large variety of conditions were met with. They saw about one hundred patients a year. Dr. Blumgart cited the case of a girl who was maladjusted both at home and at school. In the course of an examination made in the endeavor to ascertain the cause of her trouble, an x-ray examination showed a very small sella turcica. Under pituitrin treatment her home relations were satisfactorily adjusted, and she was able to complete a nine months' business course in three months. When the pituitrin was discontinued she began to relapse. In another case cited separation from the family and supervision served to effect an adjustment. The problem of the psychoneurotic child was far beyond any conception most people had of it. One thing needed was investigation to determine the exact number of maladjusted children. Such an investigation would he believed confirm the findings shown by intelligence tests in the army, that there were a very much larger number of such individuals than we suspected. He hoped it would be done soon. The environmental side must be taken into account as much as the individual side.

Dr. FOSTER KENNEDY took issue with Dr. Clark in regard to the statement that the greatest need of the time was an institution for the care of the consitutional inferior and socially maladjusted. Miss Farrell had taken Dr. Clark to task for that statement and he wished to abet her effort. It was not so much an institution that was needed as some kind of education of the public which would go to prevent the production of these people. It would see that psychiatrists were usually asked in consultation to assume a rôle identical with that which ought to have been assumed by the parent, and often the physician was appealed to on the ground that because of the parent's relationship to the patient his authority was handicapped from the beginning. Dr. Kennedy said he believed that for the most part the physician accepted the paradox of such situation without comment and worse still without thought. Of course when the antisocial trends had developed one was compelled to acquiesce with these demands and occasionally with success. He could not help feeling, however, that as a profession we were not fully cognizant of the root causes of the growing number of the socially maladapted. As civilizations advanced there had been a constantly felt a growing interference with the family instinct by increasing rationalization and growing individualism of the part of the child.

This weakening of parental authority occurred through the loosening of the bonds of religion, the social machinery for the transmission of traditional thought and of course among foreign-speaking people in a new land the parental authority was reduced to a minimum. He said physicians did not read enough history and if they did they were so busy with their individual patients that they did not have time to look thoughtfully at their world and do their share in its education. The immense stability of China and its latent power lay in its ancestor worship, and the Greek and Roman world both degenerated when the *potestas patris* lost the authority of religion and of public opinion. The tremendous strength of the Hebrew race through two thousand years of savage repression had lain mainly in their instinctive partriarchy and reverence for tradition. The loss of these fundamental instincts made for ill discipline in the family and in society had had not a little to do with sapping national strength and with the production of these problems.

Dr. JOHN T. MACCURDY said that as medicine was developing along the lines of prevention and, as all who had spoken had acknowledged that prevention was the most important factor in dealing with the socially maladjusted, he wished to emphasize the fact that the pediatrist met these cases first and had a great opportunity to advise and direct the parents so that defects in adjustment could be corrected early in life. It was a joy to know that a liaison was being established between the pediatrician and the psychiatrist. The pediatrician saw not only the glaring cases of maladjustment, but he saw many of these who were mildly maladjusted, and if he would call upon the psychiatrist, who, while he could not boast great knowledge nevertheless had a limited experience, to examine these cases the course of their psychological development might be modified.

Dr. CLARK, in closing the discussion, agreed with Miss Farrell that there were certain types of mild maladjustment which could be corrected in the ways she had suggested, but it was the more marked types that he had considered in his paper, those in which more profound methods of approach were needed.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

CONNECTICUT STATE MEDICAL EXAMINING BOARD.

November, 1919.

(*Concluded from page* 126)

OBSTETRICS AND GYNECOLOGY.

1. Discuss icterus in the newborn infant.
2. Management of breech presentations.
3. Diagnosis of placenta prævia and management of labor when this condition is present.
4. Discuss uterine inertia and means of accomplishing delivery of child when this occurs.
5. Give full directions for immediate repair in complete laceration of the perineum.
6. Give directions for preparation of patient for elective abdominal hysterectomy.
7. Diagnosis and treatment, operative or otherwise, of malignant disease of the cervix uteri.
8. Treatment of urethral caruncle with especial reference to conservation of function of postoperative urinary control.
9. State what conditions may require curettage and give technique of this operation.
10. A woman of sixty-five who had not menstruated for twenty years has a bloody discharge. Discuss the various conditions that may cause this and differentiate.

SURGERY.

1. Give the differential diagnosis and treatment of cerebral concussion.
2. Give the signs and symptoms of complete division of the musculo-spiral nerve in a gunshot injury.
3. Give the etiology, signs, symptoms, and treatment of acute cholecystitis.
4. Give the etiology, pathology, and treatment of pyonephrosis.
5. Give the diagnosis of early cancer of the breast.
6. Give the etiology and treatment of cervical lymphadenitis.
7. Draw a diagram of a typical Colles' fracture. Give the treatment.
8. Describe the signs, symptoms, and treatment of suppuration in the antrum of Highmore.
9. Give the differential diagnosis of a mass in the scrotum.
10. Describe the symptoms and give the treatment of floating cartilage in the knee-joint.

ANSWERS.

OBSTETRICS AND GYNECOLOGY.

1. *Icterus in the new-born infant. The cause* is not known. It is found most often in premature and weakly infants and in those born in maternity hospitals. The following theories have been held as to its etiology: "(1) *Obstruction to the outflow of bile* by (a) plugs of mucus in the common bile duct; (b) partial blocking of the bile ducts by desquamated epithelium, the result of hyperemia and catarrh of the ducts following on the changes in the circulation which take place at birth; (c) congenital narrowing of the bile ducts; (d) inability of the ducts to carry off the secretion of bile, which is considerable at first; and (e) delayed ligature of the cord. (2) *Pressure on the ducts from without* by (a) the portal and hepatic veins becoming distended in consequence of the changes in the circulation following birth; (b) swelling and edema of Glisson's capsule, the result of engorgement of the umbilical and portal veins—hence the jaundice is hepatogenous. (3) Closure of the umbilical vein, which leads to such a lowering of blood-pressure in the capillaries of the liver that reabsorption of bile takes place. (4) The ductus venosus remains open and thereby allows some portal blood, which contains bile, to pass through it and enter the inferior vena cava." (From *Aids to Diseases of Children.*)

Treatment is, as a rule, unnecessary; a mild laxative or enema may be given; in severe cases treatment is of no use.

2. *Management of breech presentations. "First stage.*—Keep the patient in bed and at rest, so as to preserve the membranes as long as possible. Warn the relatives of the risk to the child. *Second stage.*—Prepare warm towels to wrap around the child's body and limbs, and a warm bath, and everything likely to be required for the treatment of asphyxia. Allow the breach to be born without hurrying it. Support the perineum as in a vertex case. As soon as the body is born as far as the umbilicus, draw down a loop of the cord, at the same time maneuvering it to the corner of the pelvis, where it is least likely to be compressed. This loop by its pulsations is an index of how it is faring with the child. Wrap the limbs and trunk in a warm towel, and hold them slightly toward the mother's abdomen so as to aid the lateral flexion of the body. At the same time exert suprapubic pressure upon the fundus, which aids expulsion and promotes flexion. When the elbows appear the hands may be gently disengaged with the finger. Meantime carefully watch the pulsations of the cord. Provided it is beating regularly and the child is not making convulsive movements, there is no need for anxiety. Wait for the next pain and with the aid of suprapubic pressure expel the head in a fully flexed attitude. *Extraction of the head.*—If the head be delayed more than a few minutes after the birth of the trunk as far as the umbilicus, it will almost certainly require to be artificially aided. The two best methods of doing this are (1) the Prague seizure, and (2) the Mauriceau-Smellie-Veit grip. Both are designed to extract while at the same time promoting flexion. Therefore aid the latter by making the nurse or assistant exert suprapubic pressure while the extraction is being performed. Either method is more easily performed if the mother is in the cross-bed position on her back. This position can only be maintained by the aid of assistants, but if such aid is available it is often desirable to place the mother in this position as soon as the breech reaches the vulva. Anes-

thesia is also required. *Prague seizure.*—Seize the feet and legs by one hand and carry them well forward between the mother's thighs. Place the first and second fingers of the other hand over the child's shoulders to steady the head. Pull upon the legs in a direction at right angles to the mother's abdomen. This forces the occiput against the pubes and so increases flexion, while it also effects extraction, which is controlled by the fingers over the shoulders. In a primipara this method may require such force that the head comes out with a suddenness that causes severe tearing of the perineum. In these cases the second method is perhaps better. *Mauriceau-Smellie-Veit Grip.*—Place the child astride upon the left forearm, and slip the two first fingers of the left hand into the vagina and apply them to the superior maxilla on each side of the nose. With these fingers try to draw down the chin and nose, and so promote flexion. At the same time the two first fingers of the right hand are passed over the shoulders and traction made by them in an upward direction. An alternative is to pass the left forefinger into the mouth, but this is apt to cause injury to the jaw."—(Johnstone's *Midwifery.*)

3. PLACENTA PRÆVIA. *Symptoms.* Sudden hemorrhage, accompanied by syncope, vertigo, restlessness, and feeble pulse. The condition is to be diagnosed from accidental hemorrhage and from rupture of the uterus:

PLACENTA PRÆVIA.	ACCIDENTAL HEMORRHAGE.
Most commonly manifests itself after the sixth month of gestation, but may occur as early as the second month.	Most commonly occurs during the first stage of labor, but may occur at any time during the last three months of pregnancy.
The hemorrhage is abrupt, but painless.	The hemorrhage is sudden, and generally is attended with sharp pain.
There are generally repeated hemorrhages of increasing severity.	Hemorrhage persists until the uterine contents are evacuated or the patient perishes.
There is an edematous condition of the cervix and lower uterine segment, with marked pulsation.	Vaginal examination reveals no deviation from the condition normal to pregnancy.
Cervix is generally quite patulous and within may be detected the placenta.	The cervix is perhaps (if labor be initiated) slightly patulous.
The placental bruit is situated low down.	The placental bruit is in normal position.

(Dorland's *Obstetrics.*)

Ruptured uterus is announced by a sudden, acute, and persistent pain. Sometimes the sound of the rupture is heard by the patient; the symptoms of internal hemorrhage and shock are present—collapse, air-hunger, cyanosis, rapid, feeble pulse; the uterine contractions cease. Vaginal examination shows that the presenting part of the child has receded from its former situation owing to escape of the fetus (partially or completely) through the rent into the abdominal cavity, where it may be felt by abdominal palpation.

Treatment before term: Rest in bed, with or without a *tampon*, will arrest hemorrhage for the time; the sinuses are closed by thrombi, and the case may go on to term or another hemorrhage. The patient should be allowed cold drinks; opium may be used where pain is present. If the hemorrhage is great, it is safer to induce labor at once than to wait. Occasionally no hemorrhage occurs during pregnancy, not even in labor.

Treatment at term: (1) Introduce one or two fingers within the os (the hand being in the vagina) and dissect the placenta from the uterine wall for about three inches from the os uteri in all directions, pushing it to one side if necessary. (2) Rupture the membranes, and if there is an unfavorable presentation, turn the child and make the breech engage in the os; or, if the head presents, the forceps may be used, if speedy delivery is necessary. Stop the hemorrhage by a tampon; this must be tight and thorough. *Accouchement forcé* is indicated; this consists of dilatation of cervix, version and immediate extraction of the child.

4. *Uterine* inertia may be caused by: Debilitated constitution, exhausting disease; uterus weakened because of congenital malformation, inflammation, or too frequent child-bearing; adhesions to neighboring structures; tumors of the uterus or neighboring tissues; distention of the bladder or intestine; displacement of the uterus; premature escape of the liquor amnii; pregnancy in an old primipara; hydramnios; twin pregnancy; fright or mental emotion.

The cervix dilates slowly or not at all; if the membranes are ruptured the fetus makes little or no advance; the woman shows evidences of fatigue and may be anxious or restless; the skin gets dry, the pulse small and rapid, the temperature elevated, the tongue dry and furred, nausea and vomiting may supervene, and delirium and coma may follow. (From Webster's *Obstetrics.*)

Treatment consists in removing the cause if possible; the bladder and bowel should be emptied; opium, morphine and chloral may be given so that the patient may get a little sleep, at the same time food may be administered; the uterus may be massaged through the abdominal walls; hot vaginal douches are sometimes helpful; the vagina may be distended with a rubber bag; if the membranes are ruptured, a Champetier de Ribes bag may be placed in the lower part of the uterus; an anesthetic may be necessary; quinine, strychnine, and ergot have been recommended by some and condemned by others; the newest remedy is pituitrin, which may be injected into the muscles in doses of from 1 to 1½ c.c., provided that the cervix is dilated and that there is no obstruction to delivery.

5. *Lacerated perineum:* "The parts are cleansed and a pledget of sterile cotton or gauze pushed up the vagina to stop any flow from the uterus obscuring the wound. The sutures (preferably of aseptic silk) are passed with a moderately curved needle about two inches long as follows: Beginning at the posterior end of the laceration (that nearer the anus), the needle enters the skin near the edge of the wound and follows a circular course until its point appears at the very bottom of the laceration (a finger of the other hand in the rectum guarding against its penetrating that canal); it then enters the opposite side of the laceration at the bottom of the wound and comes out of the skin opposite its point of entrance, having followed a similar circular course to that pursued on the other side where it first went in. The ends are *loosely* tied or secured by catch-forceps, until the requisite number of sutures are passed in a similar manner (half an inch apart), when the wound is again cleansed, the vaginal plug removed, and the sutures tied tightly enough to coapt the parts without injurious constriction, the order of succession in tying being that in which the sutures were passed.

In "complete" lacerations—those of the third degree—through the sphincter ani to the rectum, the operation is more difficult. The rectal tear is first stitched with *catgut* sutures (a short, curved needle being used) and going through the rectal wall only. The sutures are tied on the inside, so that the knots are on the mucous membrane of the bowel. They begin from above and come down to the sphincter ani, the cut ends of which are drawn out with a tenaculum while the sutures penetrate them. These *catgut* sutures need not be removed; they will digest in the tissues and disappear of themselves. The posterior wall of the vagina is next sutured with fine silk, from above downward toward the hymen. Finally, skin sutures through the perineum itself, including muscles of the pelvic floor (as just described for lacerations of the first and second degrees) complete the operation. The silk sutures may be removed in about a week. Antiseptic dressings are applied as after an ordinary labor, extra care being taken to keep the wound aseptically clean by daily irrigation with the creolin solution."—(King's *Obstetrics.*)

6. *Preparation of patient for abdominal hysterectomy.* "If possible, the patient should take a bath the night before the operation, the body being well scrubbed with soap and warm water. It is well that the vagina should be thoroughly douched with an antiseptic for several days beforehand. Some pack the vagina each night with iodoform gauze as well. A purgative should be given at bed time, and an enema in the

morning. After the bowel is moved, the nurse should thoroughly wash out the lower gut with warm boracic lotion (1 in 30). The evening before the operation a thorough cleansing of the body with soap and warm water should be made. Afterwards the nurse should wash the abdomen, mons veneris, and upper aspect of the thighs with soap, turpentine, and water; the navel should be cleaned with chloroform or ether. It is a good thing to shave the mons veneris at this stage. A poultice of iodic hydrarg. (1 in 4000), or of formalin solution (1 in 1000), is then applied by some to the abdominal wall, and not removed until the patient lies on the operating table. Solutions in glycerin are best. They penetrate the skin, and do not dry up. A purgative is given, and an enema in the morning. The rectum is washed out with warm boric or formalin lotion, and the vagina is douched. The urine is then drawn off if the patient cannot empty her bladder. When the patient is placed on the table, the abdominal dressings are removed; the skin is again washed with turpentine and water, and then bathed with an antiseptic lotion. The abdominal surface is then surrounded with sterilized Mackintosh sheetings, on which sterilized towels, wrung out of a warm antiseptic lotion, are placed."—(Webster's *Diseases of Women.*)

7. *Carcinoma of the cervix:* The symptoms are hemorrhage (which gradually becomes more constant and profuse), pain, and discharge (this is at first serous and odorless, later becoming bloody, mucopurulent, and of a fetid odor). The diagnosis is made on the physical and microscopical examination. The cervix is hard and nodular, and the mucous membrane seems immovably fixed to the underlying tissue. These nodules break down, the entire cervix becomes ulcerated, or large cauliflower-like masses may fill the upper part of the vagina. The diseased tissue is friable and bleeds upon touch. The prognosis is unfavorable unless a radical operation is performed. The treatment consists in removal of the entire uterus, but is contraindicated when the disease has extended to inaccessible organs.

Treatment for inoperable carcinoma of cervix: Careful nursing, scrupulous cleanliness with douches containing potassium permanganate or bichloride of mercury; morphine for the pain; the dead tissue may be removed by scissors or curette; tonics and nourishing food are indicated.

8. *Treatment of urethral caruncle.* There are two methods: —"1. *Excision.*—The patient is anesthetized and secured in the lithotomy position. The urethral orifice is well exposed in a good light and the bladder emptied by means of a catheter. The bill of the speculum is then introduced into the vagina, and the urethra dilated with the uterine dilators up to No. 6. The caruncle is then carefully dissected from the muscular layer of the floor of the urethra, and followed up the canal until its limits are reached, and snipped off. Useful instruments for this purpose are the delicate forceps and scissors employed for operations on the iris. After the caruncle is snipped off there is generally free bleeding; this is easily controlled by passing two thin silk sutures through the cut edge of the urethral mucous membrane and the free margin of the urethral orifice. When the sutures are tied the bleeding ceases. *After treatment.*—Some patients are able to micturate unaided within a few hours after the operation; in others retention lasts for several days, necessitaing the careful use of the catheter thrice each twenty-four hours or oftener. In this event the nurse observes scrupulous cleanliness, always removing the mucus and pus which may have accumulated around the urethral orifice before introducing the catheter. The best method of keeping the catheter clean is to boil it. The patients require to keep their bed for about seven days.

"2. *Destruction by the Cautery.*—This is the simplest method: the patient, duly anesthetized, is arranged as for excision. The vulvar structures are then carefully protected by retractors or the fingers of an assistant, and the caruncle is thoroughly destroyed with the narrow point of the cautery at a red heat. Vaseline is then applied to the cauterized surface. The cautery answers very well for small caruncles. The *after-treatment* is the same as that described after excision." —(Sutton and Giles' *Diseases of Women.*)

9. *Curettage is indicated:* (1) For removal of placental débris, (2) in hemorrhagic endometritis, (3) in some forms of dysmenorrhea (membranous), (4) for diagnostic purposes, (5) in some cases of puerperal sepsis, (6) sometimes to check hemorrhage, due to fibroids. *Contraindications:* (1) The least suspicion of even the possibility of pregnancy; (2) menstruation; (3) acute endometritis; (4) malignant disease of the uterus or vagina; (5) acute pelvic inflammation.

Technique: All antiseptic and aseptic precautions are necessary, the patient should be in the dorsal position, the vagina is to be disinfected, and the cervical canal dilated; a speculum is introduced into the vagina and the cervix is drawn down with volsella; the uterine cavity is irrigated with creolin or lysol; a curette is inserted to the fundus and moved down to the internal os; the operator should begin at one cornu and go in the same direction all around till he reaches the starting point, and if necessary repeat till no more spongy or hyperplastic tissue appears; the fundus should be scraped separately by moving the curette along it from side to side; in going toward the fundus no scraping should be done, and care must be taken not to perforate the uterus; should this happen no fluid must be injected; otherwise the uterus and vagina are again irritated, and one or more strips of iodoform gauze are inserted into the cavity to act either as a hemostatic plug or as a drain, which is diminished with two days' interval and withdrawn on the sixth day. A hemostatic tampon should be placed in the vagina and withdrawn the following day. If any fever arises, the tampon is at once removed and the vagina douched with antiseptic fluid every three hours. If not, the vagina is only swabbed with the same every day, and packed loosely with iodoform gauze. After the final removal of the gauze the antiseptic douche is given twice a day until there is no more discharge. The patient should remain in bed for a week.

10. Hemorrhage is generally the first indication of cancer of the uterus, and every such case should be viewed with suspicion, and a thorough examination should be made. At first this hemorrhage may be slight, but later it increases in amount and is accompanied by other discharges and an offensive odor (in case of carcinoma). The uterus may be freely moveable, moderately enlarged, and the cervix may or may not be normal. On dilating the cervix, a hard irregular ulcerating mass or a soft mass may be found, which on microscopical examination proves to be cancerous. Other possibilities are uterine polypi or fibroids, and endometritis. In the case of uterine fibroids there will be no cachexia (cancer is accompanied by a progressive cachexia), the discharges are less foul, the cervix is not involved, and the microscopic examination is negative as compared with cancer. In endometritis the microscopical examination is different from that in cancer, and the discharge is not offensive and there is no cachexia.

SURGERY.

1. CEREBRAL CONCUSSION. *Symptoms:* In bad cases the patient is unconscious, the respirations faint, the pulse weak, and perhaps slow, the muscles flaccid, the pupils equal and reacting to light, but may in very bad cases be dilated and insensitive to light. The skin is pale and cold, and the sphincters may be relaxed. In a few minutes to a few hours improvement may be ushered in by vomiting, or signs of compression may come on and terminate in death.

In the stage of reaction the pulse, respirations, and mental powers, gradually return to the normal standard. Some headache and irritability may remain for a few days. Permanent defects may be left, such as impairment of vision, hearing, or memory, or neurasthenia.

Treatment: Absolute rest, with the head low, combined with warmth to the surface. Stimulants, such as alcohol and strychnine, should be avoided, except in bad cases, for fear of increasing the hemorrhage. In the stage of reaction the diet should be light and brisk purgatives are necessary. If the unconsciousness is prolonged, the bladder needs to be emptied by a catheter.

Differential diagnosis of concussion and compression of the brain:

	Concussion.	Compression.
Onset	Sudden.	Gradual.
General condition	Can be roused.	Cannot be roused.
Pupils	Equal, react.	Dilated, immobile, perhaps unequal.
Pulse	Slow and weak.	Slow, full, heaving.
Respirations	Slow, shallow, irregular.	Slow, deep, stertorous.
Muscular system.	Relaxed (functional paralysis).	Organic paralysis.
Reflexes	Present.	Absent.
Rectum	Incontinence of feces.	Incontinence of feces.
Bladder	Incontinence of urine.	False incontinence.
Temperature	Subnormal, equal on the two sides.	Subnormal, rising in late stages; may be unequal on the two sides.

—(*Aids to Surgical Diagnosis.*)

2. *Complete division of the musculospiral nerve* causes loss of sensation in the outer side of the forearm and radial half of the back of the hand; wrist drop; and paralysis of the triceps.

3. *Cholecystitis* is generally due to the presence of gall-stones, but it may be caused by typhoid fever, or infection by staphylococci, streptococci, or the colon bacillus. "The *clinical history* varies according to whether the condition is chronic or acute. In the *chronic* variety produced by gall-stones, the symptoms are part of the syndrome characteristic of that condition, and are but little noticeable in themselves. The gall-bladder may be enlarged and a little tender on pressure; should the cystic duct be blocked, it will be distended with mucus or muco-pus according to the degree of irritation present. In the *acute* form it is evidenced by marked pain and tenderness in the right hypochondrium, together with vomiting, constipation, and fever. The constipation may be very marked, as it is due to paralysis of neighboring coils of intestine, and especially the transverse colon. The abdominal wall is held rigid, and the right rectus is very tense; but the enlarged gall-bladder can usually be detected beneath it. As a rule, a sufficiency of adhesions forms to protect the general cavity of the peritoneum, and then the abscess, if unrelieved by art, may burst into the bowel, or may open externally and discharge itself. In the most severe forms sloughing and gangrene of the wall follow (*phlegmonous* or *gangrenous cholecystitis*), and then general peritoneal infection may follow. In the milder forms the inflammation may in time subside, the gall-bladder emptying itself *per vias naturales;* but adhesions of a more or less severe character are likely to be left and may cause much trouble, whilst the gall-bladder itself may shrink and atrophy. *Treatment* consists in dealing with the cause, if such be gall-stones. In the acute variety of suppurative inflammation, the gall-bladder must be opened and drained, or in some cases it may be possible to excise it at once."—(Rose and Carless' *Surgery.*)

4. Pyonephrosis. *Etilogy:* Renal calculus, tuberculous disease, vesical affections, and obstruction in the lower urinary passages.

Pathology: "The infection is commonly an ascending one, being formed by the increased backward pressure. As a result of chronic inflammation, the walls of the ureter become thickened and fused with the peritoneum and surrounding tissues, and the lumen is usually dilated. On section the kidney presents a number of abscess cavities, the intervening parenchyma being pale and tough as a result of chronic interstitial nephritis. Unless there has been antecedent hydronephrosis, the pelvis is usually small in proportion to the greatly enlarged and flask-shaped calyces, which constitute the abscess cavities and form the chief bulk of the kidney. Their communications with the pelvis and with each other are narrowed or obliterated, so that they may be regarded as separate cavities. The purulent contents are often mixed with crumbly masses of phosphates. The mucous membrane of the pelvis and calyces is converted into granulation tissue, and, in advanced cases, becomes the seat of ulceration which eats into the parenchyma. The renal blood-vessels are thickened and narrowed by endarteritis, so that there may be very little hemorrhage when the pedicle is divided. The perinephric cellular tissue is converted into granulation and scar tissue, and is frequently the seat of scattered foci of suppuration, and sometimes a large perinephric abscess is found to communicate directly with one of the dilated calyces. The perinephric suppuration may extend into the psoas and quadratus muscles, or into the cellular planes of the abdominal wall."—(Thomson and Miles' *Manual of Surgery.*)

Treatment: "In the ascending infections the treatment must also concern itself with the disease in the lower urinary organs. So far as the kidney is concerned, the choice lies between nephrotomy and nephrectomy. *Nephrotomy* is indicated in cases in which there is a prospect of re-establishing the outflow through the ureter, and in which all the cavities in the kidney can be opened up and drained without destroying the functions of the organ. *Nephrectomy* is indicated in more severe cases, especially when there is irremediable obstruction in the ureter, and when there is suppuration around the kidney, which can only be properly dealt with after removal of the organ. Nephrectomy is performed by the lumbar route."—(Thomson and Miles' *Manual of Surgery.*)

5. *Beginning carcinoma of the female breast:* "Scirrhous carcinoma is usually met with in women between the ages of thirty-five and fifty, and it often begins while the patient is still menstruating regularly. It sometimes occurs in patients below thirty. The most common site is the upper and outer quadrant of the breast, but it may occur in any part of the gland. Sometimes there is more than one nodule in the breast. In its early stages the condition is quite painless, and the existence of the tumor is usually discovered accidentally. In some cases indrawing of the nipple or dimpling of the skin over the breast first attracts attention. It is often noticed that here is a difference in the level of the two nipples, that of the affected breast being at a higher level than the other (Watson Cheyne). As the disease progresses the patient experiences a dull, aching pain, with occasional sharp twinges shooting through toward the shoulder, up into the neck, or down the inner side of the arm. On palpation, a more or less circumscribed and fairly well-defined tumor of stony hardness may be felt in the substance of the breast. Not being encapsulated, it cannot be moved apart from the breast. When firmly pressed against the chest wall with the flat of the hand the tumor becomes more evident, and its stony hardness is fully appreciated. The skin over the growth may for a long time remain free, but, as the disease progresses, it becomes tacked down, and is later dimpled by contraction of the suspensory ligaments of Cooper. When the skin becomes invaded by the tumor it assumes a characteristically coarse and indurated appearance, aptly compared to that of the skin of an orange or to pig's skin. When the tumor is near the center of the breast, it causes retraction of the nipple by dragging on the large ducts. It cannot be too strongly emphasized that the presence of all or any of these symptoms is not necessary for the diagnosis of cancer, and that when there is any doubt the patient should be given the benefit of an exploratory operation."—(Thomson and Miles' *Manual of Surgery.*)

6. Cervical Lymphadenitis. *Etiology:* Tuberculous or pyogenic infection; it may be found with decayed teeth, tonsillitis, adenoids, middle ear disease, pediculosis, and other affections of the mouth and head. *Treatment:* In acute (non-tuberculous) cases fomentations and incisions are indicated. In chronic, tuberculous cases, hygienic surroundings, nourishing food, removal of all local sources of irritation, and (in absence of lung involvement) the infected glands may be dissected out, or the abscesses opened and curetted.

7. *Colles' fracture* is a transverse fracture at lower end of radius; it is due to falls on the outstretched palm. The line of fracture is about an inch above the wrist, and runs obliquely downwards from behind. The lower fragment is driven backwards and upwards, and

rotated to the radial side, carrying the hand with it into the position of abduction, and leaving the tip of the radius at the same level as, or higher than, the tip of the styloid process of the ulna. The internal lateral ligament of the wrist is ruptured or the styloid process torn off. The fracture is usually impacted, the upper fragment being driven into the lower. The deformity is characteristic, viz.: (1) the hand is abducted; (2) the styloid process is on the same level as, or lower than, the tip of the radius; (3) the upper end of the lower fragment projects above the back of the wrist; on the front is a corresponding depression, while above it the upper fragment projects forward. Union occurs readily, but it is common to get deformity and adhesions about the site of fracture.

Treatment.—"It cannot be too strongly insisted upon that success in the treatment of Colles' fracture with displacement depends chiefly upon complete and accurate reduction, and to enable this to be effected a general anesthetic is of great assistance, especially when impaction exists. The surgeon grasps the patient's hand, as if shaking hands with him, and, resting the palmar surface of the wrist on his bent knee, makes traction through the hand, and counter-extension through the forearm, with lateral movements, if necessary, to undo impaction. When the fragments are freed from one another, the wrist is flexed, and the hand carried to the ulnar side, while the fragments are moulded into position. When reduction is complete, the deformity almost entirely disappears, and the two styloid processes regain their normal positions relative to one another. As there is no tendency to redisplacement, no retentive apparatus is required, but, as it adds to the patient's comfort and sense of security, a firm flannel bandage, a broad strip of adhesive plaster, or a poroplastic wristlet may be applied. In severe cases, however, anterior and posterior splints, similar to those used for fracture of both bones of the forearm, or a dorsal splint padded so as to flex the wrist to an angle of 45°, but somewhat narrower, may be employed. The hand and forearm are in any case supported in a sling. To avoid the stiffness which often follows this fracture, the massage and gentle movement of the wrist and fingers should be carried out from the first, the range of movement being gradually increased until the function of the joints is perfectly restored. If splints are used, they should be discarded in a week, and the patient is then encouraged to use the wrist freely."—(Thomson and Miles' *Manual of Surgery.*)

8. SUPPURATION IN THE ANTRUM OF HIGHMORE. *Symptoms:* "There is pain, tenderness on pressing over the canine fossa or on tapping the teeth of the upper jaw, and sometimes swelling of the cheek. The complaint of a bad odor or taste, the reappearance of pus in the middle meatus after mopping it away and directing the patient to bend his head well forward, and opacity on trans-illumination of the suspected cavity are signs which strongly suggest an affection of the maxillary sinus. The withdrawal of pus by a puncture through the thin outer wall of the inferior meatus of the nose with a fine trocar and cannula will establish the diagnosis. The *treatment* consists in opening and draining the antrum. If the infection is due to a carious tooth this should be extracted, the socket opened up and drainage established through it. If the teeth are sound the antrum is opened through the canine fossa and its walls curetted, after which the cavity is packed with iodoform worsted. To avoid the risk of reinfecting the cavity from the mouth, an opening may be made into the nose, by removing the anterior portion of the nasal wall of the antrum and part of the inferior turbinated bone, after which the incision in the buccal mucous membrane is closed with sutures."—(Thomson and Miles' *Surgery.*)

9. DIFFERENTIAL DIAGNOSIS OF A MASS IN THE SCROTUM. *Hernia* may be known by the impulse at the neck, its ready reducibility (usually) on the patient's lying down, with slip or gurgle, the facility with which now the external ring and cord can be felt, its speedy descent when the patient stands up and coughs, and its lack of translucency. The thickened tissue felt in the scrotum after the return of the hernia is merely the sac, and not to be taken for anything more abnormal. If the hernia is irreducible, there will still be impulse, the feeling of coils of bowel or of granular omentum; and the irreducibility will be either temporary—due to neglect of the bowels or disordered digestion—or permanent, owing to repeated "bowel attacks," accompanied by slight colicky pains.

Hydrocele, known by the absence of impulse, by its pyriform shape, fluctuation, and almost unvarying translucency. The testis is at the back, as shown by its sensitiveness and opacity. The increase has been slow, painless, and usually occurs in patients of middle or later life, though it is not uncommon in younger men after strain, injury, or in association with acute epididymitis.

Hematocele will be known, when at all recent, by its rapid onset after a blow or the tapping of a hydrocele; its condition, at first fluid, then more solid; its weight and want of translucency, and the position of the testicle at the back.

Epididymitis is nearly always due to some urethral irritation, most frequently gonorrhea. It shows itself as a rapidly forming swelling, acute and tender, at the outer and back part of the testis, from which at first it is situated by a distinct furrow. Nausea, chilliness, and pyrexia accompany it.

Varicocele will be known by the soft, worm-like bluish coils of enlarged veins around and along the cord, the relaxed scrotum, and the dropped testicle. It sometimes gives an impulse on coughing, and is not completely reducible.—(From Heath's *Dictionary of Practical Surgery.*)

10. FLOATING CARTILAGE OF THE KNEE JOINT.—*Symptoms:* "Violent pain in the knee joint, chiefly on the inner side over the lateral ligament. The knee is locked in a semi-flexed position. Synovial effusion with its usual signs appears within a few hours. Later, and in the absence of proper treatment, recurrent attacks of synovitis often occur in any action of flexion and rotation of the knee. Tenderness is most marked on pressure over the tibial attachment of the internal lateral ligament. Very rarely a lump or gap can be felt in the position of the cartilage."

Treatment: "Reduction by flexion and extension of the joint. Immobilization on a back-splint for six weeks, followed by firm bandaging for three months. This treatment should be adopted in all recent cases occurring for the first time. Operation (for all recurrent cases): If thorough immobilization has been neglected at first, it is useless later. Incision in a transverse direction over the edge of the affected cartilage. Open the joint. Remove completely all injured or displaced parts of the cartilage. Cut any tags of hypertrophied synovial membrane. Close without drainage. Retentive apparatus (when operation is refused or undesirable in chronic cases): The mechanism embraces the joint and while allowing flexion does not permit of any rotation."—(Grove's *Synopsis of Surgery.*)

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Original Articles.

DIAGNOSIS AND TREATMENT OF RECURRENT CHOLECYSTITIS WITHOUT STONES.*

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THE last two or three years have given us frequent opportunity to deal with gall-bladder inflammations without stones in which the diagnosis as well as the treatment presented a rather difficult problem. Although some surgeons notably, the Mayos, Dr. R. S. Fowler[1] of Brooklyn and John B. Deaver[2] of Philadelphia, excise the gallbladder when chronically inflamed, the majority of clinicians and not a few surgeons doubt the advisability of extirpating a gallbladder—even if diseased—so long as it does not contain stones. Inasmuch as our opinion is contrary to this commonly held view, we thought it best to present our experience regarding this subject before you.

As the basis of this paper we select eighteen cases of recurrent cholecystitis without stones that have been operated upon, and in this way the diagnosis corroborated *per autopsiam in vivo*. A few of these cases we shall describe in detail while all will be mentioned in the table stating the findings of the duodenal contents.

CASE I.—Albert De V., 25 years, October 22, 1919. In January, 1919, patient was seized with a severe sharp, knife-like pain, lasting several hours. The attacks occurred at intervals of about once every month up until July, 1919. Since that time they came on every week to 10 days. The pain had no relation to food, radiated to the left side and was relieved only by hypodermics of morphine. There was no vomiting, no belching of gas, bowels were normal. During the attacks the patient would lose 2 or 3 pounds, but he would regain this weight in the intervals of euphoria. He was jaundiced once shortly after an attack. Patient has always been well prior to the present illness.

Examination of the abdomen revealed a slightly enlarged liver. There was an area below the right costal margin painful to pressure. The gastric contents showed: HCl +; acidity =65; the string test revealed a blood stain at 18 inches distance from the lips. The duodednal contents aspirated in the fasting condition were turbid, grayish green looking. A diagnosis of gastric ulcer and cholecystitis was made. Patient was treated by duodenal alimentation and was then operated upon by Dr. Willy Meyer for his gallbladder condition. Wassermann was negative.

November 21, examination per rectum: appendix tightly adherent to meso-appendix, old bands. Typical removal; contains large fecal concretion with proximal stricture. No stones in gall bladder which is blue, glistering, soft; contents turbid; cholecystectomy performed; which was difficult on account of firm adhesions in liver bed; same at duct; juncture of both covered by large adherent glands. Drainage and closure as usual. Culture from aspirated bile of gallbladder showed colon bacilli.

November 24, patient doing nicely.

March, 1920.—Patient feels perfectly well; has had no attacks since the operation.

CASE II.—Mrs. Rose S., 38 years. February 4, 1920. The patient gave a history of abdominal cramps on and off for 18 months. Five weeks ago had severe abdominal cramps in right epigastric region radiating to right shoulder associated with some jaundice and light colored stools; two weeks later another attack came on, and since then has had them daily. No vomiting. The appendix was removed two years ago. Upon examination a mass is palpable in the region of the gallbladder, which has an oval configuration of about 1½ to 2 inches in length and one inch in width and feels elastic and somewhat pliable. This appears to be the gallbladder. Temperature upon admission until operation, normal to 100°.

Duodenal contents: Greenish yellow; turbid; alk = 20; A = +; S = +; T = +; microscopically, bilirubin calcium and cholesterin crystals; bacteria.

Blood count=R. B. C., 4,600,000; W. B. C., 8,800; polys, 80 per cent.; lym,. 20 per cent.; Hb., 80 per cent. Wassermann negative; String test negative; *x*-ray negative.

Gastric contents: HCl, 0; Acidity, present; Blood +.

On March 8, 1920, cholecystectomy was performed by Dr. Willy Meyer. The bile aspirated from the gallbladder at operation was dark brown and turbid.

CASE III.—Mrs. Eva B., 43 years old. March 20, 1919. She has had attacks of pain in the epigastric region on and off for five years. Pains radiate across abdomen and are accompanied by vomiting. Sometimes they come on after meals and at other times they have no relation to the food. Two months ago the patient ate some chopped meat and an attack came on. This brought her to the hospital. Jaundice was present two years ago.

Temperature normal up until the time of the operation. Duodenal contents: yellowish brown, turbid; alk = 25; A, 6; S, 3; T = 5. Gastric contents: HCl = 20; Acidity = 40; Blood, +.

Cholecystectomy and appendectomy performed by Dr. Willy Meyer on April 1, 1919. The gallbladder was glistening, not blue; the bile aspirated from the gallbladder at operation was greenish and very turbid. Anatomical diagnosis: Chronic catarrhal cholecystitis; chronic appendicitis.

At the operation the following was found: Pyloric ring irregular, slightly infiltrated; pannus, with adhesions upward, but not to liver; probably additional duodenal ulcer, but clinically symptoms missing.

Later on at home, she had vomiting spells and was then readmitted to the hospital. No food retention was found in the stomach. She recovered.

CASE IV.—John A. H., aged 29 years, admitted May 5, 1919. Four weeks ago patient became dizzy; felt like fainting; two weeks later had pain across the abdomen, but it did not radiate and had no relation to food. The bowels were constipated since onset; no vomiting.

*Read before the American Gastroenterological Assoc., at Atlantic City, N. J., on May 3, 1920.

Physical signs: Tenderness in right upper quadrant. The edge of a tumor mass can be made out in right upper quadrant. The temperature on admission was 103°, then varied from 102° to 105° until the operation after which it fell to normal in 10 days.

Duodenal contents: yellow, very turbid; alk = 25; A = 6; S = 1; T = 1; many bacteria, pus cells, and cholesterin and calcium bilirubin crystals. Blood count: W. B. C. = 20, 400; polys. = 86 per cent.; lym., 14 per cent.

Cholesterol = 120; bile sterile; Widal negative; complement fixation for tuberculosis negative; Wassermann—0; gastric contents, HCl. = 50; acidity = 75; feces negative.

Anatomical diagnosis: Chronic periappendicitis; catarrhal cholecystitis.

On June 5, 1919, a cholecystectomy and appendectomy were performed by Dr. Rehling.

CASE V.—Max S., age 50 years, admitted February 17, 1920. Five weeks ago the patient had a gnawing pain in midline region of the stomach, 4 hours after the noonday meal; the pain was relieved by the taking of food; no vomiting, patient belched gas after meals, lost 15 pounds in two months. Wassermann was positive two years ago; had ten salvarsan injections. The bowels were regular.

Physical signs: Liver palpable two fingers below the epigastric angle. Heart sounds of poor quality; short systolic murmur apical; pupils sluggish to light.

Duodenal contents: yellow pea-soup appearance; turbid; alk = 20; A = +; S = 2; T = 6; cholesterin crystals; bacteria and mucus. Gastric contents: HCl. = 14; acidity = 26; no blood; string-test negative; feces negative. Wassermann negative at present. Blood count: W. B. C., 5,720; polys., 58 per cent; lym., 42 per cent.; Hb., 80 per cent. Temperature, slight elevation up to 100. The *x*-ray apparently showed penetrating gastric ulcer; persistent defect in the lesser curvature.

Cholecystectomy was performed by Dr. Willy Meyer on February 23. No ulcer was found. Bile from the gallbladder, alk. = 120; dark green like Kulmbacher beer.

CASE VI.—Jacob R., age 40 years. Admitted September 30, 1919, with a history of having suffered with pain in the right upper quadrant for four years, the attacks coming on gradually and leaving gradually, the pain radiating to both shoulders; no jaundice; lost 30 pounds in 3 or 4 months..

Physical examination shows slight rigidity and extreme tenderness over the entire right side; the liver is enlarged and very tender at the site of the gallbladder. *X*-ray negative; Wassermann, 0; blood count, W. B. C. = 7,550; polys. = 62 per cent; lym. = 38 per cent.; R. B. C., 6,000,000. Temperature, 102°.

Duodenal contents yellow with a tinge of green, turbid; alk = 30; A = 8; S = 1; T = 1; microscopically are seen cholesterin crystals, bacteria, and white blood cells. Gastric contents: HCl = 66; acidity = 82; blood, negative. String test negative.

Cholecystectomy and appendectomy performed by Dr. Torek on November 1, 1919. The contents of the excised gallbladder = culture sterile. Pathological diagnosis, catarrhal appendicitis; slight localized inflammation of the gallbladder. The temperature dropped to normal two days after the operation.

CASE VII.—Mrs. D. Sick for many years. Frequent pain in the epigastric region and had to be most careful in diet; gained twenty pounds lately under proper management; this speaks much against carcinoma though the presence of acanthosis nigricans suggests the same. At the first office call tenderness was found in the region of the gallbladder; duodenal contents found turbid with cholesterin crystals.

February 17, 1919. A Perthes incision was made and lengthened to the xiphoid; stomach large and ptosed; no sign of ulcer at pylorus or duodenum nor of carcinoma in entire length of stomach, duodenum, or head of the pancreas, large intestine or liver; gallbladder large, not blue glistening, evidently chronically inflamed; appendectomy was performed with difficulty. "In view of duodenal findings" cholecystectomy was performed (ligature at the cystic duct left for the further examination); usual drainage; aspiration of the gallbladder shows pronouncedly turbid bile. Bacteriological examination of the aspirated bile from the excised gallbladder showed it to be sterile.

March 1. Tampon and rubber removed.

In conjunction with the above cases we give in the following table a detailed description of the duodenal contents as found in all the patients before the operation, and in some also of the bile aspirated from the gallbladder during the operation.

In looking over the cases with regard to their symptomatology two types can be easily discerned. Type I is characterized by distinct attacks of colicky pains in the upper abdomen (usually on the right side or exceptionally on the left side), lasting from one to several days, followed by perfect relief of symptoms. One or more such attacks will have occurred before the patient consults his physician. During the attack there is often a slight rise in temperature accompanied by a moderate leucocytosis and an increase of the polymorphonuclear white blood cells.

Type II shows no distinct attacks. The patient usually complains of slight distress either in the midepigastrium, especially after meals, or somewhat to the right of the linea alba covering, principally the right hypochrondriac region. While there is usually no rise in temperature, at times the latter may occur in a pronounced manner. The patient is then debilitated and bedridden.

In both types the objective findings are as follows:

The liver is frequently found somewhat enlarged. Palpation to the right of the linea alba in the area situated between the costal margin and the navel line occasionally elicits pain, especially during an inspiration. In the same region there is at times found the *défense musculaire* of the rectus abdominis muscle.

The bile, as found by aspiration of the duodenal contents in the fasting condition of the patient, is usually turbid, presenting a yellow-brownish appearance. Occasionally it looks greenish. Microscopically numerous bacteria and cocci are frequently found; often pus cells; cholesterin- and bilirubin-calcium crystals are likewise encountered, but in comparatively small numbers. The alkalinity and the pancreatic ferments do not, as a rule, deviate much from the normal.

In the above-mentioned eighteen cases of true cholecystitis verified by operation and pathological examination, the duodenal contents were pretty clear in one (Mr. B., No. 11), while the rest showed pronounced turbidity with all the attributes mentioned in the previous paragraph.

In quite a number of these patients the appendix was found to be considerably diseased. In every one of the patients (excepting a few who had undergone appendectomy before) the appendix was removed as a prophylactic measure. A few of the cases were complicated with peptic ulcers, requiring special treatment for the latter affection.

At the operation the gallbladder, as stated above, was thoroughly examined by inspection, palpation, and aspiration. In all the cases mentioned it was found diseased—either thickened or glistening whitish, or the bile was dark black and turbid or containing much mucus and slightly thickened material. The pathological anatomical diagnosis, as

TABLE OF EXAMINATION OF THE DUODENAL CONTENTS (BILE) IN 18 CASES OF CHRONIC CHOLECYSTITIS WITHOUT STONES OPERATED UPON.

Name.	Date.	Alkalinity	Amylopsin	Steapsin	Trypsin	Appearance and Microscopical Findings.	Remarks.
Mrs. M.	4-15-18	20	10	3	1	Yellow; slightly turbid.	Cholecystectomy by Dr. Willy Meyer.
Mrs. B.	3-30-19	25	6	3	5	Yellowish brown; turbid.	Appendectomy and Cholecystectomy by Dr. Willy Meyer; gall-bladder at operation glistening; not blue; bile-greenish and turbid. Pathological diagnosis-chronic catarrhal cholecystitis; chronic appendicitis.
Mrs. D.	2-14-19	30	6	2	4	Very turbid; yellow; green, pea-soup appearance; cholesterin and calcium oxalate crystals.	Cholecystectomy by Dr. Willy Meyer.
Mr. A. de V.	11-2-19	25	11	2	5	Reddish yellow; turbid, pus cells; cholesterin crystals.	Cholecystectomy by Dr. Willy Meyer; Bile from gallbladder turbid; culture showed colon bacilli; gallbladder at operation-glistening, blue, and soft.
Mr. K.	11-2-19	25	7	2	2	Yellowish green; turbid; pus corpuscles.	Cholecystectomy; Dr. Willy Meyer; Bile from gallbladder, greenish and turbid; at operation right lobe of liver infiltrated.
Mrs. G.	11-25-19	30	10	1	3	Yellowish green; turbid.	Cholecystectomy by Dr. Willy Meyer; Bile from gallbladder, dark green; turbid; Pathological diagnosis-subacute catarrhal cholecystitis.
Miss P.	2-6-20	20	10	1	2	Yellow turbid; small cholesterin crystals; calcium bilirubin crystals; pus cells.	Cholecystectomy by Dr. Willy Meyer. Bile from gallbladder, green and turbid.
Mr. R.	10-15-19	30	8	1	1	Yellow; tinge of green; turbid; pus cells; cholesterin crystals; bacteria.	Cholecystectomy and appendectomy, by Dr. Torek. Pathological diagnosis, catarrhal appendicitis; slight localized inflammation of gallbladder.
Mr. H.	5-28-19	25	6	1	1	Yellow, very turbid; cholesterin crystals; bacteria; calcium bilirubin crystals; pus cells.	Cholecystectomy and appendectomy by Dr. Willy Meyer; Pathological diagnosis, chronic periappendicitis; chronic cholecystitis.
Rev. H.	1-25-19	15	5	Trace	0	Light yellow; turbid; few cholesterin and tyrosin crystals; mucus; pus cells.	Cholecystectomy by Dr. Willy Meyer; Pathological diagnosis, chronic cholecystitis.
Mr. B.	2-16-20	20	10	Trace	1	Golden yellow; clear.	Bile from gallbladder at operation dark colored. Cholecystectomy by Dr. Willy Meyer. Pathological diagnosis, catarrhal cholecystitis.
Mr. S.	2-16-20	30	..	2	6	Yellow; pea-soup appearance; turbid; mucus; cholesterin crystals; bacteria; pus cells.	Cholecystectomy by Dr. Willy Meyer; Bile from gallbladder dark green like Kulmbacher beer.
Mr. P.	2-20-20	20	..	.	.	Greyish, reddish tinge; turbid.	Appendectomy and Cholecystectomy by Dr. Willy Meyer; Bile from gallbladder dark and black at operation, gallbladder shows enlarged vessels; bluish and glistening.
Mr. B.	3-21-20	20	6	1	5	Greyish; turbid; tinge of yellow; many cholesterin and calcium bilirubin crystals; mucus; ova.	Cholecystectomy by Dr. Willy Meyer.
Mr. D.	3-24-20	20	6	1	3	Greenish yellow fluid; mucus.	Cholecystectomy by Dr. Willy Meyer; Bile from gallbladder dark, green; turbid alk, 60.
Mr. F.	3-16-20	20	4	1	2	Yellow; turbid; cholesterin crystals; mucus; epithelial cells.	Cholecystectomy by Dr. Willy Meyer; Bile from gallbladder turbid; dark green.
Mrs. S.	3-1 -20	20	..	.	.	Greenish yellow; turbid; small cholesterin crystals; calcium bilirubin crystals; bacteria; mucus; epithelial cells.	Cholecystectomy by Dr. Willy Meyer; Bile from gallbladder dark brown, turbid.
Mr. B.	4-20-20	35	8	1	3	Greenish yellow; turbid; cholesterin crystals; epithelial cells; mucus; pus cells.	Cholecystectomy by Dr. Willy Meyer.

given by the pathologist of the hospital, is stated in each case examined. The gallbladder was always found diseased and the diagnosis of cholecystitis corroborated.

Diagnosis.—The recognition of chronic cholecystitis without stones is not difficult. In making a diagnosis, however, in most instances, merely the cholecystitis can be made out, while the absence of stones cannot be foretold until after the operation. According to Smithies' even in distinct cases of biliary colic, stones are found in 57 per cent., while in 43 per cent. no calculi are present. In exceptional cases the probable occurrence of a cholecystitis without stones can be predicted.

The diagnosis of cholecystitis is based upon the symptoms (colicky pains in the upper abdomen; distress in the epigastrium radiating backward to the right) in conjunction with the presence of pronounced turbid bile in the duodenum in the fasting condition of the patient, as found by means of the duodenal tube. The existence of a considerable leucocytosis, with an increase of the polynuclear elements, enhances the diagnosis and indicates the severity of the lesion.

Treatment.—Mild cases of cholecystitis yield often to medical treatment. The same consists in ample rest, frequent small meals, plenty of water, saline aperients (Carlsbad, Saratoga, French Lick Springs) washing of the duodenum with a weak argyrol or ichthyol solution (1 to 2 per cent).

Frequently recurring attacks of cholecystitis, especially when accompanied by even a slight rise of temperature, require operative intervention. The same applies to forms of cholecystitis throwing the patient into a state of invalidism or endangering life by infection. The operation consists in removing the offending organ (cholecystectomy).

The Reasons for and the Results of the Operation.—The reasons for the operation in the cases described were: (1) Recurrent troubles not yielding to the usual modes of treatment. (2) Febrile conditions bearing the stamp of infection and apparently due to the gallbladder, endangering life.

The results were uniformly good, excepting in one case in which recurring attacks of jaundice and cholangitis persisted after the operation.

Conclusions.—1. A diagnosis of chronic recurrent cholecystitis can frequently be made, even when stones are absent, by the symptoms present in conjunction with a direct examination of the bile.

2. When operating for cholecystitis a chronically diseased gallbladder should be excised, even if no stones are found in the affected organ. M. E.

ADDITIONAL REMARKS FROM THE SURGEON'S POINT OF VIEW.

In patients complaining of distress in the upper abdomen physicians and surgeons will think of a diseased stomach, duodenum, gallbladder, or pancreas; the appendix and kidney also come into consideration.

After we have obtained a most careful history of the case and made an equally thorough clinical examination, trying to make a preliminary diagnosis, the laboratory nowadays steps in for differentiation. Examination of stomach contents, string test, *x*-rays, Wassermann reaction, and stool analysis pave the way for the correct diagnosis of gastric or duodenal affections.

For the determination of gallbladder disease there are at our disposal to-day, citing them in accordance with the time of their introduction: radiography, cholesterol test of the blood, and examination of the duodenal contents.

The *x*-rays, according to some writers, show stones in about 15 to 20 per cent. of the cases; others have found positive results in somewhat over 30 per cent., while others still claim much higher figures. The rays cannot assist in shedding light on the condition of patients who suffer from an inflamed gallbladder without stones, though they can show adhesions (insufflation of oxygen into the peritoneal cavity).*

The cholesterol test is generally believed to be unreliable.

The examination of the duodenal contents with the help of the Einhorn tube, chemically, microscopically, and bacteriologically, bids fair to throw a great deal of additional light on the subject. At the present moment, it appears to be the best and most reliable means we possess for diagnosing an affection of gallbladder or bile ducts.

For several years Dr. Einhorn and myself have systematically added the examination of the duodenal contents to the other laboratory tests, and then compared the condition of the bile as it is physiologically discharged into the duodenum previous to surgical interference, with later operative findings.

We can state that the pre-, inter-, and post-operative examinations tallied in almost every instance. It is, of course, necessary to leave the duodenal tube in place for a number of hours (3 or 4) and then aspirate every half hour. In some cases, *e.g.* if the cystic duct is strictured or a stone completely obstructs it, the secretion will represent fresh liver bile only. If the examination before operation had shown the bile discharged through Vater's papilla, blackish green or brown in color, and turbid, with cholesterin or bilirubin crystals and pus corpuscles, aspiration of the bile with a needle introduced into the gallbladder during the operation usually showed the same thing.

Inasmuch as the culture of the bile aspirated during operation not infrequently failed to show bacterial growth, the question arose: is a blackish-green or dark brown bile pathological. We believe it is. Physiologists teach that normal bile from the hepathic duct as well as from the gallbladder is golden yellow in color. In animals possessing a gallbladder, the bile within the latter has uniformly shown a golden-brown color. Furthermore, as stated by Dr. G. L. Rohdenberg, pathologist of the Lenox Hill Hospital, "Two healthy young men in the twenties of life, who were autopsied within 5 minutes after death, the latter having followed legal electrocution, showed a golden-yellow bile in the gallbladder." He adds, "The fact that death by this method raises the body temperature to 120°-150° F. may, of course, have had some effect on the fluid content of the gallbladder." Again he states: "That some of the fluid from diseased gallbladders is sterile, is not surprising; first, because bile is lytic for several types of bacteria; second, because it is probable that the bacteria do their damage in the tissues of the gallbladder wall."

Personally I would add that possibly the frequent negative results of culturing bacteria in the dark green or brown turbid bile, as aspirated from the gallbladder during operation, may depend upon the procedure itself. In order to give results the culture has to be made on an anaerobic plan, because naturally there is no air within the gallbladder. It, furthermore, is possible that, with the ever-shifting fluid within the bladder itself, the bacteria may be found only here and there, and also may vary, and just that particular bit of bile that is used for making the culture may not contain any. In order to obtain more reliable results, we have therefore adopted the following plan:

We always have a competent assistant of the pathological laboratory at the operating table. Immediately after aspiration, he receives the syringe with the bile from the gallbladder and spreads it on the

*This at least had been the generally accepted opinion of clinicians up to date. The recent presentation of the subject before the American Gastroenterological Association, May 3, 1920, by Dr. A. W. George of Boston makes us entertain the hope that radiography is going to show disease of the gallbladder in almost 90 per cent. of the cases. The rays frequently demonstrate a distinct contour line of the gallbladder without stones. At the present moment it is believed that if they do so the gallbladder is pathological. A healthy gall bladder does not show on the plate under ordinary conditions. The pneumoperitoneum (oxygen insufflation), however, does do so.

agar plates. After the cholecystectomy, the viscus is bisected transversely; the cystic duct with the proximal half of the gallbladder is placed in a 5 per cent. formalin solution, so as to preserve the mucosa which otherwise for pathological examination rapidly undergoes autolysis, while the fundus with the distal half is used for tissue culture. Examination has repeatedly proved the presence of bacteria in the gallbladder wall, though the turbid, greenish black bile from the bladder failed to show a growth. Proceeding systematically in this way, we hope gradually to gain data of value in post-operative laboratory examination—data which will allow of definite diagnostic conclusions on basis of preoperative findings.

So far we have found that recurrent cholecystitis without stones is a much more frequent disease than is generally believed, that it seems to occur oftener in the male than in the female sex, that many patients with vague complaints of distress of the normal equilibrium in the upper abdomen, suspected to be referable to a gastric or duodenal ulcer, suffer from cholecystitis, often without stones.

Persistently recurring pains in the left side of the upper abdomen as well as in the region of the heart—so frequently diagnosed in the male as spurious angina—are also frequently due to a gallbladder infection. I have seen a number of such instances. (Proceedings of N. Y. Surg. Soc., 1919, *Annals of Surg.*) Complete gastric analysis and radiography of stomach and of the left kidney for stone has given a negative result, the urine, too, having been found normal. But examination of the duodenal contents gave the right clue, and was corroborated by operative findings. These pains on the left side of the abdomen are more often associated with cholecystitis and cholelithiasis than with cholecystitis without stones.

Of course, not too much must be demanded from this mode of examination. It cannot throw definite light on the question whether the turbid bile is discharged from the gallbladder, or from the liver and bile ducts—at least not thus far.

Perhaps the further working out of the problem will permit us to do this also. I would but refer to Meltzer's proposition to instill a solution of magnesium sulphate into the duodenum in order to stimulate the discharge of bile.

However, the method will, I believe, be of importance in clearing up the cases of recurrent colicky pain after cholecystectomy. These pains do not necessarily always depend on the gradual descent of calculi, or of "liver gravel" found within the branches of the hepatic ducts or a spasm of the constrictor muscle at the papilla of Vater, which the duodenal tube may greatly assist in proving.

With reference to the surgery of the gallbladder, but a few words:

1. So far as indications point to-day, it appears to be better surgery to extirpate the infected gallbladder without stones, than to drain, or leave it in place. Such a bladder, stitched to the abdominal wall, though at first drained for quite some time, may in the future come to represent an infected focus from which the system is intermittently flooded with toxins. If secondary cholecystectomy is refused by the patient, chronic pancreatitis may develop in addition to the chronic recurring cholecystitis, and invalidism may develop for the remainder of life.

It is also most likely that the chronic cholecystitis *without stones* which often shows bacteria suspended in its bile and habitating within its walls, is to be considered "the precursor" of chronic cholecystitis *with stones* in many instances.

2. I prefer operating from the fundus toward the cystic duct, in spite of the somewhat increased hemorrhage from the gallbladder bed. In this way one will always be ready properly to meet any of the anomalies so often present near the junction of the cystic and the common ducts, so beautifully demonstrated by Eisendraht's specimens. One will also be able always to ligate the cystic duct very close to the common—an important point, inasmuch as by so doing nature's effort to distend the stump and form a miniature new gallbladder with all the inherent faults of the original larger one will be forestalled.

3. The results of cholecystectomy are almost as good as those of appendectomy. Of 100 patients operated on we see practically 100 get well. Something extraordinary, something unforeseen, beyond the control of the attending surgeon has to happen to have the operative result disappoint expectations.

4. To close the abdomen completely, without drainage, as in appendectomy, seems inadvisable; a leak may occur permitting infected liver bile to pass into the peritoneal cavity, at the tied stump of the cystic duct, and thus cause death from septic peritonitis after an original straight recovery. Drainage is more cumbersome, but meets all emergencies. The patient's safety is the first law.

5. The principal advantage accruing from the preliminary more refined diagnosis by means of the examination of the duodenal contents, for the patient as well as for the surgeon, is the indication derived from it with reference to the place of the incision. Every surgeon, I am sure, has often felt dissatisfaction on cutting down on the appendix and then introducing the hand into the abdomen and palpating the gallbladder region. When using the intermuscular (McBurney's) incision, the hand cannot be introduced, and the para- or per-rectus cut must be made long enough to permit the hand to pass. Having the fingers in place, we can but determine the presence or absence of calculi in the gallbladder; we cannot clearly feel pericystic adhesions, omental attachments, etc. When we know, however, before we proceed with the operation, that the bile is turbid, it becomes our duty to cut down on the gallbladder and then pull up the cecum with the lower portion of the ileum into this wound, and remove the appendix. Then we are able to view the gallbladder and its immediate surroundings; we can inspect stomach, duodenum, and liver, can palpate the head of the pancreas, common and hepatic ducts—in other words, can make the usual survey of the upper abdomen, the same as we are wont to do in other gallbladder operations. Finally we can aspirate the gallbladder and find out the quality of its contents, comparing it with that of the bile examined before operation, and on the basis of this finding determine the necessary operative procedure.

It is interesting to note how the whole method of examination before the operative procedure, as de-

scribed above, has changed the indication formerly derived from the results of inspecting and palpating the gallbladder. Formerly a non-glistening, whitish, and thickened bladder gave the signal for ectomy; a shining, bluish soft gallbladder was left in place. To-day, the color of the wall, whether bluish, pink, or white, its reflex and softness are no longer determining factors for attack or non-interference. The *quality of the bile* determined systematically, with the help of the duodenal tube, *previous* to operation, and the condition of the bile aspirated from the gallbladder *during* the operation, guide the surgeon in his decision of where to incise and what to incise. W. M.

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ALLERGY, ANAPHYLAXIS, AND IMMUNITY IN HAY FEVER AND ASTHMA.

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Necessity of a Working Formula.—There are many theories concerning the subjects of immunity, allergy, and anaphylaxis which are of great importance, but whose final decision may be deferred for a long period. As the object of the American Hayfever Prevention Association is to give the most benefit to hayfever sufferers, both as regards the prevention of the disease by legislative and educational methods in reducing the hayfever weeds,[1] and by developing and encouraging therapeutic methods for its relief, we have accepted certain provisional theories on this subject in the laboratories of the association. This does not indicate that we have ceased our work in immunological research, but simply that a working formula is necessary in order to give the most benefit in the present state of our knowledge.

We have, therefore, accepted "allergy" in hayfever and hayfever asthma as indicating the form of hypersensitivity to the inhalation of pollen protein that is congenital, and "anaphylaxis" as the sensitization of an allergic subject resulting from an exposure to pollen protein in excess of his inherited resistance.

Influence of Heredity.—The influence of heredity in hay fever is shown by the fact that in a series of over 1,000 cases treated in the Hay Fever Clinic of the Charity Hospital and in private practice, over one-third (358) had relatives of the first degree (parents, sisters, or brothers) who suffered from hay fever. The influence of heredity, however, is greater than this, as many cases of hayfever are not recognized, being classed as "summer colds." Allergy may also exist indefinitely without developing hay fever, by reason of insufficient exposure to the hay fever pollens to cause the anaphylaxis necessary to produce the hay fever symptoms.

Importance in Treatment.—In the immunizing treatment of hay fever and hay fever asthma,[2] the recognition of the difference between allergy and anaphylaxis is important. In successful immunization, absolute immunity is not established, but usually a restoration to the congenital allergic condition before the special sensitization which resulted in the hay fever symptoms. Successfully immunized subjects should therefore be warned against excessive exposures to the hay fever pollens to which they are sensitive, as this might result in a renewed sensitization and necessitate a repetition of the immunizing treatment. The failure to observe this precaution is responsible for many cases of relapse after an apparent cure lasting for several seasons.

The following is one of many cases illustrating this statement. One of our patients lived for forty-two years in New Orleans without developing hay fever. Five years ago he visited Tennessee during the month of September, where the atmospheric ragweed pollens are twice as numerous as they are in New Orleans. He developed a severe attack of hay fever, with regular annual recurrences in New Orleans. After two courses of immunizing treatment, he no longer had attacks in New Orleans, but again developed hay fever in Tennessee last September, with probability of recurrence in New Orleans this fall, unless prevented by prophylactic immunizing treatment.

In this case the allergic condition of the patient was not sufficient to develop hay fever from the pollens in New Orleans until the excessive exposure in Tennessee gave rise to an anaphylaxis, which lowered his resistance to the inhalation of pollen protein so that the pollens in New Orleans, which previously had caused no reactions were sufficient to develop the usual symptoms.

Absolute and Relative Immunity.—The question of whether absolute immunity to the pollen proteins exists is important, in order to determine whether every one is liable to contract hay fever under sufficient exposure to hay fever pollens.[3] One difficulty in deciding this from clinical evidence is that, in spite of the greater general knowledge of hay fever, there are still many cases that are classed under the general name of "colds," and the hay fever is not recognized. In northwestern North Carolina, for instance, where "hay fever" as such is unknown among the natives, it is not uncommon to have the laborers develop a "cold"—typical hay fever—when stripping corn in September while surrounded by pollinating ragweed.

On the other hand, one of the members of our Research Department, in order to test the question of absolute immunity, inhaled pollen directly from a mass of staminating ragweed flowers, so that his nostrils were discolored by the millions of pollens inhaled. The reaction, however, in spite of the excessive exposure, was simply mechanical, resulting in no more reaction than from the inhalation of a similar amount of mineral dust.

Incriminating Pollens of Hay Fever.—The determination of the incriminating pollens of hay fever, which formed the subject of the early work of our Research Department, has already been pro-

ductive of valuable results.' Our statement in 1908 that only atmospheric pollens need be considered in hayfever from a prophylactic and immunological standpoint has been almost unanimously accepted, and has limited the research in hay fever to definite practical limits.

Biological Groups of Pollens.—Through the cooperation of the Botanical Department of our association, representing botanical authorities in almost every state, we have been enabled to test hundreds of samples of pollen and eventually to reduce them biologically to a small number of groups. In the immunizing treatment, were it necessary to immunize the patient to each species of plant to whose pollen he is sensitive, it would be a hopeless proposition.[5] In the ragweeds the most common cause of fall hay fever, there are six common varieties, not including the cockle burs, gaertnerias, and marsh elders, which are almost as common in some sections. Of the grasses, the most common cause of spring-summer hay fever, there are hundreds of varieties, and of the wormwoods, which replace the ragweed in the Rocky Mountain and Pacific States, there are over thirty varieties. Fortunately, the pollens of the species of each of these families are biologically similar, and any one, or a combination of several, may therefore be used for testing and for immunizing purposes.

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AUDUBON BUILDING.

THE RELATION OF TEETH TO GENERAL MEDICINE.*

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IT is by no means a recent conception that there is an intimate relationship between diseased teeth and systemic or general disorders, for in the literature of the past few centuries many references to this connection can be found. However, it is only in the last decade that this subject has been accorded the prominence it deserves.

Dr. Benjamin Rush, one of America's most noted physicians and one of the signers of the Declaration of Independence, published his observations in a truly remarkable article commenced in 1801. This, as you will recall, was before the discovery of bacteria and at a time when our knowledge of pathology was only rudimentary, and yet this article, in its essentials is in harmony with our present-day views. Dr. Rush says: "When we consider how often the teeth, when decayed, are exposed to irritation from hot and cold drinks and ailments, from pressure by mastication and from cold air, and how intimate the connection of the mouth is with the whole system, I am disposed to believe that they are often the unsuspected causes of general and particularly nervous diseases. I cannot help thinking that our success in the treatment of all chronic diseases would be very much promoted, by directing our inquiries into the state of the teeth in sick people, and by advising their extraction in every case in which they are decayed. I have been made happy by discovering that I have only added to the observations of other physicians in pointing out a connection between the extraction of decayed and diseased teeth and the care of general diseases."

Our interest in the teeth begins at birth. The appearance of baby's first tooth marks an epoch in the family life, and when it comes, the anxiety of the fond mother is relieved and the pride of the doting father is most pronounced when he exhibits the tooth for general inspection and admiration.

At a very early period in the child's life the question of diet becomes most important, because of its direct connection with the growth of the permanent teeth, and if this diet is deficient in certain essentials, early decay of the teeth soon becomes evident. Zilva and Wells of London have shown experimentally that the teeth are very early affected by scorbutic causes. Damage may be found in the teeth even before any general symptoms can be detected. It is not at all unlikely that defects in the teeth arise owing to faulty diets that are not clearly recognized beforehand. Hess of New York maintains that children not infrequently suffer from a "latent scurvy" which is really a condition of malnutrition; and this frequently cannot be diagnosed until an improvement in the malnutrition is brought about by the administration of an antiscorbutic. Since these unrecognized conditions, though present in many cases, are frequently overlooked by the doctor, they may help to explain the hitherto unexplained prevalence of tooth decay.

It has been pointed out that diet plays an important part in the growth and nutrition of the child, for example. A child's diet is most likely to be deficient in the fat-soluble vitamine from the ninth month to the second year, and if this is so, the condition known as rickets may make its appearance. The permanent teeth calcifying at this period are, as you know, the incisors, canines, and first molars, and it is just these teeth in children that are most commonly hypoplastic and carious.

The average diet, particularly that of the poor, is now more than ever made up of specially prepared cereals such as rice, wheat, oats, etc. Meats and the animal fats tend to play a smaller part. Vegetable fats, in the form of oleomargarine, etc., are superseding butter; whole milk is being more and more excluded from the diet of the needy, partly because of the expense and partly because of a curious antipathy that many people have toward it. Obviously, such a dietary is very deficient in the fat-soluble vitamine. Here presents itself a picture rather obscure but none the less real, illustrating, in part, the cause of defective teeth in our own time.

Following this same line of reasoning, one can

*Read before the New Haven Dental Association, April 7, 1920.

also understand why the Esquimaux in their own country, where the flesh and blubber are the staple articles of diet, have such excellent teeth, while the inhabitants of Chile, who live chiefly on cereals, have teeth which are much less sound.

Having seen that early decay is due more or less to an improper dietary, we must bear in mind that this condition is carried over into adolescent and adult life, and now comes the added damage from bacterial invasion which supersedes the early decay in importance and becomes a menace to the general health of the individual. It is a well known fact that the mouth is an ideal place for bacterial life, and even though there are no lesions of the teeth or gums, any number of pathogenic and saprophytic bacteria may be present. The most infectious lesions of the teeth may be caused by any of a large number of pyogenic bacteria, and secondary invasion of saprophytes is the rule rather than the exception.

Originally the bacteria of the mouth were studied with the theory that one variety or group of bacteria was the etiological agent of a definite lesion, but so far as I know, no one has been able to demonstrate specific organisms in the various diseased conditions. Any one of the pyogenic bacteria may cause an alveolar abscess or a pus pocket at the gingival margin. We almost always find a mixed infection with a great variety of combinations.

Although pyorrhea is mentioned as a possible causative agent of many general diseases, it is my belief that apical abscesses are of greater pathological import. In pyorrhea drainage is often good, while alveolar abscesses lack drainage and are also subjected to pressure, which adds to their virulence. Septic foci in the gums have room for expansion, whereas abscesses localized in bony tissues are more liable to invade the blood stream. And lastly, pyorrhea often gives rise to symptoms and signs which attract the attention of both patient and dentist, whereas alveolar abscesses do not, as a rule, give rise to a single disagreeable symptom by which one may suspect their existence. This last is quite evident, since as you all know, the frequence of apical abscesses has only recently been proven by means of systematic dental radiography. Black in a recent article reports abscesses at the roots of 47 per cent. of devitalized teeth.

An ingenious conception of infections and diseases caused by streptococci has been suggested by Rosenow, Billings, and their coworkers. They conclude from their observations that members of the streptococcus-pneumococcus group may develop affinity for certain tissue not only while growing in these particular tissues, but also while growing in the primary foci of infections. This they call the organotropic tendency of these bacteria. The interesting deduction is made by Rosenow that bacteria growing in a given tissue acquire an affinity for that particular tissue. There is little tendency to involve any other kind of tissue. Therefore he claims that a focus in a specialized tissue is of less importance as a distributor of bacteria than the primary focus.

It is extremely important that conclusions so interesting and of such a vital and fundamental nature be confirmed by other observers and that their full acceptance await repeated verification.

The underlying causes of dental caries are still unknown. They have usually been sought in local bacterial conditions within the mouth, if one may conclude from the emphasis that dentists place on oral hygiene. They do not seem to realize that the presence of bacteria in itself never causes disease. Evidently much depends on our theories of resistance.

The bacteria may reach various parts of the body through different channels where they may cause disease. The distribution of the infection in oral focal disease may take place by continuity where the surrounding structure may become contaminated from infectious material about the teeth. By direct infection, for example, pyogenic organisms from dental sepsis may and probably often do spread and produce tonsillitis, pharyngitis, and inflammatory conditions of the surrounding tissues. Other modes of distribution have been described, namely, infection through the gastrointestinal tract, through the lymph glands, and through the circulation.

In regard to teeth and their relation to systemic disturbances it is admitted that many infectious diseases, such as infectious arthritis, acute nephritis, and bacterial endocarditis, may at times be traced to septic foci in the mouth, just as they are often attributable to foci in the tonsils or any part of the organism.

A writer, supposedly an authority on the subject, enumerates twenty-six distinct diseases that he positively states may arise from dental lesions, and he goes on to say, to quote his own words, "Neither have I presumed, in compiling this list, to collect all the claims that have been made, but have aimed to be conservative." In this list he has named such disorders as gastritis, appendicitis, colitis, gastric and duodenal ulcer, nervous and mental conditions, especially in children. It must be obvious that the enthusiastic and sanguine reports made by some of the medical fraternity as well as the dentists often border on the absurd. The claims often made by these enthusiasts as to the relation of gastrointestinal disorders and oral sepsis are that the septic material, after being swallowed, sets up an inflammation in the various parts of the gastrointestinal tract, and as a result there are produced gastritis, enteritis, colitis, appendicitis, cholecystitis, and even gastric and duodenal ulcer.

I believe that it is not unlikely that the swallowing of poorly masticated food, and of pus, putrid material, etc., has some slight influence upon digestion. It does not seem probable, however, that it has an important bearing on many general disorders for which the teeth are now believed to be more or less responsible. The fact is the normal mucous membrane of the stomach is capable of tolerating a great deal of abuse. It can take care of poorly masticated food and by means of its germicidal acids destroy septic material when swallowed. The deleterious effects of oral sepsis seldom go through this channel, although many have expressed views to the contrary.

It doesn't matter where the infection is situated, in the mouth or in any other part of the body, such infection should be eradicated as efficiently as possible. However, the many glowing promises often made by physicians as well as the dentist that the

extraction of poor and infected teeth will prove a panacea for all ills should be condemned. Perhaps you think I am unnecessarily severe in my condemnation of physicians who claim "cures" for all the "ills that flesh is heir to" through the medium of the teeth. You would not think so if you listened to the tales of gastric disturbances from the "toothless" army of unfortunates who invade the physician's offices daily and are unable to eat, because some physician, in cooperation with the dentist, promised magical results; such as the disappearance of a gastric or duodenal ulcer, the fading away of a goiter, yes, and even promising to restore lost manhood, if they would only submit to the extraction of a few offending teeth. I could name many physicians who have made these promises. And as for the dentists, listen to the words of one of your profession. In an article in *Modern Medicine* of 1920, among other things, Dr. C. B. Bray says: "But it is with the workman himself where the really big thing is accomplished by the industrial dentist. He has come to seem almost like the mythical healer of ancient days. His operations are confined to the teeth, but he secures astounding results in almost any part of the anatomy. Men come to him with a chronic case of rheumatism. He pulls a tooth—Presto! the rheumatism which may have been in the man's ankle at the other end of his anatomy is gone. From a makeshift, inefficient, dissatisfied, grumbling workman, the patient has been transformed into a healthy, efficient workman who goes about his duties with a song. All by the pulling of a tooth. But this is only one case. There are hundreds. Men come with indigestion-bad teeth. Men come with neuralgic pains; in fact, with everything down to and including an ingrown and souring disposition, and the dentist fixes them up by treating their teeth. Is it any wonder dentistry is being hailed with loud acclaim in industry?"

I believe that the *x*-ray is more or less responsible for the fad of "tooth pulling contests" which are now taking place throughout the country. The use of the *x*-ray in dentistry is undoubtedly a valuable aid in diagnosis, but the liability to err in interpreting the findings must be evident to all. I can recall many individuals who have had normal teeth extracted because the *x*-ray showed—or rather the roentgenologist said they showed—disease. I could also relate a number of cases where a variety of diseased conditions at the roots of teeth have been correctly diagnosed through the medium of the *x*-ray. Clinical experience, however, shows these same individuals living peaceful and healthful lives in spite of the fact that they have refused to have their teeth extracted.

I never fail to examine the mouth of every patient who comes to me for relief, and I want to emphasize the fact that I have seen a large number of digestive disturbances and other diseases due to dirty mouths and diseased teeth. But I have also observed many individuals whose digestive apparatus has been seriously impaired by the ruthless, careless, and unnecessary extraction of teeth. The interference with digestion, the improper mastication of food, the kind of food that the toothless patient must necessarily take, thus seriously interfering with nutrition, should all be taken into consideration before we advise the removal of teeth, which I consider a serious matter.

In conclusion I wish to make a plea for a commonsense, conscientious, conservative co-operation between the dentist and the physician. At the present time we are passing through an era, so common after important medical theories or discoveries, of permitting the pendulum to swing too far and allowing our enthusiasm to interfere with good judgment. There is no question that oral sepsis bears a definite and often vital relationship to systemic disease, but to accuse the teeth of everything from ulcer of the stomach to a sour disposition is not rational. When team work is established between the physician and the dentist better results will be achieved.

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STUDY OF MAN AFTER DEATH.

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IT has been said that few men can be estimated justly as to their ability and worth, until after they are dead. Psychologically this is probably true, and in the great future it may also become physically true when scientific research on the human body, especially brain and nervous system, has made sufficient advancement.

There may come a day, for instance, when further microscopic and chemical development in the investigation of the brain will establish correlations between a refined analysis of brain cells and the mentality of the person to whom the brain once belonged.

The Human Body Must Be Studied as One Whole After Death.—The methods of approaching the study of man after death are in need of much im-

provement. The idea is too often to procure material for some special or minor investigations, which are liable to be very limited. From the scientific point of view, requiring broader interpretations, we must study the human body as a whole and the relation of its various parts to one another in their biological and anthropological unity. Here pathology should take a subordinate place. It is due time that after death as before death we give more attention to the normal and super-normal man, rather than the pathological or abnormal man; in short, to the successful, talented and genius man rather than the unsuccessful, criminal and insane man.

Three General Causes of Death.—The study of man after death should include all the important parts of the body. Most of the lesions found are the marks of disease, rather than the cause of death. It is not known how great a degree of many diseases is necessary to cause death, for one patient may recover with a lesion sufficient to destroy another. The brain and the heart are organs especially capable of giving symptoms during life without corresponding lesions after death. Every death may be attributed to one of three causes: (1) interference with respiration (asphyxia or apnea), (2) interference with the heart's action (syncope), and (3) interference with the nervous system (coma or shock). The number of distinct diseases producing death is limited.

Necessary to Know Causes of Disproportion of Organs.—The size of an organ naturally depends upon the size and weight of the body.[1] The interpretation of weight and dimensions of organs has hardly begun to be recognized. When there is disproportion in any organ it is desirable to know whether it is due to type, development, habit, condition or disease. But there is no standard as yet for comparison. The insurance companies have given tables for body weight and height, which are valuable.

Approximate weights of organs of adults with their percentages in relation to the weight of the body are given in table 1.

TABLE I.

APPROXIMATE WEIGHTS OF ORGANS IN AN ADULT.

	Grains.	Ounces.	Percentage Relation to Body Weight
Brain	1,400	49	2.37
Heart	300	10	0.46
Lungs	1,175	41	2.0
Thymus gland	5	0.13	0.0086
Spleen	170	6	0.346
Liver	1,600	57	2.75
Pancreas	200	7	0.346
Kidneys	300	10.5	0.44
Testicles	48	1.5	0.12
Ovaries	14	0.5	0.04
Adrenals	10	0.35	0.014
Muscles	30,000	1,050	43.09
Skeleton	11,500	400	15.35

To secure a conception of the value of an organ we must compare its size, shape, volume and weight and the proportion of parenchyma to skeleton tissue and included fat, blood and other fluids.

Statistical Study of Human Viscera Necessary.—The object of the statistical study of human viscera is to record results comparable with many investigations of anthropologists dealing with other organs or dimensions, and also to provide materials for investigation of changes caused by disease in the absolute measures and interrelations of the organs. It has been found that the more healthy organs are accompanied by higher correlation and less variation.

It is also known that age alone is not sensibly correlated with the weight of the viscera. The healthy heart, for instance, is smaller than the diseased heart, and sickness increases with age; so that if the weight of heart increases with age, it is what might be expected.

Correlation of Weights of Human Viscera.—There is need of a systematic collection on a large scale of normal and pathological data as to the human viscera. Even with the meager material on hand, there are sensible, though moderate correlations between the weights of the heart, liver, spleen and kidneys. From Table 2 it appears that the heart-kidney correlation is higher than the heart with the liver or spleen.

TABLE II.

CORRELATIONS OF HUMAN VISCERIA.

Correlation of heart and liver is	0.2780 ± 0.0329
Correlation of heart and spleen	0.2654 ± 0.0276
Correlation of heart and kidneys	0.4004 ± 0.0279

It has been found that the weight of the heart may be predicted from the weight of the body and kidneys with an average error of about 8 per cent. of the mean weight of the heart.

The Skeleton.—Some physical characteristics are organic and are to be studied on the skeleton and dead body; others are physiological and to be investigated on the living. But the skeleton ranks first, for it determines the general form of the body; it is the foundation of its physical superstructure.

Knowledge of Skeleton and Viscera Necessary to Study Brain.—Since, as we shall see, stature, nationalty, race, body weight, build and viscera seem to be related to brain weight, all these data should be determined in each case. The skeleton therefore should be preserved and mounted to be examined along with the brain and other viscera. One of the difficulties of otherwise careful studies of the brain is the omission of cognate material which might prove to be of great value, since without it, such study may be reduced in its significance, owing to want of confirmation by collateral evidence and correlations.

Skull the Great Document of Prehistoric Man.—The skull is formed by three modified vertebrae and is the real commencement of the vertebral column. It is because of the brain that the skull, which encases it, receives so much attention. The skull also is one of the parts of the skeleton and of the entire body, which exhibits the greatest number of well marked variations. The difference in the form and the dimensions of the skull in correlation with those of the brain and masticatory organs serves to distinguish races and species.

The skull with the rest of the skeleton is the only anatomical document of prehistoric man which has come down to us; it is only in studying skulls that we can connect and compare extinct races of mankind. Thus, the mean cranial capacity of the Australian is 79 cubic inches, the African 85 and the European 91 (Flower.)

The smallest adult human cranium has a capacity of 63 cubic inches, while the largest gorilla cranium has 34 cubic inches. It appears from a study of

the very earliest skulls that the vertical diameter was small, making the brain flat, indicating that the grain grew in length and breadth before reaching its present stage in height.

The American Indians have a low cranial capacity, which increases in the yellow races until it attains its maximum in the white race; it appears to vary somewhat according to intellectual endowment.

In general, sutures in the skulls of Europeans are more tortuous than in those of primitive peoples; the metopic suture becomes obliterated in 90 per cent of adults. The skulls of women in prehistoric times, as compared with those of men, are larger than at the present time.

Cranial Capacity Increases From Barbarism to Civilization.—As will be found in Table III, all European nations have a cranial capacity more than 1,400 cubic centimeters. In general, the table shows that as we advance from barbarism to civilization, the cranial capacity also increases.

The close correlation of cranial capacity with weight of brain makes it probable that brain weight also increases as we pass from barbarism to civilization.

TABLE III.

CRANIAL CAPACITY.

Races and Nations.	No. of Skulls	Vol. in Cu. Centimeters
Australians	8	1,228
Hottentots	3	1,233
Peruvians	152	1,233
Americans	341	1,315
Negroes born in America	12	1,323
Mexicans	25	1,338
Negroes (in general)	76	1,347
Negroes born in America	64	1,371
Wild Indians	164	1,376
Parisians (common)	35	1,403
Parisians (Cemetery of ———)	117	1,409
Parisians of 12th Century	115	1,425
Germans	30	1,448
Parisians of 18th Century	125	1,461
Anglo-Americans	7	1,474
Parisians (private graves)	90	1,484
Germans in general	38	1,534
English	6	1,572

Not being able to obtain the direct weights of the brain in sufficient numbers in the various races, we must take the cranial capacity as a general index of the weight of brain.

Geography of Cephalic Index.—Dolicocephaly is almost exclusively located in Melanesia, Australia, India and Africa; subdolicocephaly is found in North and South of Europe, but is met with only sporadically in other parts of the world. Mesocephaly is frequent in Europe, Asia and America. Brachycephaly is limited to Western and Central Europe and some populations of Asia. The ancient fossil skulls are dolicocephalic, the negro races are generally very dolicocephalic, but the greater number of the Mongol races are brachycephalic. The inferior races are mostly dolicocephalic.

The cephalic index may vary in one and the same race to 10 per cent., but when it reaches 15 to 18 per cent., it is due to mixture of race.

The skulls of Parisians of the 19th century are more capacious than those of the 12th century.

Neanderthal Skulls Probably the Oldest.—Human paleontology begins with the Post-pliocene or Mammoth epoch. The Neanderthal skull is one of the oldest; it is like the valvarium of the female gorilla; the superciliary arches are altogether Simian, but the skull is undoubtedly human, having a capacity of 1,200 cubic centimeters. This skull may represent an inferior race, that has disappeared and probably existed at a prodigiously remote period.

Solution of Some Craniological Problems.—It has been found possible to estimate the capacity of the human skull, when this cannot be measured directly. This is done with a mean error of 3 to 4 per cent.[1] It is possible to find the mean skull capacity of a race without the use of sand seed or shot to a degree of accuracy comparable with that of the direct method owing to the personal equation of the measures even when using the same method of direct determination. The determination of the skull capacity of living individuals can be found with a degree of accuracy sufficient to determine whether skull capacity is or is not closely correlated with intellectual power. Thus, craniometry must tabulate means, variables, correlations, and their probable errors in order to draw safe inference and make racial comparisons.

The cephalic index of the cranium + 2 units, will correspond to the cephalic index on the living subject, to whom the skull belonged; two units are subtracted from the cephalic index on the living to obtain that on the cranium; the muscles of the temporal region are thicker than those of the frontal or supraorbital areas.

The age of a cranium is determined according to the number of pieces composing the cranium, their position, structure and conformation also by the obliteration of sutures and the order in which the obliteration of each suture takes place; by the general form of the forehead and the angle of the lower face, when all the dimensions of the skull and the status of dentition are noted.

Some Racial Anomalies of the Skull.—The differences in the form and the dimensions of the skull in correlation with those of the brain serve to distinguish races and species. Thus the Inka bone (one of the wormian bones), between the parietal and occipital bones, is frequent in Peruvian crania —20 times in 100; in negroes 6 times; in Europeans it is still more rare; among Indians of Arizona this bone is more frequent than among Peruvians. The suture of the malar bone is peculiar to Japanese crania—25 to 40 per cent., and only 9 per cent in European races.

Height.—Some facts as to height will be useful to recall in the study of man after death. The length of the humerus multiplied by 5.06, or the length of the femur multiplied by 3.66, equals the height of the man. Thus the height of prehistoric peoples can be worked out.

In height man may vary from 1 m. 25 (4 feet 1 inch) to 1 m. 99 (6 feet 6¾ inches). Below 1 m. 25 man is abnormal or pathological (dwarfism); above 2 meters man is also abnormal (giantism). Both these extremes are sterile. The extreme averages of different populations run from 1 m. 38 (4 feet 6 inches) to 1 m. 79 (5 feet 10.5 inches); the Scots of Galloway,[2] or Scots of the North are 1 m. 78. The stature of man is not more than 2 or 3 centimeters higher than his skeleton.

The length of the trunk in man is more than one-third and less than two-fifths of the height. The arm reach in American soldiers is as 1,043 to 1,000.

Thus it appears that the height of an individual is closely related to the weight of the cerebrum and that brain lesions are often associated with dwarfism.

The Great Difference Between Man and Animal Lies in the Brain.—In all the principles of internal structure, in the composition and function of parts, man is but an animal. It is remarkable that beings should exist so near to each other in their *physical* structure and so wide apart in their endowments and capabilities.

The comparison of the brains of animals brings into view the immense difference between the small smooth brain of a fish and the large and developed brain of man, which is the organ of his thought. The brains of the higher apes are much less complex in their convolutions and much less in both relative and absolute weight. The gorilla's brain barely exceeds 20 ounces in weight, while man's brain hardly weighs less than 32 ounces, though the gorilla's body is considerably larger.

This great difference between man and animal in brain weight is confirmed by a similar difference of cranial capacity which is indicated in Table IV, where it will be seen that the cranial capacity of man is about three times as great as that of the animals nearest to him. It will be noted also, starting with the Newfoundland dog, that the cranial

TABLE IV.

CRANIAL CAPACITY (TOPINARD) IN CUBIC CENTIMETERS.

Man, European male	1,500
16 Gorillas, males	531
3 Orangs, males	439
7 Chimpanzees, males	421
2 Lions,	321
1 Bear	265
1 Newfoundland dog	105

capacity of the animals gradually increases until it reaches man, when there is a great and sudden increase. Likewise as to arm reach, in American soldiers, the arm reach is to the height as 1,043 to 1,001; in the gorilla it is as 1,654 to 1,000, showing a great difference from man. In Sweden the average height is 8 per cent. less than the average arm-reach[4] in soldiers.

Weight and Volume of Brain and Intellectual Activity.—From 11,000 brains weighed, Topinard finds an average weight of 1,361 grains for man and 1,290 grains for woman. The mean weight of the largest brains in Europe is 1,417 grains, taken from 157 brains of the Scots[5] (Reid and Peacock).

The grey substance represents 37 to 38 per cent. of the total weight of the brain. As the thickness of the grey matter is very much the same in all brains the complexity in structure of the convolutions corresponds to the increase of the grey substance and probably of the psychic force. The grey substance is the part exclusively belonging to the mental processes.

Intellectual Activity Probably Increases Size and Quality of Brain.—It is probable that the density of the cerebral substance increases as well as the total volume and richness of convolutions by intellectual activity. The more work a limb or organ of a body does, the more it increases in size, so it is probable that the more the brain works the more it increases beyond its ordinary term of growth and the time for the closing of the sutures is also increased.

If the average man's brain has 100 or more connections for every fact which he remembers, the number of such connections in the brain of the intellectually superior man is probably many times greater. It seems likely, therefore, that an elaboration of brain structure would accompany the higher intelligence.

The Higher the Social Status the Greater the Brain Weight.—As Table V shows, the study of the brains of distinguished personalities has made a beginning. As an illustration of this, it may be of interest to note a few results.

Table V gives the average brain weights of 255 persons[6] according to the nature of their occupation. It will be seen that as the intellectual status of the occupation increases the average brain weight increases. Though the numbers are not large, yet they are sufficient to create a probability of such tendency.

TABLE V.

BRAIN WEIGHT AND OCCUPATION.

Occupation.	Number.	Brain Weight in Grains.
Unskilled laborers	14	1,410
Skilled laborers	34	1,433
House servants	14	1,435
Expert workers	123	1,449
Mental workers	28	1,468
Professional workers	22	1,500

It appears from studies of thousands of brains of all social and intellectual classes that men who never remain employed, often unable to learn a trade, stand lowest in scale of brain weights; then come in rising order mechanics, clerks, business men and teachers in the elementary schools. The highest in brain weight are individuals with marked mental ability as artists, mathematicians, scholars, and statesmen. Also the more numerous, the more sinuous and the more ramified the brain fissures, the greater is the degree of expansion of the cerebral cortex. Vigorous minds possess superior brain organization (Spitzka). The brain of Gauss, the mathematician, for instance, is as far removed from that of the average as the savage is removed from the brain of the nearest ape. These differences usually extend to the weight of brain.

TABLE VI.

DISTINGUISHED PERSONS.

Categories.	Number.	Averages.	Average Brain Weight.
Scientists	57	64.7	1,467.1
Artists and Philosophers	24	57.6	1,479.0
Men of Action	23	61.0	1,516.3
Total and Averages	104	62.3	1,439.3

In Table VI the cases are divided into scientists, philosophers and artists, and men of action as government officials, statesmen, lawyers, and military men. Assuming that intellectual status is reflected in mass and weight of brain in a general way, it will be seen that men of action will average the highest in brain weight.

High Correlation Between Brain Weight and Cranial Capacity.—It has been found that with the exception of cranial capacity, all skull characters are about half as variable as brain weight. The agreement in variability between cranial capacity and brain weight is expected on theoretical grounds alone; and when in practice it turns out to be very close, this gives a general trustworthiness of brain weight statistics. Brain weight has been estimated from cranial capacity. Welcker found an

average coefficient of 0.93. More recent studies have lessened the coefficient. Manouvrier has a good working coefficient of 0.87.

TABLE VII.

BRAIN AND NATIONALITY OF DISTINGUISHED MEN.

Nationalities	Numbers.	Average Weight of Brain.
Americans (including Canadians)	27	1,519
British (including Scots)	14	1,481
Frenchmen	20	1,456
Germans and Austrians	38	1,439

Table VII shows the average weight of brain of American, British, French, German, and Austrian distinguished modern men. The Americans and British show the highest average brain weight.

Ratios Between Large and Small Brain.—The cerebrocerebellar ratio is the weight of the cerebrum as compared with that of the cerebellum, the latter being unity. This ratio is for distinguished men from 1.90 down to 1.80, while the ratio of the average man is 1.77 down to 1.70; that is the ratio is fully a unit higher in eminent men; in other words, the cerebrum or thought apparatus is relatively larger, while the organ of motor coordination (cerebellum) remains relatively reduced.

Exceptions to the Rule Often Due to Pathology.—Quite a number of heavy brains are found in idiots, imbeciles, criminals, insane, and other defectives; also certain laborers have large brains. These facts sometimes are used as an argument against the relation of large brains to superior minds. But these cases are almost always explained by pathological hypertrophy, sometimes shown by grave defects in structure, as diminution in ganglion cells, etc. Age and nature of disease causing death also affect the weight of the brain.

Correlation of Brain-Weight with Other Characteristics.—The degree of correlation of brain-weight with other characters of the body makes possible suitable corrections for bodily differences, as will make feasible any comparison of the brain-weights of different races, or different groups of the same race.[6] This gain shows the importance of preserving the skeleton and viscera in connection with the study of the brain. It has been found that with the exception of capacity, all skull-characters are only about half as variable as brain-weight. So far as investigation has gone (not far as yet), the correlation of brain-weight with age, stature, and body-weight is low. The correlation of brain-weight with skull-length and skull-breadth is, in comparison with other characters, fairly high and for skull-length and breadth positive. There seems to be a steady decrease in brain-weight with advancing age, beginning at about the twentieth year. The correlation of brain-weight with stature and with body-weight is positive. The diminution in brain-weight follows very closely the diminution in the size of the head.[7] While the size of the head increases with stature, it does not increase as fast as stature.

One of the main objects in the study of the relation of the brains to the size of the head is to be able from certain chief measurements of the head to predict within the limit of normal variation the approximate weight of the brain. Thus the probable brain weight of an individual can be determined from stature, age, diametral product and horizontal circumference with a mean error of about 50 grams. The mean deviation in brain weight from the mean of the groups is about 80 grams. That is, we improve the prediction in the ratio of 8 to 5 by taking into account these characters.[8]

Physical Degeneration May Influence Intelligence.—Physical stigmata of degeneration are more serious in proportion to their fundamentality and number. Excessive asymmetries of the head are abnormalities and generally unfavorable signs as to mental status in two-thirds of the cases. The eyes can be too close together (simian) or too far apart (cretin). An imperfect development of the socket of the eye, on account of its close anatomical connection with the brain, may have a concomitant, if not causal, relation to cerebral troubles. Want of development, or excessive development of the bony frame of the nose, are stigmata of degeneration, causing troubles of breathing, influencing the power of attention, and through this the intelligence.

The Future of Nature Points to Cerebral Specialization.—A general conclusion of human morphology is that cerebral specialization on the part of nature is the prime factor in the future as in the past, and is ultimately dependent upon hygienic conditions, which require proper reactions between the vascular, nervous, and other systems. This necessary physiological equilibrium depends upon the adequate exercise of its functions by each system of tissues involved.

What Persons Should Be Studied After Death.—In pioneer work, to which the extensive study of persons after death belongs, it may be necessary to limit greatly the number of cases at first, for there are so few specialists working at this most difficult task. All persons of genius, talent, or special ability perhaps should be selected first. Then come those who have been thoroughly educated, though they may not have either genius, talent, or great ability. Eventually every representative of the many types of men, from the lowest idiocy to the highest genius should be studied after death.

What Parts of the Body Should Be Preserved for Study After Death.—Inasmuch as the results of study of man after death are comparatively very meager, and since very little has been determined, it is best, as in all original work, to have too much rather than too little material, for it might turn out as sometimes happens in new work, that things omitted at first have subsequently proved to be of much value. Owing to inadequate knowledge, it is best to take the safe side. I would, therefore, suggest as a minimum that the following parts of the body be preserved: Brain, skeleton, lungs, stomach, kidneys, liver, and whatever other parts specialists consider important. Whatever material is preserved should be permanently preserved as far as possible, so if not studied at first, it may be accessible to investigation later.

History of the Study of Brains.—Individuals have now and then directed their relatives to arrange to preserve their brains after death. There was founded in 1881 the Mutual Autopsy Society of Paris, for securing elite brains for scientific study. In the United States the pioneer in such effort was the American Anthropometric Society of Philadelphia, established in 1889, followed by the Cornell Brain Association, directed by Professor Burt G. Wiler.[9] Later, Retzius, a Swedish anthro-

pologist, and Tigerstedt, a physiologist, proposed that their colleagues bequeath their brains for purposes of scientific investigation.

Americans Whose Brains Have Been Studied.—Among Americans whose brains have been studied are Hon. Charles G. Atherton,[10] a United States Senator (1854); Abraham Lincoln (1865); Louis Agassiz (1873), a naturalist; Chauncey Wright (1875), philosophical writer; Philip A. Aylett (1878), a blind physician; Edward Seguin (1880), a French-American physician; E. H. Knight (1883), a mechanician; Edward Olney (1887), mathematician; A. Thorndyk Rice (1889), diplomat and journalist; B. G. Ferris (1891), jurist; Benjamin F. Butler (1892), soldier, lawyer, and statesman; Hosea Curtis (1893), mathematician and educator; Walt Whitman (1893), poet; Garrick Mallery 1894), ethnologist; James E. Oliver (1895), mathematician; George McKnight (1877), physician; Caroline B. Winslow (1896), a physician, the only American woman whose brain has been studied; Edward Charles Seguin (1898), physician; Frank Collier (1901), lawyer; Henry Wilson (1902), Vice-President of the United States; John W. Powell (1902), ethnologist and geologist; James B. Pound (1903), lecturer, manager, and soldier; George Francis Train (1904), merchant and traveler; Alexander Winchell (1904), geologist and educator; Samuel D. Gross (1905), physician; Isaac J. Wistar (1905), scientist and philanthropist; W. J. McGee (1912) (death mask made), ethnologist (the results of the study of his brain have not at this writing been given).

Dedication of Our Bodies to Science Increases Future Usefulness.—The author has signed over to science his body, including skeleton and viscera, as well as brain, for reasons already advanced in this article, and he would urge all persons to be willing to do likewise, especially those who have had the advantage of higher education and professional careers.

If we had knowledge of the bodies of our ancestors, including their ages at death and their different diseases; if also their physical measurements, color of hair, eyes, and skin were known; if, in brief, we were in possession of adequate knowledge of the physical nature of our ancestors before and after death, then we would know better how to protect ourselves from the physical weaknesses to which we are most susceptible. If, in addition to this, we knew the mental and moral characteristics of our ancestors as well as their physical, then we would be following the maxim, "know thyself." Such knowledge would be power, enabling us to live more rational, useful, and truly happier lives, with less solicitude for personal enjoyment and more willingness to make sacrifices.

Just as we are benefited by knowledge of our ancestors, from whom we have received most of what we are, so we in turn should make our ancestorship beneficial to future generations.

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100 EAST CAPITOL STREET.

THE BORDEAUX CONCEPTION OF LETHARGIC ENCEPHALITIS OR EPIDEMIC ENCEPHALOMYELITIS.

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FROM September to the end of December, 1915, while I was in Commercy, then at Verdun from December to the middle of February, 1916, and, finally, at Bar-le-Duc, centers of military sanitary service, where I had the direction of the Neuropsychiatric Service, I had remarked the great frequency of cases of encephalomyelitis of a type different from the ordinary. In April, 1917, therefore, before Von Economo and Netter, working with Moutier and Calmette, I was able to study forty of these cases. The description which I then published of these cases under the title of "Subacute Encephalomyelitis" was identical with the syndrome since described under the name lethargic encephalitis. The following is what I wrote at that time:

"From the first it has been quite easy to diagnose the cerebello-protuberantial, cerebello-bulbar, or medullary lesions, but it was necessary to exclude in succession the hypotheses of hemorrhage or softening of a tumor, of diabetes or uremia, of tuberculosis or syphilis, and the same with regard to the central lesions denominated polioencephalitic, studied by Medin and the Americans. One did not meet here with the distinctly epidemic characteristics of violent onset, high fever, vomiting, severe pains, wide extension of paralytic troubles, subsequently limited to certain muscle groups, and more or less considerable ensuing atrophy. In many cases with a moderate febrile reaction one might question whether one had not to do with some typhoid or paratyphoid infection running an extremely mild course, but examination of the blood gave no positive result. The hypothesis of an aborted cerebrospinal meningitis was also not tenable for examination of the cerebrospinal fluid, although it often showed a lymphocytic and albuminous reaction, was always negative as regards microorganisms. However, it was difficult not to be struck with a certain family resemblance of the symptoms of these affections. Thus one was led to place them among the central nervous affections of attenuated virulence. Their clinical characteristics generally were the following:

"*Onset.*—At the beginning the patients complained of extreme lassitude, physical and mental debility. They had no violent headache, but complained of a sensation of weight in the head. Fever was usually absent, but occasionally there was a slight elevation of temperature, between 37.5° and 38° C., for a few days. In some cases in which it has been more mild it has seemed rather to have referred to some spinal complication in the clinical course such as hemorrhage or bulbar asphyxia. These patients, aged usually between twenty-five and forty-five years, all presented a dull facies, indifference, semitorpor, and emaciation, with an earthy hue of the skin, sometimes subicteric, and gave the impression of some profound infection or intoxication.

"*Clinical Forms.*—There was a variety of clinical forms which might be grouped as follows:

"1. The mental form in which the cerebellar torpor, anemia, pupillary troubles, trembling, dysarthria, even paraphasia, and the reaction of the cerebrospinal fluid led one to think first of a sort of general paralysis or of some variety of dementia.

"2. The convulsive form in which the attacks simulated an epileptic status, but this was generally only temporary.

"3. The choreic form having all the characteristics of infectious chorea of the adult.

"4. The meningitic form in which the meningeal reactions, rigidity, Kernig's sign, rachialgia, somnolence, and vasomotor phenomena, always associated with profound and lasting encephalitic troubles, could not be explained by any of the known causes.

"5. The hemiplegic, or rather the paretic, form which, in its rapidly progressive course and its arrest at a certain stage of its evolution, was distinctly to be differentiated from the ordinary hemoplegia of the adult.

"6. A pontocerebellar form with ptosis, conjugate paralysis of the eyes, and titubation, and a simple cerebellar form, often giving a deceptive resemblance to the symptomatology of tumor of the cerebellum.

"7. A bulbo-protuberantial form with various nuclear lesions affecting the nerves of this region, the trigeminal, facial, and vagospinal.

"8. An acute ataxic form resembling in certain features toxiinfectious polyneuritis.

"9. An anterior poliomyelitic form, the characteristics of which, at least the initial characteristics, lead on to think of infantile paralysis—an exceptional form, however.

"*Evolution.*—The evolution of these clinical types, often mixed, follows no special course, and in spite of their polymorphism shows a resemblance between the different forms. Except for two cases of death occurring suddenly, one in the course of status and the other from bulbar asphyxia, the convalescence was very tedious, and the asthenic and somnolent patients returned slowly to health and often showed sequels having reference to their anatomical lesions, such as paralysis or spasmodic conditions, cerebral fatigue, muscular atrophy, trembling, etc.

"*Nature.*—The culture and inoculation of the blood into guinea pigs, as also examination of the

cerebrospinal fluid systematically carried out, gave no results. In the case of the patient who died suddenly of bulbar asphyxia, a certain quantity of the region most affected in the bulb was ground up with a cubic centimeter of physiological serum and injected into the brain of a rabbit, but without the slightest result. We were, however, poorly situated to make pathogenic researches, for most of the patients came to us in the stage of full development of the disease, at a time when the infection was declining. Thus many of the symptoms still not well known readily passed unperceived, especially taking into consideration in many cases the slight intensity of certain manifestations and their indefinite character which sometimes suggested merely an exaggerated fatigue or the muscular soreness of over exercise."

Thus ever since my first communication I insisted upon the polymorphism of the disease which recalled in certain of its aspects Medin's disease, but which was to be differentiated from it by the rarity of the medullary localizations and the frequency of encephalic symptoms, the irregularity of the fever which was usually of slight degree, the ordinary absence of pain, and the persistence of cerebral torpor. I also emphasized the dull facies of these patients, their asthenia, their *somnolence*, and mentioned also the lengthy convalescence.

Toward the end of 1917, I published an article in the *Revue Neurologique*[2] calling attention again to these little understood cases, but nevertheless they continued to escape observation in France until the communication by Netter, in March, 1918, on lethargic encephalitis. I have never ceased to regard this title as inexact, for I have shown by the foreign literature and my personal records that the symptomatic tripod noted by M. Netter, namely, lethargy, fever, and ocular paralysis, was not in evidence in all these cases. I had always held that lethargic encephalitis was only a special form of diffuse encephalomyelitis such as I had described in April, 1917[2]. This conception, which was adopted in Bordeaux,[3] was promptly confirmed by numerous communications on lethargic encephalitis published in France since the end of 1919,[4] at Lyon, Montpellier, Nancy, Angers, and especially Paris. MM. Chauffard, Pierre Marie, Achard, Widal, Sicard, and others were in close accord with my point of view on all the clinical anatomico-physiological and nosological facts.

As to the detail of certain clinical forms, such as the myoclonic form or type of the electric chorea of Dubini, the theories advanced, especially by M. Sicard, repeat and reenforce in a very remarkable degree my personal views expressed long before. In 1907, I had insistd upon the rhythmic character of Dubini's chorea and the distinctive difference between these movements and those of chorea, classifying them under the name of "rhythmia," which is preferable to the more vague term myoclonia.

These acute "rhythmias," as we indicated from the beginning, are always symptomatic of grave cerebrospinal troubles, especially tuberculous meningitis and central complications due to typhoid fever, alcoholism, syphilis, measles, bronchopneumonia, etc. One of their essential characteristics is sleep or coma, contrary to what is found in tic or true chorea. The prognosis in these cases is more commonly fatal.[5] These various peculiarities are found in rhythmic encephalitis or actual myoclonia, of which numerous cases have been described in Bordeaux, Lyon, Paris, and elsewhere.

In conclusion the facts above noted established the following:

1. The form of encephalitis characterized as lethargic in May, 1917, at Vienna, and in March, 1918, at Paris, was described by me on April 27, 1917, as one of the forms of subacute or diffuse encephalomyelitis.

2. The Bordeaux conception of lethargic encephalitis or rather epidemic encephalomyelitis (or Cruchet's disease, as it is still called in the Gironde region), is in fact that which has been adopted in England, the United States, Spain, and the South American countries; accepted first in France in the great local centers such as Lyon, Nancy, and Bordeaux, it has finally been accepted also in Paris.

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8 Rue du Champ de Mars.

EPIDEMIC ENCEPHALITIS.

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CROOKSHANK speaks of this disease as being 450 years old. In 1695 Albrecht of Hildesheim spoke of lethargic fever and strabismus. A disease similar to epidemic encephalitis was described by Camerarius in 1712, following an epidemic of grippe. The disease was seen in Germany in 1745, in Lyons in 1800, in Milan in 1802, and Southwestern Europe (upper Italy and Hungary) in 1889-90; in the United States and other countries in 1895. It was noted that it followed the pandemic of influenza (1889-92) and was termed "nona." Mauthner, who had an opportunity of studying the pathology of this disease, called it acute hemorrhagic polioencephalitis. In April, 1917, Economo described a clinical syndrome which he termed lethargic encephalitis. It apparently antedated the recent pandemic of influenza. Brunell, an Australian observer, described a similar syndrome in the fall of 1917. Early in 1918 Netter described

cases in France. A number of English observers, among them Harris, Hall, and Wilson, reported instances of this disease. It was at first thought to be botulism, in view of the food conditions during the war. It was later thought to be poliomyelitis on account of the similarity in the pathological process of the two diseases. In 1918 the disease was made reportable in England; a commission was appointed to study this clinical entity. It published its conclusions in a "Report of an Enquiry into an Obscure Disease; Encephalitis Lethargica." In America the disease made its appearance early in 1918, but did not reach epidemic proportions until toward the end of the year. In February, 1919, the New York Neurological Society proposed that it be made a reportable disease. Reports were made in this country by Sachs, Kennedy, Bassoe, Neal, Abrahamson, and many others.

Pathology.—The pathology of this disease consists essentially of microscopic lesions, although there may be evident, in the gross, hyperemia of the meninges and pial edema. Very frequently minute hemorrhagic areas are seen and occasionally larger infiltrations are noted. Microscopically, we find perivascular infiltration of cells, including lymphocytes and plasma cells, but no polynuclear cells. There is also a diffuse invasion of the nervous tissues by round cells. Bassoe and Hassin found plasma cells in the ganglion cells of the subthalamic region. This cuffing of the vessels is similar to that seen in poliomyelitis, in rabies, and other low grade infections of the nervous system. It is apparently a response to a virus which is not sufficiently virulent to produce a polynuclear reaction. The lesions rarely lead to actual necrosis, but seem to interfere by vascular compression with the nutrition of the areas affected. The disease process may invade any part of the nervous system, but the favorite sites seem to be the basal ganglia and the central gray matter surrounding the aqueduct of Sylvius. This special localization explains the clinical pictures encountered in this disease. The cord changes are slight. In the cortex the ganglion cells show degeneration and are either surrounded by phagocytic glia cells or invaded by them (neuronophagia). There is usually some proliferation of glia cells. The virus probably reaches the nervous system from the nasopharynx. This has been demonstrated by Strauss and Loewe.

Symptomatology.—From what has been said one can readily see that epidemic encephalitis may give rise to various clinical syndromes. Marie, in 1890, spoke of these cases as acute multiple sclerosis. As a matter of fact, the disease is protean in its manifestations, but the vast majority of the cases show the evidences of mid-brain involvement. The incubation period is variously given as 10 to 21 days, and the prodromal period may last from a few hours to three weeks. The most striking symptoms are lethargy*, asthenia, muscular rigidity, and mask-like facies. These are present in most of the cases seen. The mode of onset is usually insidious, although some cases show an apoplectiform invasion. There usually are malaise, fever, which rarely reaches a high level, and weakness. The patients usually also show headache, some occipitocervical pain, slight rigidity of the neck, and in over 60 per cent. of the cases give a history of diplopia. In the cases with meningeal involvement there may be a suggestive Kernig sign. This, however, is not very common.

Of the cranial nerves, the one most commonly affected is the third. The internal branches are more often involved than those supplying the extrinsic ocular muscles. The pupils respond sluggishly to light and accommodation. There may be paralysis of accommodation. The other ocular nerves are also affected but much less frequently. Their involvement gives rise to ptosis, strabismus, and failure of convergence. The diplopia is easily accounted for by these ocular palsies. There is frequently a mild nystagmus in all directions. The lateral movements of the eyes are frequently carried out in "cog-wheel" fashion. There is often marked limitation in the upward movement of the eyes. This is due to lesion of the cephalad portion of the posterior longitudinal bundle. The optic discs rarely show definite pathological changes, although we have seen occasional papilloedema and even hemorrhages. A number of these cases have begun with trigeminal neuralgia from involvement of the fifth. Many of the cases showed facial paralysis of the lower motor neuron type. The incidence of seventh nerve palsy was only second to that of the third. The facial paralysis was frequently double. In most of the cases it was more evident on emotional innervation, suggesting the thalamic origin of this disturbance. Involvement of the labyrinthine division of the eighth with vertigo has also been noted. Inability to fully protrude the tongue, disturbance in the motor innervation of the palate, difficulty in swallowing, salivary drooling, impairment of chewing, and dysarthria, all suggestive of that type of pseudobulbar paralysis seen in basal ganglia disease were frequently noted. A phenomenon similar to the "fress-reflex" of Oppenheim has been noted by me in a number of the cases. These patients ate voraciously and showed a more or less definite tremor of the lower jaw. In one patient there was a persistent tachycardia out of all proportion to the rest of the findings. This patient also showed glycosuria which had not been present previously. There was some irregularity in breathing. All of these signs pointed to probable involvement of the medulla (fourth ventricle).

Many of the cases showed choreiform movements. There was a certain amount of general muscular rigidity together with the so-called "cog-wheel" phenomenon, in the execution of muscle movement. This rigidity is probably due to irritation of the tonus-controlling extra-pyramidal motor mechanism, and gives these patients the attitude of paralysis agitans. Pain usually occurred early and was associated with a certain amount of general hyperasthesia. In some of the cases the pain was radicular in type (due to posterior root involvement) and was accompanied by myoclonic movements. Hiccough was a symptom frequently noted. Abdominal tics were also commonly observed. In some cases convulsions occurred, but these were rare.

The deep reflexes were rarely altered. The ab-

*In encephalitis, lesions exist in the floor of the third ventricle. Trömner has postulated a sleep center in this area. Chronic alcoholics with persistent coma have shown lesions in this region.

dominal wall reflexes in our cases seemed depressed except in those associated with radicular pain. Here they seemed overactive. It is interesting to note in this connection that the abdominal wall reflexes are phylogenetically a late acquisition; they are first seen in primates and are not present in the newborn infant. It seems that their reflex arc is particularly vulnerable. Of the pathologic reflexes, Babinski was observed fairly frequently but rapidly disappeared. Definite pyramidal tract phenomena were not common. Many of the cases, particularly those showing the Parkinsonian syndrome, showed profuse perspiration and a subjective sense of heat.

The mental state of the cases varied from active mania to severe depression. Delirium was common. One of our cases showed a definite jocoseness (witzelsucht) so commonly seen in frontal lobe lesions. Many of the cases showed mild confusion. A certain amount of euphoria existed in most of the cases seen, but in our judgment this was not a true euphoria. The patients simply showed emotional indifference. This can easily be explained on the basis of the favorite localization of the pathologic process in the basal ganglia. We know that the optic thalamus is the center of our affective life; it is the seat of our perception of pain and pleasure in the sense described by Head. Disease of this region produces, therefore, a loss of emotional tone. The expressionless facies, the thalamic type of facial paralysis, the occasional occurrence of hemianopsia, and central (thalamic) pains, all seem to point toward disease in this area.

The occurrence of choreiform and athetoid movements, some of which persisted long after convalescence was definitely established, also indicates the selective affinity of the virus for the basal ganglia. The cases showing katatonia resemble very much some types of dementia præcox. The general muscular rigidity, which is very much like that seen in pseudosclerosis (Strumpell-Westphal) has been ascribed to lesion of the corpus striatum, the choreo-athetosis to lesion of the thalamic or subthalamic region. The ataxia is said to be due to lesion of the brachium conjunctivum. Marburg divides the brachium conjunctivum fibres into three groups: tegmentocerebellar, lesion of which produces athetosis, thalamic fibres, injury to which causes chorea, and cortical fibres which are concerned in the production of tremor. He also ascribes ataxia to a lesion of the tegmentum between the substantia nigra and the oculomotor nucleus. Strumpell has recently linked up pseudosclerosis, progressive lenticular degeneration, dystonia, musculorum deformans, paralysis agitans, and the syndrome du corps strié (C. Vogt). He groups all of these under the term "amyostatic symptom complex" and ascribes them to changes in the corpus striatum, thalamus, subthalamic region, pons and dentate nucleus.

Retention of urine early in the disease was very frequently observed. This bladder symptom is due to involvement of its center in the basal ganglia. Experimentally, irritation of the midbrain leads to dilatation of the pupils, sweating and contraction of the bladder.

The spinal fluid findings, as a rule, were meagre. In some of the cases there were no abnormal findings. In others there was a slight increase in the globulin and a moderate increase in the number of cells, most of which were lymphocytes. In these cases the spinal fluid tension was usually slightly increased and the puncture often gave some relief.

Prognosis.—The mortality rate varied with different observers, and is given as ranging between 15 and 50 per cent. Altered mental states, cranial nerve palsies, may remain as sequelæ. I have noted a number of instances of stubborn and persistent headache. The paralysis is rarely permanent because the lesions are not, as a rule, destructive in type. The Parkinsonian cases usually are longest in duration and are most apt to remain permanently impaired. So, too, the cases with choreiform movements seem to be less likely to recover from their ailment. The fixity of the pupils may remain more or less permanently, and we may have to revise our notion on the significance of a fixed pupil. It is still premature, however, to make dogmatic statements with reference to the final outcome of these cases. There is a tendency in some cases to chronicity with periodic exacerbation of symptoms.

Bacteriology.—The bacteriology of this disease was studied by Wiesner, who produced the disease in monkeys, the brains of which showed the characteristic pathological changes and from which he recovered a pleomorphic coccus. He found that his streptococcus pleomorphus, besides causing encephalitis, produces a peculiar hemorrhagic diathesis. This may account for the apoplectiform onset in some cases. Landsteiner demonstrated the same organism in cases of polymyositis. Cleland and Campbell succeeded in giving the disease to the horse, calf and sheep. Wilson recovered an organism from the cases of acute infective polyneuritis (a form of encephalitis), which Bradford described. He also gave the disease to monkeys. Sabatini recovered a Gram positive diplococcus from these cases.. Strauss and Loewe have recovered an organism from the brains of these cases. They have been able to reproduce the disease in monkeys and rabbits, and have passed the organism through more than sixteen generations. Levaditi has confirmed their work. All observers are agreed that the virus belongs in the group of filtrable organisms, and is similar to the globoid bodies described by Flexner and Noguchi in poliomyelitis.

Relation to Poliomyelitis.—The relationship between this disease and poliomyelitis is very close pathologically. The virus in both cases apparently reaches the brain from the nose and throat. Yet the localization is different, poliomyelitis attacking chiefly the cord, while encephalitis seems to favor the midbrain. The seasonal incidence is different, poliomyelitis usually occurring in the spring and summer, while encephalitis seems to run parallel with influenza during the fall and winter. The paralyses, too, are more or less permanent in poliomyelitis and more transitory in encephalitis. MacNalty, of the British Commission, speaks of the relationship between poliomyelitis and encephalitis as being similar to that between typhoid and paratyphoid.

Diagnosis.—This disease must be differentiated from tuberculous meningitis. The absence of clin-

ical evidence of tuberculosis elsewhere, the absence of the tubercle bacilli containing pellicle in the spinal fluid, the animal inoculation test and the subsequent course should help to eliminate it. Tuberculous meningitis, too, usually occurs in the first years of life and is rare after the age of ten. In encephalitis 40 per cent. of the cases occur in those over ten years of age. The meningitic signs also are more marked in tuberculous meningitis. The serology serves to differentiate it from cerebrospinal lues.* Early in the course of the disease typhoid and influenza would have to be ruled out. The clinical manifestations are so manifold that almost every neurologic syndrome can be produced. We have seen one patient in whom the diagnosis of progressive muscular atrophy was made. This was due to the marked spinal involvement in this case. Another of our cases showed the clinical evidences of involvement of the pulvinar (hemianesthesia-hemianopsia).

Treatment.—This is wholly expectant and symptomatic. Spinal puncture helps in some instances.

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74 EAST NINETY-FIRST STREET.

CLINICAL LOCALIZATION OF THE VERMIFORM APPENDIX.

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LOCALIZATION of this process has been described elsewhere[1] under the head of "Abrams' Electronic Reactions." The following simplified method is easier of application.

Exactions.—The subject must stand facing the geographical west, preferably grounded on a metal plate connected by wire[2] to a faucet or radiator. A wire attached to subject's leg and connected with radiator or faucet suffices.

Method.—Pass either pole of a bar magnet slowly over the right inguinal region and then percuss. An area of dullness in the norm can be elicited, as a rule, midway between a line drawn from the right anterior superior iliac spine to the navel. This area of dullness corresponds to the appendix. This method of localization has been repeatedly confirmed by the *x*-rays.

Note that the dullness may persist for hours; that it descends during forcible inspiration and ascends during expiration, provided there are no adhesions.

Note that the dullness is dissipated at once if the patient swerves to the magnetic meridian, and that dullness returns when the posture facing west is resumed.

If the positive pole of a magnet were used, the negative pole of the same magnet presented to the area of dullness would dissipate it and *vice versa.* If a horseshoe magnet (neutral radioactive energy) were used, the dullness would be dissipated by grounding the dull area with an electrode leading to a ground plate, radiator, or faucet. If the physician facing west presents his grouped finger tips (right hand) to the right inguinal region after the manner suggested in using the magnet, the positive energy of his finger tips will elicit an area of percussional dullness which can be dissipated by the finger tips of his left hand (negative energy).

If the subject separates his feet and arms from the body during percussion, dullness is accentuated.

The foregoing data are easy of confirmation. They show that the appendix is essentially a "tissue condenser" to store energy and may be employed for that purpose in constipation.

The writer has already shown[3] how the appendix may be emptied and how this fact may be ultilized in appendicitis. It remains to be observed how a diseased appendix may respond to the methods suggested by the writer.

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2135 SACRAMENTO STREET.

*It may be that the cases of exhaustion pseudoparesis recently described by J. Ramsay Hunt were early instances of the subsequent epidemic of encephalitis.

French Children and the War.—In a recent report submitted by the American Red Cross Headquarters at Lille, France, based on figures furnished by the Municipal Bureau of Hygiene, the effects of the war on French children are given. The prewar population of Lille was 200,000. The birth rate has shrunk from nearly 4,900 in 1913 to only 600 in 1918, the actual figures indicating a total loss of 15,000 births during the war. The death rates according to ages are not known, but since the armistice a survey has been made in all public and private schools with a view to obtaining appropriate food for all children whose development has been retarded and to place all those who show signs of tuberculosis in the care of institutions and welfare organizations. Of 18,000 children in school at Lille at the time of the armistice, over 6,000 had to be sent to hospitals or convalescent centers. This survey indicated that 60 per cent. of the school population showed signs of arrested development, while about 40 per cent. gave evidence of ganglionary or pulmonary tuberculosis. In one typical school, out of two hundred and ten examined, only one was in normal health.

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CANCER OF THE ILEOCECAL VALVE.

MALIGNANT disease of the ileocecal valve is one of the most uncommon growths of the intestinal tract. Its frequency is difficult to state statistically because up to date it has been studied either with cancer of the terminal portion of the ileum or as a particular type of cancer of the cecum, which, according to Desmaret, is the starting point in 66 per cent. of the cases. Quite independently of cancers of the valve which are merely extensions of cecal neoplasms, and those of the terminal portion of the ileum, there is a cancer of the valve strictly speaking. It frequently invades the cecum and respects the ileum, causing little, if any, stenosis there; this is the typical ileocecal valve cancer. There is, however, yet another form which appears to be about as frequent, namely, the growth which arises on the ileal aspect of the valve, in no way involving the cecum, invading the last portion of the small intestine, and resulting in a very tight stenosis.

The cecovalvular and ileovalvular forms offer themselves for study in two different aspects: a laterally situated tumor implanted on a rather broad base, on one of the lips of the valve and spreading out in the cecum or ileum; an annular growth—ring cancer—much more common, which involves both lips of the valve, and assumes the aspect of a thick cuff closing down the valvular opening. This cuff invades the proximal side of the ileum, transformed into a narrow canal ending sharply in a point. On the cecal aspect, extension takes place on a much larger scale, reaching the ascending colon or even going beyond. Involvement of the regional lymph-nodes is not common, at least it is late in occurrence, the neoplastic invasion involving only the lymph-nodes in near relation to the lesion, those situated further away presenting only inflammatory changes. The mesentery is often involved; visceral metatases, which are infrequent, are encountered along the digestive tract, in the liver, lung, and ovary.

Malignant growths of the ileocecal valve give rise to two sets of accidents: (*a*) to early phenomena of incomplete intestinal occlusion and chronic occlusion, which manifest themselves by characteristic symptoms, such as pain, variable gastrointestinal disturbances, one of the most frequent being periods of constipation followed by copious diarrhea. (*b*) Later on these early disturbances become systematized. The dilatation and hypertrophy of the muscular layer of the ileum and mucous hypersecretion give rise to Ricard-Mathieu's syndrome, namely, clapotage and declivous pseudo-ascitic dullness. The symptomatology is completed by intestinal evacuations and the presence of a tumor in the right iliac fossa. The evolution of this showy progressive form of occlusion ends either in acute intestinal occlusion, which may be the first symptom of the process, or in a series of temporary attacks of acute occlusion and finally in cachexia. Or, on the other hand, cancer of the ileocecal valve may produce accidents of chronic invagination of the ileocecal segment into the large intestine. This is special to growths of the valve, cecal growths rarely giving rise to it. The neoplasm of the valve remains mobile for a long time without adhesions to the surrounding viscera. Two principal symptoms characterize invagination of the valve: a tumor and passage of a bloody mucous discharge. The invagination can never be reduced and will require resection of the portion invaginated. Briefly, the rapidity of the accidents of stenosis and chronic intestinal occlusion and frequency of invagination are the essential characteristics of this lesion.

Treatment of ileocecal cancer is, of course, surgical, and is one of the best examples of the utility of medicosurgical collaboration. The physician will be consulted for the painful phenomena and gastrointestinal disturbances, and it rests upon him to make an early diagnosis which is the prelude to a successful surgical interference.

THE ETIOLOGY AND PATHOGENESIS OF OSTEOMATA OF THE ORBIT.

FROM the viewpoints of both etiology and pathogenesis the origin of orbital osteomata is most obscure. Sichel and Mackenzie were of the opinion that these growths resulted, in some cases, from trauma, but that syphilis and scrofula played the most important part in their production. According to Chauvel, scrofula does not appear to have much if any importance in the etiology as he never met with any instances of this morbid process where it could be invoked. Wecker maintained that if exception were made of the rare instances of syphilitic exostosis, the only etiological factor was the arthritic or rheumatic diathesis, and still this was in contradiction with the ages of the patients presenting osteomata of the orbit. Out of a total of forty-nine cases Berlin found only two in which there was a syphilitic history, one of them being cured by antiluetic treatment. Berlin believes that traumatism may play a part in but few instances, and explains this infrequency by the fact that the orbital walls are protected against external violence. Tchilinghiroff found a history of traumatism in eleven cases out of a total of sixty, or 18 per

cent., and states that this factor so frequently invoked can only be regarded as probable in osteomata of the margin of the orbit as in all the eleven cases this was the site of the bony growth.

Modern views regarding scrofula, syphilis, and the arthtritic diathesis in the etiology of many affections have been, rightly or wrongly, rather against them in many instances, but in the case of osteoma of the orbit it is probably correct to say that these factors have little or no part whatsoever in the causation of this neoplasm. These growths may, perhaps, be related to some disturbance of evolution at the time the walls of the orbit and those of the sinuses are forming. The fact that they grow very slowly and that their onset takes place in early life lends support to this view. It is, in fact, surprising to note that the majority of bony tumors are manifest in very young subjects and have existed from early life. Of seventeen cases of orbital osteoma in which the patient's age was given, Chauvel found eight who were between ten and twenty years old, two between twenty and thirty, five between thirty and fifty, and two over fifty. Tchilinghiroff's results are likewise striking in this respect. Of fifty cases in which the age is given thirty-two subjects were from fifteen to twenty-five, eight from twenty-five to thirty-five, and ten were over thirty-five years old. On account of the very slow evolution of the growth too great an exactitude cannot be attributed to these figures, but it nevertheless is apparent that the greater number of cases begin during the period of growth, or between ten and twenty-five years of age. There is, consequently, in this respect an analogy between these morbid productions and osteomata of the epiphyses in adolescence, and Duplay was of the opinion that osteomata of the orbit were growths resulting from the nutritive activity of early life. It is also known that the orbit is the region which offers the most variations in its embryonal evolution. On the one hand, the frontal and maxillary sinuses continue their development up to an advanced age; on the other, the connection existing between the different bones, particularly the frontal, superior maxillary, ethmoid, etc., is so close that reciprocal disturbances may occur during their development.

THE FAILURE OF A MISSION.

THE newspapers report that Dr. Serge Voronoff of Paris, who figured somewhat conspicuously in the cables last autumn as the discoverer of the rejuvenating virtues of the "interstitial glands," has recently arrived in New York. His method differs from that of Brown-Séquard in that he follows Lydston's operation of engrafting a section of the gland itself instead of injecting a testicular extract. According to the *Tribune* of July 19, Dr. Voronoff, the day after his arrival in this country, announced that his purpose in visiting America was to carry his operation a step farther by using the human testicle instead of that of an ape or other animals. the French law forbidding such an operation. He was confident, he said, that he could graft the "interstitial gland" of a man to whom death had come while he was in perfect health into the body of an old man with most beneficial results to the latter, providing he was in a position to obtain the gland immediately after death. The victim of an accident or of the electric chair at Sing Sing would yield a suitable gland, he said.

This is awfully discouraging. We had hoped that one of the minor blessings flowing from the great tragedy of the war would be the freedom of our devoted country from further exploitation by foreign inventors and discoverers of medical wonders —the turtle serum vendors and the twilight sleepers. But now with Germany down and out, up pops France. It was hoped and expected that she would take the place which belongs to her as the leading exponent of Continental medicine, but this is a sorry beginning. There has been a good deal of indignant criticism of Dr. Voronoff's presumption in coming to America to advertise as his own a procedure which was introduced as long ago as 1914 by Dr. Lydston of Chicago and has been practised in this country since then many times and by many surgeons. It does not seem credible, however, that any man would knowingly carry such a load of coals to Newcastle, and we are inclined to believe that it never occurred to him that anyone in the wilds of America could have previously evolved such a brilliant idea. His journey will not have been in vain, however, if its outcome serves to warn others against such foolish enterprises.

ACTION OF THE *X*-RAYS ON THE SUPRARENAL GLANDS.

THE *x*-rays behave toward the suprarenal glands in the same fashion as they do in the case of other glands of the organism when given in sufficient doses—they diminish the functions. When given in cases of hypertension, the *x*-rays will diminish the blood-pressure, as the clinical experiments of Cottenot (Thèse de Paris, 1913) have amply proved. This fact brings up another argument in favor of the theory which considers hypernephria as a factor of hypertension, because a rational therapeutic measure is brought to bear on the very cause of this functional disturbance, and at the same time that the pressure drops, the symptoms due to hypertension improve. The value and duration of the lowering of the blood-pressure, as well as the functional changes, are variable according to the subject. In some patients the improvement has been maintained for months, in others it has been necessary to renew the *x*-ray applications from time to time. It is in the purely hypertensive cases without appreciable renal lesions that the best results have been obtained, and subjects with mild arteriosclerosis without albuminuria have also been benefited. In albuminuria with high blood-pressure, the latter has been decreased, but no functional improvement naturally takes place. In cases of albuminuria with arteriosclerosis the treatment has been found of no avail, although the amount of

albumin is not increased by the treatment. By massive repeated radiations, Cottenot has been able to produce lesions of the suprarenals in dogs. The lesions were found in both the medullary portion and the cortex of the kidney, the latter being less involved. The lesions consisted of destruction of the cells by cytolysis and chromatolysis. In one animal a transformation *in situ* of the glomerular cells was found which in their shape, cytoplasm, nucleus, etc., had become identical with the normal cells of the fascicular portion. This can be interpreted in two ways: either the *x*-rays hastened the normal evolution of the cells of the glomerulæ or the process was a supplementary one destined to replace the destroyed cells. All these lesions have been found in dogs autopsied from eight to forty days after beginning the *x*-ray radiations. The suprarenals of animals who had been *x*-rayed for months were found absolutely intact, so that if in these cases if there were glandular lesions they must have been transient and the prolonged action of the rays did not prevent the regeneration of the gland. In only one dog was there any marked lowering of the systolic and diastolic blood pressures, and this was one of the animals whose suprarenals showed on post-mortem examination important destructive lesions.

Pseudo-Pregnancy in a Subject with Major Hysteria.

Infroit and Royole relate a case published in the *Bulletin et mémoires de la Société anatomique de Paris* for January, 1920, xvii, 1, of a woman aged 40, very subject to crises of major hysteria, both convulsive and vertiginous. She had never been pregnant but was fond of the pretence that she had had a romantic love affair and had become pregnant. She presented the abdominal enlargement and gait of advanced pregnancy and there was no sign of menstruation in the hospital in which she had for some months been interned. Upon special examination she gave the appearance of a woman 7 or 8 months pregnant and there was marked tympanitic resonance in the left hypochondriac region, as if the intestines were crowded into that area. The gynecological examination revealed that the internal genitals were quite intact. The abdomen showed marked resistance to palpation but upon diverting the attention it became supple for the moment, once more to simulate a gravid abdomen. To exclude air-swallowing, the only condition which could come and go in this fashion, the radioscope was used and it was found that the patient was an aerophage. This behavior seemed to be voluntary and deliberate, the woman swallowing air forcibly until she had produced the distention. The diaphragm did not participate in the mechanism. The gas presumably escaped through the anus, but this does not seem to have been proved outright. Purgatives evidently prevented the simulation on account of the increased pressure in the intestine, while after administration of paregoric and bismuth simulation seemed to be facilitated. The diagnosis in brief was simulation of pregnancy by voluntary air swallowing without participation of the diaphragm by a woman of notorious hysterical makeup and behavior.

Plurality of the Organisms of Syphilis.

Pagniez contributes an article on the recently published finds of Levaditi and Marie in *La Presse Médicale* for May 1, 1920, xxviii, 27. Despite the plausibility of their position on the dualism of virus the question has not been completely settled. It has been proved that when the virus of a paretic brain has been passed through the rabbit a syphilis is developed which differs from banal syphilis. But this cannot be shown to mean that the original syphilis in the paretic was of a special form, for the organism may have undergone a mutation in the diseased brain. It has yet to be shown that the same change does not occur in an ordinary tertiary lesion. In other words, we have not yet been shown that this difference in virus means that there is a special neurotropic form. But these questions may be attacked in the laboratory, so that speculation is out of place. The possibility of special strain should also be studied in connection with other metasyphilitic affections, for clinically the latter, of which there are a number not associated with nervous lesions, are distinct from ordinary gummatous syphilis. So far as the general trend of microparasitology is concerned multiplicity in specific germ life is shown by the increasing use of polyvalent serums in practice. This idea is inseparable from that of manifold strains of all pathogenic germs. We see this tendency in regard to the tubercle bacillus, the pneumococcus, the streptococcus, etc. A priori there is no reason to predict that the treponema will be an exception in this respect. The belief in a neurotropic strain of the spirochete should not have too much cold water poured on it, for it gives some hope that a remedy for paresis and tabes may some time be devised.

News of the Week.

International Conference on Tuberculosis.—Announcement has been made by the National Tuberculosis Association that an international conference on tuberculosis will be held in Paris during the week of October 7. This will be the first similar gathering since the one held in Rome in 1912.

Good Advice to Germans.—Professor Franz Boas, head of the department of anthropology at Columbia University, New York City, is reported to have received so many letters from German colleagues and students asking his assistance in securing for them desirable appointments in the United States, that he has written an open letter to Dr. Felix von Luschan, professor of anthropology at the University of Berlin, to be published in leading German papers. The substance of the letter is the advice to all Germans to stay at home, and to devote the time they formerly spent in the army to the farm and the factory.

Bubonic Plague in the City of Mexico.—The Mexican Federal Board has announced that a recent death in Mexico City was caused by bubonic plague.

Drug Regulations Assailed.—The Federal Grand Jury, in connection with certain indictments for violation of the Harrison Drug Act, made the recommendation that the same regulations be adopted for drug control as those which control the sale of

liquor. In other words, that the party to whom a license is issued shall be required to give a bond and then sell only on certificates issued after due investigation by the Collector of Internal Revenue, or upon physician's prescriptions.

Movement to Restore the "Personal Equilibrium" of Disabled Soldiers.—The New York Rotary Club has started a nation-wide movement to interest business men in the work of restoring "the personal equilibrium" of disabled veterans of the World War and of fitting them for future usefulness.

Red Cross Supplies to China.—According to advices from Shanghai, more than a thousand tons of American Red Cross Supplies, of an estimated value of more than $500,000, originally shipped to Siberia, have been transshipped to Shanghai and are to be distributed to mission hospitals of all denominations throughout China.

Radium for Cancer Research.—The State of New York has bought two and one-quarter grams of radium for the Institute for Malignant Diseases at Buffalo. The radium has been undergoing a scientific test by the Bureau of Standards at Washington, D. C. One gram of the radium, valued at $120,000, was delivered by the Bureau of Standards on July 27 to Arthur Roeder of New York City, representing the State of New York. This gram is said to represent 125 tons of ore.

Resignation of the Counsel of the State Society.—Mr. James Taylor Lewis, counsel for the past two decades of the Medical Society of the State of New York, has resigned, the reason given being that the society declined to raise his salary. It is said that a resolution offered in the House of Delegates at the recent annual meeting, condemning Mr. Lewis for agreeing to defend a member of the society charged with an alleged violation of the Harrison law, may have had something to do with his present action. The resolution was defeated, but the animus which prompted its introduction was evident.

Tuberculous Soldiers Like Saranac.—When the order from the New York office of the United States Public Health Service directing the transfer of soldiers under treatment at the Home Sanatorium, Saranac Lake, to service sanatoria in other parts of the country, was received a strike was called. Of the 210 ex-service men undergoing treatment for tuberculosis contracted while in service, 200 voted to disregard the order. The American Legion of New York State recommended that the men be permitted to remain at Saranac Lake.

Aid for Mentally Afflicted.—At a special executive meeting of the Home and Farm Institution for Mental Convalescents held in New York City recently plans were made for a drive for a membership of 50,000. Simultaneously with this membership drive will be conducted an intensive campaign to raise $1,000,000 for the purpose of constructing a large institution in the Catskill Mountains, where the poor who are nearing or have reached the border line of insanity will be treated in an effort to restore them to mental vigor.

War Risk Cases in Naval Hospitals.—Sixteen naval hospitals have been notified that they will be expected to take war risk cases for reconstructions, provided there is available personnel. These patients are to be in addition to Navy and Marine Corps cases. There are now 3,200 beds in naval hospitals, according to the *Army and Navy Journal*, available in temporary buildings erected during the war, but at the Bureau of Medicine and Surgery it is stated that there is no personnel to look after these hospitals.

Radium Clinic.—The Nathan and Miriam Barnert Memorial Hospital Association of Paterson, N. J., has opened a radium clinic under the charge of Dr. William Spickers. The institution has acquired fifty-five milligrams of radium and is prepared to treat patients referred from other hospitals as well as those who come directly to this hospital.

Dr. Jacob Geiger has been appointed director of the pathological laboratories of the New York Diagnostic clinics. After an extensive survey of the better American laboratory systems he will reorganize the laboratories of this institution.

Dr. Sarah J. McNutt has removed her office from 265 Lexington Avenue to the Park Avenue Hotel, New York City.

Police Plan Sanatorium.—A sanatorium in the Catskills or the Adirondacks is to be erected for members of the New York Police Department with the funds collected from the annual police games to be held August 21 and 28 at the Gravesend track.

Dr. Blanche Norton of Eldon, Iowa, has had conferred upon her by King Alexander of Greece the Order of King George I. Dr. Norton, who is said to be the first woman to receive this order, as a member of the American Committee for Relief in the Near East, distinguished herself at Kerrassunde, Anatolia, by treating Greek orphans for trachoma, contracting the disease herself.

Dentist Teetotaller Dies at One Hundred and Three.—Dr. Jesse C. Green of West Chester, Pa., died July 26, as the result of falling from a step ladder while hanging a picture. He was born in 1817. He never used tobacco or intoxicants, and took his last cup of coffee in 1844. Until six years ago he is said to have been in the habit of taking a daily ten-mile bicycle ride before breakfast. For a number of years Dr. Green was president of the Pennsylvania Dental Society, for nearly fifty years he was a local volunteer weather bureau agent, and for more than seventy years he was treasurer of a local fire company. He was a member of the Society of Friends.

Dr. Magruder's Body Arrives.—The funeral of Dr. Ernest Pendleton Magruder, a chief surgeon of the American Red Cross, who died during the epidemic of typhus fever in Belgrade, Serbia, April 8, 1915, was held in Washington, D. C., July 29. The body, which arrived at Hampton Roads aboard the United States naval ship *Patoka*, was interred in the family burying ground in Prince George's County, Maryland.

The Late Dr. James W. Markoe.—The following resolutions were adopted by the Board of Governors of the Lying-in Hospital on May 25:

Whereas, In January, 1890, due to the initiative and efforts of Doctor James W. Markoe, the work as now conducted by the Society of the Lying-In Hospital of the City of New York, had its inception at the Midwifery Dispensary, 314 Broome Street, which in August, 1892, was merged with the society, and, Whereas, From 1892 till 1902 the work of the

Society was carried on at 314 Broome Street and in the reconstructed Hamilton Fish Mansion on the site of the present hospital, and, *Whereas*, In January, 1902, due to the inspiration of Doctor James W. Markoe and the generosity of the late J. Pierpont Morgan, the Society of the Lying-In Hospital of the City of New York began its work in the building on Second Avenue between Seventeenth and Eighteenth streets, which it now occupies, and, *Whereas*, From 1890 until March, 1918, when he retired, Doctor Markoe gave of his best to the organization, medical and surgical work of the hospital, giving aid and comfort to thousands of poor women and children and with his coworkers bringing to a full realization the hopes for the institution which he had entertained for so many years, and, *Whereas*, By his untimely death the City of New York has lost an honored and helpful citizen and the poor of the city a skillful surgeon and sincere friend, therefore, be it *Resolved*, by the Board of Governors of the Society, in meeting assembled that they hereby express their profound sorrow at the untimely death of Doctor Markoe, and hereby extend their deepest sympathy to his family in their bereavement, and be it further *Resolved*, that these resolutions be spread upon the records of the Society printed in the Annual Report for the current year and that a copy of the same be engrossed and sent to Mrs. Markoe.

(Signed) LEWIS CASS LEDYARD,
President.

(Signed) JAMES GORE KING,
Secretary.

Obituary Notes.—DR. JOHN IRVING VAN WERT of Patton, Pa., died July 25 at the Park Avenue Hotel, New York City, after a short illness. He was fifty-five years of age, and was graduated from Bellevue Hospital Medical College in 1887. He was a member of the Pennsylvania State Medical Society and of the American Medical Association.

DR. HARRY E. CAMPBELL, formerly a practising physician of Pittsburgh, Pa., died in New York City July 25 from cerebral hemorrhage, at the age of sixty-one. He was graduated from Jefferson Medical College in 1881, served as interne at the Philadelphia General Hospital, and practised for twenty-five years in Pittsburgh, devoting his attention chiefly to surgery. Three years ago he gave up his practice, presumably because of financial reverses, came to New York, and, as was revealed after his death, had since been employed as dishwasher in a local restaurant.

DR. EVA HARDING of Topeka, Kansas, died of cardiac disease July 27, at the age of sixty-three. She was graduated from Hahnemann Medical College and Hospital of Chicago in 1882 and had practised in Topeka since 1892. Dr. Harding was candidate for the United States Senate on the Socialist ticket at the general election two years ago, and for the office on that party's present primary ticket. Four years ago she was Democratic nominee for Congress.

DR. LAURA A. C. HUGHES of Boston, Mass., who was known as the "Angel of Montauk" for her work as a nurse among troops at Camp Wyckoff, Long Island, during the Spanish-American War, died July 30, at the age of sixty. She was graduated from Tufts Medical School in 1895, and was a member of the Massachusetts State Medical Society.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, July 7, 1920.

Educating the Public to Combat Disease.—An influential deputation from the Society for the Prevention of Venereal Disease waited upon the Minister of Health on July 2 and advanced suggestions for awakening the country to the dangers of the disease and the means for combating it. In urging upon the Minister of Health the acceptance of the principle of immediate self-disinfection, the introducer of the deputation, Lord Willoughby de Broke, said that first of all the society asked for the immediate self-disinfection of those who had exposed themselves to risk. Its policy was that the Ministry, as responsible for the health of the nation and for the prevention of the spread of venereal disease, should take such steps as would educate the public on the whole of this extremely important matter, and that those who insisted, after warning, in exposing themselves to risk should at least have an opportunity of being equipped by authoritative instruction with regard to the disinfectants they ought to ask for and the methods by which these ought to be applied. Dr. Addison said in reply that it was not enough to urge people to do something or other; he had to satisfy himself that it was the right thing to do and to obtain a sufficient measure of public support in doing it. What struck him was that they were dealing with a subject which did not rest on the basis of ascertained fact. With regard to self-disinfection, if the Government took the responsibility of issuing throughout the country the kind of instruction suggested by the society, they must have an overwhelming case in order to contend against the deep-rooted national opinion, which would say that the Government was encouraging vice. It was no good shutting their eyes to these facts, that any systematic effort of that kind would incur risk and that there might be a big wave of feeling in opposition. Therefore it was necessary in the first place to have an overwhelming case in order to convince the public that the particular method they proposed should be adopted, and that notwithstanding all the prejudices which might well be aroused, their case would be so strong as to be really beyond question. If they were not successful they would put back the movement a generation. Supposing owing to the failure of its application the scheme did not succeed, the result would be worse than if they had never tried it, because they would therefore prejudice other methods. Furthermore, another great objection would be raised, that to adopt this method as regards the population as a whole would be held as doing something which would tend to encourage them to run risks.

Insurance Medical Benefits Changes.—On July 3 important changes in national health insurance came into force. These affect more than fifteen million workers besides their employers. According to Sir Walter Kinnear, Controller of the National Insurance Department of the Ministry of Health, the changes are designed to bring health insurance more into line with the changed

needs and economic conditions of the country, to bring them, in fact, into closer relations to the lessened value of money and the higher cost of living. Steps are being taken to improve the medical benefit. Medical officers are about to be appointed by the Ministry of Health with the view of improving the conditions both of the diagnosis and the treatment of disease. They will cooperate with the insurance practitioners in difficult and doubtful cases. They will also give assistance in cases of doubtful incapacity and of prolonged claim to benefit. The number of patients on the panel of any one medical practitioner is to be restricted to 3,000, but it does not follow that practitioners in partnership, or with an assistant, will be allowed to take 3,000 each. A practitioner is required to provide proper and sufficient surgery and waiting room accommodation for his patients. In case of accident or sudden emergency the nearest insurance practitioner may be asked to attend, although the insured person is not actually upon his panel. A person who may wish to change his medical attendant will be able to do so at the end of any half year, instead of at the end of any year. Medical treatment may be provided for the wives and families of insured men; convalescent homes may be established for members, and increases may be given in the cash benefits under the act. The benefit societies of Great Britain have accumulated funds amounting to no less than £78,000,000. In future it is estimated that nearly £30,000,000 a year will be expended on sick benefits. At present the payments made during sickness represent a loss of working time in Great Britain and Ireland of no less than 25,000,000 working weeks a year.

Emergency Distribution to the London Hospitals.—An emergency distribution of the London hospitals of £250,000 from King Edward's Hospital Fund has been decided upon in order to relieve their pressing needs. These grants have been made with the object of assisting the hospitals to carry on their work; and it is the hope of the fund that, where the committee of management are experiencing any special difficulty in raising funds for maintenance, the grant may give them both the opportunity and the encouragement to consider methods of improving the finances, and in particular (a) to consider whether the income of the hospital can, without detriment, be increased by taking some special steps, e.g. by the organization of contributions from employers or from employed, or from patients who can afford to pay, or by other methods; (b) to take whatever steps may be necessary and practicable to keep the expenditure within the available or prospective income, e.g. by postponing bed extensions, and by exercising more stringent control over cost of working, especially where the cost is substantially in excess of the average of the hospitals in the same group in the Fund's statistical report.

Anderson Hospital for Women.—To celebrate the completion of the collection of £50,000, the sum which was asked for to endow fifty beds at the Elizabeth Garrett Anderson Hospital in Euston Road as a memorial to the founder, a pleasant ceremony took place in one of the surgical wards of the hospital on the afternoon of July 5. Sir William Plender who made the financial statement, said that in 1916 the hospital had its fiftieth anniversary and it occurred to Lady Hall that the event might be celebrated by the raising of an endowment fund of £50,000. This became the memorial fund on the death of the founder, Dr. Elizabeth Garrett Anderson. Lady Hall raised this sum under the most difficult conditions in time of war. She did not go to the general public, but to the girl and women workers, and enlisted their sympathy.

Scotland's Record Birth Rate.—The most remarkable features of the vital statistics of Scotland in the first quarter of 1920 are a high birth rate, a high marriage rate, and a low death rate. The number of births registered during the quarter was 37,748—males, 19,261; females, 18,487. This is the largest number registered in Scotland during any quarter since the institution of national registration. It is 66.1 per cent. more than the first quarter of the previous year. The birth rate was correspondingly high. It was 30.9 per 1,000, which is higher than those of all quarters since 1891 and higher than those of all quarters subsequent to the second quarter of the year 1905. Marriages registered during the quarter numbered 11,751, and the marriage rate was 9.6. Both the number and the rate exceed those of all first quarters since the institution of national registration. The deaths of the quarter numbered 18,925 and the death rate was 15.5 per 1,000. In only one previous quarter, 1918, has there been a lower death rate recorded.

New Convalescent Camp at Epsom.—A new convalescent camp has been set up at Epsom, some twenty miles from London, by the Ministry of Pensions, and organized by Colonel Bostock. Its object is to afford a disabled man a real training in some occupation suitable to his disability, while at the same time he receives the treatment he requires. On reaching the camp the disabled man has a consultation with the medical officer and the superintendent of occupations. The medical officer, after examining the man, indicates what kind of work may be done. The exact type is then arranged between the man and the superintendent of occupations. Even then, however, the matter is left open until a test has been made in actual experience. As well as the practical branches there are lectures and demonstrations. It is said that the men are eager to learn and it is felt that a serious, and it is to be hoped a successful, attempt is being made to solve a very grave problem.

The Eleventh Annual Meeting of the Oxford Ophthalmological Congress.—This congress will meet at Oxford on July 15 and 16, 1920. The proceedings will take place in the Department of Human Anatomy in the University and will consist of addresses, demonstrations, and a scientific and commercial museum. The Doyne Memorial Lecturer for the year is F. R. Cross Buslot, who will lecture on the nerve paths and centers concerned with sight. A discussion on perimetric methods will be opened by Dr. Luther C. Peter of Philadelphia, who will limit his remarks to the new methods of perimetry and the types of cases for which they are especially adapted.

Honor for Sir T. Clifford Allbutt.—It has just

been announced that with the King's approval, Sir Thomas Clifford Allbutt, Regius Professor of Physics in the University of Cambridge and president of the British Medical Association, is to be sworn a member of the Privy Council.

Archbishop of Canterbury Refuses to Confer a Medical Degree.—It is a curious fact that the Archbishop of Canterbury has the power to confer medical degrees. This right was granted when the medical profession was at a low ebb and the church was more powerful than at the present time. Needless to say that what is known as a Lambeth degree (Lambeth Palace is the old palace of the Archbishops of Canterbury situated on the south side of the Thames) is seldom conferred, and then merely as an honorary title. However, there is an extraordinary sentiment and strong movement in Great Britain to give a medical degree to Mr. Barker, a well-known bone setter, who did great work during and after the war in relieving and removing disabilities of soldiers caused by war injuries. It is felt by a certain section, and it may be said influential section of the public, that a man so skillful and with such really wonderful manipulative powers should not be regarded as a quack but should be placed on an equality with members of the medical profession. The universities and medical and surgical bodies in Great Britain that have the power to confer degrees and qualifications do not see their way to upsetting all precedent and conceding to a man who has never been trained in recognized schools of medical and surgical work, or passed examinations therein, their degree or license to practise. Accordingly, a petition signed by over 300 past and present members of Parliament in favor of a Lambeth medical degree being granted to Mr. Barker "in view of his unique and distinguished services to suffering humanity and the cause of science through a long period of opposition, contumely, and persecution" was presented to the Archbishop some little time ago. The primate has replied recently to this petition. He considers that such a degree might be misleading and would not be of any real value to Mr. Barker, but expresses the hope that "some means may be found of marking the public appreciation of what he cannot but call Mr. Barker's eminent services to sufferers." In his letter, the Archbishop goes on to say that from letters which have reached him he gathered that some at least of those who had signed the petition were under the impression that by holding a Lambeth medical degree *honoris causa*, Mr. Barker would become qualified to undertake medical or surgical practice from which, as an unregistered practitioner, he is at present debarred. This impression was a mistaken one, and the status acquired by registration is not given by the degree which the petitioners invite him to confer on Mr. Barker. That being so, he was at a loss to know in what way Mr. Barker's assistance would be made more generally available by his holding a Lambeth medical degree, unless it were by leading the public to suppose that he possesses the technical qualifications of a registered practitioner. The popular use of the title "doctor" in connection with his name would, the primate imagines, have this probable result, but it would not be in accordance with facts.

Obituary.—Dr. C. Montagu Handfield-Jones, of Cavendish Square, London, W., died on June 25 last from heart failure, following a prolonged illness, at the age of sixty-five. He was educated at Rugby Schol, London University, and at the Medical School of St. Mary's Hospital, where he had a very successful career as a student and where he was afterward lecturer on midwifery and diseases of women. He had been assistant physician at the Chelsea Hospital for Women and was consulting obstetric surgeon to St. Mary's Hospital and to Paddington Dispensary, and surgeon to in-patients at the British Lying-in Hospital. He was examiner in midwifery and the diseases of women for the University of London, the University of Cambridge, and the Victoria University. An ex-president of the Harveian Society and of the Obstetrical Section of the Royal Society of Medicine, he had contributed largely to various professional journals and to works on obstetric medicine and surgery.

OUR LETTER FROM BELGIUM.

(From Our Own Correspondent.)

LIÈGE, July 6, 1920.

Medical Congress of Brussels.—Instead of September 30, 1914, it was not until May 19, 1920, that the Fourteenth Congress of French-speaking Physicians opened at Brussels after six years' delay. After the sufferings of the war which were borne in common, this reunion of French physicians had the characteristics of very close brotherhood. Among the participants at the opening of the first meeting, which for the first time since the establishment of peace reunited all the French, French-speaking Swiss, and Belgian physicians, were also English, Danish, and Dutch friends.

Her Majesty the Queen of the Belgians had accepted the presidency of the opening meeting, and the President, Henri Jean, gave in his inaugural address a heartfelt tribute to the charitable devotion of this sovereign. He spoke in this address of the progress of medicine which was becoming more and more a pure science, and noted the progress made through the study of physiological chemistry applied to the humeral theory, the problems of anaphylaxis, the rôle of vitamines, and the organic reactions.

A subject in the program which was brilliantly discussed by MM. Hayet, Etienne, Vaquez, and Laubrez was the treatment of cardiovascular syphilis. MM. Zunz, Chauffard, Linossier, Guy Laroche, and Grigaut made extensive contributions to the very timely question of lipoids in therapeutics. Another address was on the therapeutic value of artificial pneumothorax, which was the subject of an interesting discussion by MM. Burnand, Dumanet, Kuss, Dezscheid, and Geeraert. In each of these three sessions one of the well-known professors in the Belgian Faculty delivered an oration of a general character. The first of these was Malvoz, who spoke at length on "Measures of Antivenereal Prophylaxis." Then Bordet, whose important book on immunity has just been published, discussed the "Coagulation of the Blood in the Light of New

Physiological Discoveries." Finally, Brachet, after discussing the history of the theory of heredity, paying special tribute to Darwin and Lamarck, spoke of the general manifestations and special aspects of heredity. The author of this marvellous work of ontogenesis was well qualified by his personal researches to speak on this vast and difficult problem. He recalled in moving terms all that Belgium might gain from Latin influences, and dwelt from the point of view of ethnology on the Franco-Belgian fraternity which was manifested even in scientific matters.

Balneological Stations in Belgium.—The indifference of the public authorities has been very prejudicial to the spas of Belgium, all the more as the most important of these installations were ruined during the occupation. Nevertheless Belgium has thermal springs of the first importance. The Academy of Medicine has, therefore, devoted several meetings to this question, at which M. Moeller spoke especially of Spa, Chaudfontaine, and Ostende. The waters of Spa are rich in iron and carbonic acid. This combination makes them very suitable for the digestive passages, and at the same time they are very useful in anemia. The waters of Spa are also efficacious in heart disease, having a value at least as great as those of Nauheim. A third indication is arthritis and all its complications. Mud baths such as are in use at Spa have a very favorable action in rheumatism.

M. Moeller then spoke of the baths at Chaudfontaine, and urged that the Government should grant a subsidy to a committee which had been formed at Liége to restore this station. The waters of Chaudfontaine are of an undetermined character. They have a temperature of 36° to 37° C., they are indicated in slow convalescence, and in certain nervous and rheumatic affections their value has been conclusively demonstrated.

Ostende suffered relatively little during the war, but it will take some time before strangers will find their way again to this resort. A project is under way to construct a bathing establishment, which is very necessary if treatment shall be carried out in a rational way. At the same time it will be necessary to complete the drilling operations intended to increase the flow of thermal water (22° C.) from the spring which is situated in the center of the city.

After the international conference at Monaco, where Terwagne represented La Société Belge d'Hydrologie et de Climatologie, it was only right that the Academy should concern itself with this question, especially in view of the fact that the next International Congress of Hydrology will be held at Brussels.

INFECTED APICES OF TEETH AND PYORRHEA ALVEOLARIS.

To the Editor of the Medical Record:

Sir:—In an article with the above title published in Medical Record July 10, 1920, the following statement occurs, among not a few to which I might take exception. To those cited below I am inclined to give my adhesion:

"The dentist can restrain the decay of teeth, diseases of the gums, and the infected areas of some roots, but these inhibitory treatments do not insure immuunity from recurrence if dental and bodily hygiene are neglected."

"It is not true that 'a clean tooth never decays.' Many an individual who has never used a tooth brush will show a perfect set of teeth."

In view of much that is written at present, in regard to the subject of pyorrhea alveolaris, which is in my judgment, faulty and indeed, false, I consider it desirable to quote some important truths. The sacrifice of many teeth, because of the exaggerated opinion that they cause serious disease in other organs, should be called a halt to and it is none too soon.

Beverly Robinson, M.D.
42 West Thirty-seventh Street.

FAME AND PROFESSIONAL LIBERTY.

To the Editor of the Medical Record:

Sir:—Dr. S. Adolphus Knopf is to be congratulated upon the support and the encouragement his effort to honor American medicine by proposing a medical candidate for the Hall of Fame is receiving from the profession at large. Side by side with this effort there has been attempted another one designed to spare the medical profession from a distinction of a character the reverse of that which Dr. Knopf is endeavoring to confer upon it. For some reason this undertaking is receiving neither support nor encouragement though intended for the benefit of the members of the profession still living and as yet at large.

The candidates proposed by Dr. Knopf practised their profession unhampered by laws overruling their judgment and jeopardizing their liberty as well as besmirching their character. In this respect they enjoyed a distinction still attaching to the practice of medicine in every civilized country except our own.

Whether or not Dr. Knopf succeeds in his endeavor he has at least tried to put a representative medical man in the Hall of Fame. All that can be said of the effort coincident with his is that it has helped to keep one or more men of this type now practising medicine out of jail.

John P. Davin, M.D.
117 West Seventy-six Street.

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 22, 1920, clxxxiii, 4.

1. The Diagnosis of Accessory Sinus Disease Causing Loss of Vision. Leon E. White.
2. Ready-to-Wear Braces for Strained Muscles and Ligaments. H. W. Marshall.
3. Motion Study of Inoculation Tubes. M. M. Canavan. (Concluded.)
4. Specific Aortitis. William D. Reid.

4. Specific Aortitis. William D. Reid concludes from his study of the subject that syphilitic disease of the aorta is one of the most common and most serious findings in all cases of acquired syphilis. The lesion is essentially a mesaortitis, and a manifestation of active syphilitic disease; its conception as a parasyphilide being made untenable by the discovery in 1906 of the spirochete directly in the aortic lesion. The aortic process frequently extends to the aortic cusps, and Warthin has shown that relatively often there is an accompanying myocarditis of spirochetal origin. Aortic roughening, aortic regurgitation, dilatation or aneurysm of the aortic arch, and angina pectoris are common in

syphilitic aortitis. Aortic or mitral stenosis is of exceptional occurrence in connection with specific aortitis. Non-syphilitic forms of aortitis are rare. Many cases may be called latent in that symptoms are absent. Such cases are commonly undiagnosed until disclosed, perhaps, in a routine roentgen examination. There is no one point on which a diagnosis should be based, but only after a study of all the facts in a given case should a decision be rendered. Every case of cardiac disturbance of obscure origin, especially if the patient be a young adult and if there are signs of involvement of the aortic valve, should promptly suggest the probability of syphilitic causation. A positive Wassermann reaction is of confirmatory value, but is frequently absent. Roentgen examination, though unreliable in early cases, gives, perhaps, the most reliable findings. Specific aortitis evidences a tendency to progressive impairment of the heart and aorta and is, therefore, of serious import. Treatment should be directed primarily toward killing the spirochetes in the aortic lesions. Decomposition of the heart is to be treated as in that of non-syphilitic origin. Early diagnosis is imperative, and there should be a greater willingness on the part of clinicians to make a tentative diagnosis of specific aortitis and to resort to a therapeutic test.

New York Medical Journal.

July 24, 1920, cxii, 4.

1. An Effort to Standardize Surgical Mensuration. R. Tunstall Taylor.
2. Diagnostic Tests in Hay Fever and Asthma. William Scheppegrell.
3. Report of Some Interesting Cases of Protein Sensitization. Maximilian A. Ramirez.
4. Diagnostic Charts as a Guide in the Study of Gastro-intestinal Conditions. I. O. Palefski. (Concluded.)
5. Peptic Ulcer. Joseph S. Diamond.
6. Benzyl Benzoate Treatment of Whooping Cough. T. E. McMurray.
7. Pleural Disease in Infants and Children. Harry Lowenburg.
8. Treatment of Tuberculosis. Benjamin S. Paschall.

2. **Diagnostic Tests in Hay Fever and Asthma.**—William Scheppegrell holds that in making the diagnostic test for hay fever one is guided in the selection of the pollen extract, by the location. It is, therefore, necessary to know the hay fever plants to which the patient is exposed, the representative biological group being sufficient in most cases. East of the hundredth meridian, one must test for the grasses, ragweed, and chenopods. West of this meridian, the tests should in addition also be made in the Rocky Mountain and Pacific States, since, although the ragweeds are uncommon, there are other members of the ragweed or Ambrosiaceæ group, such as the gærtnerias, marsh elders, Iva, and cockle burs, which respond to the same test and similar immunizing methods. In making the diagnostic test the writer has standardized the method, which, in a series of over a thousand cases, has given results which are accurate as regards the nature and degree of the sensitization, and reliable as a guide to the immunizing doses. Five units of the extract of the selected pollen, of the strength of one hundred units to the cubic centimeter, are injected into the skin, and the reaction determined in twenty minutes, and recorded on a percentage basis. A marked wheal, two or more centimeters in diameter, is recorded as 100 per cent.; one centimeter, 50 per cent., etc. While this is an arbitrary scale, it is valuable for gauging the size of the dose and for purposes of comparison, and is much more definite than such terms as mild, marked, or severe. The record of the diagnostic test is placed at the head of the clinical chart for each patient, so as to form a constant guide in administering the immunizing doses. A mild reaction indicates a proportionate tolerance of the pollen extract, and a marked reaction that caution should be used in increasing the doses of the pollen extracts. The record of the test also indicates the probable maximum dose required for desensitization. In patients of 90 per cent. reaction or over, 200 units is the maximum dose, and should be reached by gradually increasing doses. In those marked 60 per cent. the maximum dose is 600 units, and others in proportion. In the writer's last series of cases, in addition to the tests for sensitization to the various groups of pollens to which the patient is exposed, he included the test for a vaccine composed of the following microorganisms: Bacillus Friedlander, Micrococcus catarrhalis, pneumococcus, Streptococcus pyogenes, Staphylococcus aureus and albus. If there is a marked reaction to the intradermal injection of this vaccine it is used as a part of the immunizing process, and the degree of the reaction, as in the case of the pollen extracts, forms a guide to the size of the injections.

7. **Pleural Disease in Infants and Children. With Special Reference to Empyema.**—Harry Lowenburg, discussing the subject from the pediatrist's point of view, draws the following conclusions: (1) Surgeons and surgery have failed to give a definite method for the treatment of empyema. (2) Their right to preempt this disease is therefore denied. (3) A correct diagnosis as to the location of pus must precede all methods of treatment. (4) No patient should be operated upon until the evidences of pneumonia have passed and until the temperature has subsided and the pus has become thick. (5) Aspiration should precede permanent drainage, if there is mechanical interference with breathing, until the conditions mentioned above have been met. (6) Neither thoracotomy nor costatectomy *per se* offers any special advantage to the patient if indifferently performed. (7) The size of the opening is not nearly so important as the position of the opening. (8) Thorough drainage with proper irrigation of the infected area or areas, with a minimum amount of trauma, is desirable. (9) For this reason alone thoracotomy is to be preferred to costatectomy. (10) Personal experience would seem to indicate that multiple thoracotomy is the operation of choice. (11) A reasonable amount of pneumothorax in the absence of pneumonia is negligible.

Journal of the American Medical Association.

July 24, 1920, lxxv, 4.

1. Relation of Orthopedic Surgery to Industrial Surgery. Roland Hammond.
2. Renal Glycosuria. James Edgar Paulin.
3. Intrapleural Hypertension for Evacuating Pus Through Bronchi in Spontaneous Pyopneumothorax. Alfred Meyer and Barnett P. Stivelman.
4. Ulcer of the Jejunum Following Gastrojejunostomy. Wallace I. Terry.
5. An Improved Technic for the Removal of the Gall Bladder. Based on an Anatomic Study. Moses Behrend.
6. Study of Nutrition and Mental Development in Childhood: Preliminary Report of Work Done by the Board of Education in the Public Schools of Chicago. Katherine B. Rich.
7. Congenital Hypertrophic Pyloric Stenosis: Review of One Hundred and Seventy-five Cases in Which the Fredet-Rammstedt Operation Was Performed. William A. Downes.
8. Hypertrophic Pulmonary Osteo-Arthropathy Following Lung Abscess: Further Notes on a Previously Reported Case. Ethan Flagg Butler.
9. Accessory Sinus Disease and Choked Disk. Harvey Cushing.
10. Prevention and Treatment of Weakfoot in Children. Percy Willard Roberts.

2. **Renal Glycosuria.**—James Edgar Paullin. (See MEDICAL RECORD, May 8, p. 810.)

4. **Ulcer of Jejunum Following Gastrojejunostomy.**—Wallace I. Terry. (See MEDICAL RECORD, May 29, p. 937.)

5. **An Improved Technic for the Removal of the Gallbladder. Based on an Anatomic Study.**—Moses Behrend. (See MEDICAL RECORD, May 22, p. 893.)

7. **Congenital Hypertrophic Pyloric Stenosis.**—William A. Downes. (See MEDICAL RECORD, May 29, p. 936.)

10. **Prevention and Treatment of Weakfoot in Children.**—Percy Willard Roberts holds that if, through mechanical support and muscle training, the balance of the child's foot is maintained through the period of growth, there will result a normal foot, architecturally correct, and muscularly strong enough to meet all the demands that may be made on it in the years to come. There are three factors commonly at work to disturb the fulfillment of Nature's plan for the formation of the foot, namely, improperly designed shoes, unequally developed leg muscles, and a deviation in the normal mechanical relations between the tarsus and the leg. Perhaps the most important single factor in the development of a normal arch is the maintenance of the upright position of the os calcis during the period of growth. In some cases it is necessary only to raise the

inner border of the heel of the shoe to insure this result. In others, some firm mechanical appliance capable of grasping the heel will be indicated. It is the custom of the day, when a child has weakfoot, to put in the shoe a plate which presses up the arch. In the light of the writer's experience this would seem to be both psysiologically and mechanically wrong. The desired correction can be much more readily obtained by an apparatus whose effective force is applied directly to the heel, and the permanence of the results will be much more certain. Much can be done toward maintaining the proper alignment of the bones of the foot by muscle training; but the use of this measure must of course be deferred until such time as the child is old enough to cooperate intelligently; therefore, the question of shoes takes second place in any reasonable scheme of prophylactic supervision of foot growth. Children's footwear should be selected with an intelligent understanding of the needs of the growing foot. The popular idea that the anterior part of the shoe should swing inward—a design so often seen in so-called "orthopedic" lasts—is based on an entirely erroneous conception of the normal foot. About two thousand tracings of normal feet were collected by the American Posture League from various parts of this country, Japan and India, among which were many outlines of feet that had never worn shoes. Careful examination of these by means of a geometric scale revealed the fact that there exist three distinct types of feet, not merely one, as formerly supposed. These may be designated as the "straight," the "inflared," and the "outflared" foot. Unfortunately, there is no record of a similar study of children's feet, and until scientific data are available one must be content to treat the child's foot on more general principles when it comes to the selection of shoes, bearing in mind that compression of either the outer or the inner borders of the feet is to be avoided. The writer describes a plate which he has devised for the comfortable maintenance of the upright position of the os calcis, or its rotation outward if there is an inclination to pronation.

The Lancet.

July 3, 1920, cxcix, 1.

1. Presidential Address on the Universities in Medical Research and Practice. Delivered before the Eighty-eighth Annual Meeting of the British Medical Association in Cambridge. Sir T. Clifford Allbutt.
2. Clinical Lecture on Fibroids, Lipoma, Dermoids and Polypi of the Stomach and Intestines. Sir John Bland-Sutton.
3. Bone-Grafting of the Fractured Mandible. With an Account of Sixty Cases. Gilbert Chubb.
4. The Paratyphoid "C" Bacillus as a Cause of Paratyphoid Fever. Leonard S. Dudgeon and A. L. Urquhart.
5. Syphilitic Aortitis. S. B. Boyd Campbell.
6. Some Racial Problems, Social Evils and Modern Crusades. Robert B. Wild.

3. Bone-Grafting of the Fractured Mandible.—Gilbert Chubb reports a series of sixty consecutive cases of bone-grafted mandibles, of which all but two were free autogenous grafts from the ilium. Fifty-one possessed edentulous posterior fragments and in forty of these the loss involved the region of the angle. In sixteen of the latter the loss involved the ascending ramus also. Firm bony union was obtained in fifty-six of the cases, 93 per cent. of the series. The graft and jaw fragments were so trimmed as to fit accurately end to end, with the largest obtainable areas of exposed vascular bone tissue held in close contact by firm wiring. The close apposition results in early bony union, while the firm fixation allows of the bones being subjected at once to some degree of muscular strain without fear of displacement, thus leading to the early consolidation of the primary union. In over 60 per cent. of the successful cases the union was of ivory hardness on the final removal of the splints, three to four months after operation.

6. Some Racial Problems, Social Evils, and Modern Crusades.—Robert B. Wild believes that the need for a clear appreciation of the factors involved in racial evolution is shown by many modern movements designed to improve the conditions of life, the welfare of the individual, and to produce a strong and virile race. On every hand there are crusades against predominant forms of racial degeneration. While he is far from wishing to make any attack upon these crusades, and least of all upon sincere, well-meaning, and often altruistic persons who lead them, he thinks it important to consider their racial as well as their individual effects. The welfare of a particular individual may not always be coincident with the best interests of the nation or race to which he belongs. After discussing the regeneration of the race, tuberculosis and cancer contrasted, venereal disease, eugenics, drug addiction, the effect of alcohol and other drugs on the race, the writer concludes that probably neither caffeine nor nicotine is a serious handicap to the nation at present, for competitive nations are equally affected by these addictions. If the use of these drugs enables more and better work to be done and diminishes the dependence of old age by an earlier wearing out of the arterial tissues the nation will gain at the cost of the individual, and in peace as in war the welfare of the individual should be sacrificed for the good of the race. He suggests that it is necessary for medical men to take a broad and unsentimental view of the issues with which they will be confronted in their work. If in the future the work of a medical man is to be more preventive than curative he will have to think more of the community and of the race than he has done in the past without thinking less of the individual.

British Medical Journal.

July 3, 1920, ii, 3105.

1. The Universities in Medical Research and Practice. Sir T. Clifford Allbutt.
2. The Place of Preliminary Science in the Medical Carriculum. Sir George Newman.
3. Courses of Study in Science for Medical Students, with Particular Reference to Biology. Prof. Sydney J. Hickson.
4. Anatomy. Prof. Arthur Keith.
5. Physics. Prof. Sir E. Rutherford.
6. The Relation of the Preliminary Science Teaching to Pathology in the Medical Curriculum. Prof. J. Lorrain Smith.
7. Chemistry. Prof. Arthur Smithells.

2. The Place of Preliminary Science in the Medical Curriculum.—Sir George Newman, in his introductory address as president of the Section of Medical Education of the British Medical Association, at the recent annual meeting of that body, said the form and content of the medical curriculum are dependent on two principal factors: (*a*) the advance of our knowledge of the science of medicine, and (*b*) the demands made upon the practitioner of the art of medicine. The curriculum must incorporate the principles of medicine as interpreted in current knowledge. It must also comprehend its practice in relation to the needs of the time and the art of the practitioner. The expansion of applied medicine and the widening of the demand which the community makes on the medical man must thus find its counterpart in the curriculum. The establishment of clinical teaching units is but an expression of the growth of integration. By gradual evolution of this unit method over many years there has come to be recognized the necessity of further development in the curriculum. It is not revolution we need, but reform, and even reformers must have regard to the facts (*a*) that the scope and character of secondary education is not yet settled, (*b*) that medicine itself is in a transitional state, and (*c*) that the public medical services has not yet crystallized itself. Speaking generally, however, it appears that the main reforms needed in the medical curriculum are four: 1. A lightening of the curriculum at both ends—in other words, fuller preparation in science before entrance to the medical school, and a postponement of instruction in certain specialties and in general practice to the post-graduate period; 2. A fuller study of the sciences preliminary to medicine and a nearer application of these subjects to clinical work; 3. Development of clinical teaching of university standard, particularly in relation to the beginnings of disease, the science of prevention, the closer integration of various forms of clinical practice and of clinical with intermediate study, concentration on the protean diseases of tuberculosis, venereal, malaria, malignant disease, and an understanding of the social side of therapeutics, as well as the social aspects of disease; 4. There is need of further State aid, with a minimum of State control.

Bulletin of the Johns Hopkins Hospital.

May, 1920, xxxi, 351.

1. The Significance of Syphilis in Prenatal Care and in the Causation of Fœtal Death. J. Whitridge Williams.
2. Transient Paroxysmal Auricular Fibrillation. V. R. Mason.
3. Presentation to the University of the Portrait of Dr. Florence Rena Sabin. William H. Howell.
4. Determination of the Acidity of Gastic Contents. I. Determination and Significance of Acidity. Alfred T. Shohl.
5. Determination of the Acidity of Gastric Contents. II. The Colorimetric Determination of Free Hydrochloric Acid. Alfred T. Shohl and John H. King.
6. Determination of the Acidity of Gastic Contents. III. Combined Acidity and Buffer Value. Alfred T. Shohl and John H. King.
7. Contributions to Psychopharmacology. David I. Macht.
8. A Biological Study of Hemolytic Streptococci from Throats of Patients Suffering from Scarlet Fever. Preliminary Report. Walter P. Bliss.

1. The Significance of Syphilis in Prenatal Care and in the Causation of Fœtal Death.—J. Whitridge Williams, in preparing material for his presidential address "Upon the Limitations and Possibilities of Prenatal Care," presented before the American Association for the Prevention of Infantile Mortality, in 1915, became convinced that the only way in which the problem could be approached with any hope of effective solution was by determining the Wassermann reaction in every pregnant woman who registered in the dispensary, and subjecting her to intensive antisyphilitic treatment whenever it was positive. This work was begun in April, 1916, and the present paper is based upon the critical study of 302 fetal deaths occurring in 4000 consecutive deliveries between that period and December 31, 1919. Attention is directed to the fact that the material differs from that which may be collected in many other cities, somewhat more than half of the patients being black. Thus, in 4000 cases under consideration, there were 1839 white and 2161 black women, in whom positive Wassermann reaction was present in 2.48 and 16.29 per cent., respectively. This incidence, however, did not exhaust the possibilities of syphilis, as there were 105 additional women in the series in whom the Wassermann reaction was negative, but in whose history some mention was made of syphilis. Of the 302 dead babies 212 came to autopsy. In the former are included not only those dying at the time of labor, or during the two weeks immediately following it, but also those dying during pregnancy from the time of viability onward. Of the 302 deaths 99 occurred in white and 203 in black infants, an incidence of 5.4 and 9.4 per cent., respectively; while 157 occurred at the time of labor or during the first two weeks of the puerperium, and 145 were in premature children. Syphilis was noted in 104 cases, in 89 of which the diagnosis was confirmed by autopsy with the demonstration of spirochetes in the fetal tissues; while in the remainder it was made from the presence of syphilitic lesions in the placenta, associated with a positive Wassermann on the part of the mother. The causes of death are as follows: Syphilis, 34.44 per cent.; dystocia, 15.20 per cent.; toxemia, 11.55 per cent.; prematurity, 10.59 per cent.; cause unknown, 8.61 per cent.; placenta previa and premature separation, 5.28 per cent.; deformity, 3.64 per cent.; eleven other causes, 10.69 per cent. Upon analyzing the figures in the summary of the causes of death it is seen that 89.3 per cent. of the deaths are attributable to seven groups of causes, of which syphilis is the most important, as it accounts for 34.44 per cent. of the total number, which is almost as high as the mortality for the next three groups combined, dystocia, toxemia, and prematurity, which were responsible for 37.34 per cent., or only 3 per cent. more than syphilis. Consequently, it is apparent that if it were possible to eradicate syphilis as great a reduction in fetal mortality should be effected as by doing away with all fetal deaths due to the various accidents at the time of labor, toxemia, and prematurity combined.

8. A Biological Study of Hemolytic Streptococci from Throats of Patients Suffering from Scarlet Fever.—Walter P. Bliss, in this preliminary report, summarizes his study as follows: (1) In a study of 25 strains of *S. hemolyticus* isolated from the throats of patients with scarlet fever, 20 or 80 per cent. were agglutinated by four different antistreptococcic sera made with streptococci isolated from scarlet fever cases. (2) None of these strains were agglutinated by five antistreptococcic sera of nonscarlatinal origin (except in the few instances noted). (3) But three of seventeen strains of nonscarlatinal origin were agglutinated by these three sera of scarlatinal origin, and these three may have been either atypical scarlatinas or scarlatinal contacts. (4) Certain differences in cultural characteristics, particularly in the fermentation of carbohydrates, were noted. From this study, therefore, it would appear that a great majority (80 per cent.) of strains of *S. hemolyticus* isolated from the throats of patients with scarlet fever belong to a specific biological type as determined by the reaction of agglutination. It is possible that the heterogeneous strains found may be accidental dwellers in the throat and that a more careful selection of colonies may reveal a still higher proportion of unit type organisms.

La Presse Médicale.

April 28, 1920, xxviii, 26.

Migraine.—Pagniez and Nast have continued a line of investigation on the anaphylactic nature of migraine, their earlier reports having been noted editorially at the time in the MEDICAL RECORD. It was shown that in the predisposed subject certain substances like chocolate could cause a migrainous anaphylaxis, and also that peptone has some power toward preventing such anaphylactic crises. It is not claimed that all migraine or even the greater part is of this nature, but a type exists which can be produced at will. Among the causes which operate in this type are certain articles of diet, alcoholic beverages, great muscular fatigue and emotions—so that among such cases personal hygiene will protect the victim. It does not follow that the attack at once succeeds the indiscretion, for as a rule there is a period of inoculation. This may range from a few hours to a day and upward. Again the cause does not always produce the effect, for there are days on which the subject seems immune. There is therefore a periodic factor which enters into the personal equation, and the subject may at times give himself license to indulge in this or that article of food, etc., for days at a time. In a given case the subject was born to migraine and suffered early in life from the ophthalmic form. This man discovered that a little peptone before meals had some prophylactic value. The attacks were decidedly less frequent and when the peptone was intermitted the frequency returned. He also soon learned that chocolate, especially when served with milk, increased the frequency and severity of the attacks. Under observation of the authors it was shown six times in succession that chocolate precipitated a migrainous attack, the blood showing the hemoclastic crisis which is believed to characterize anaphylaxis. It was also shown that chocolate could not invariably produce an attack. Under observation the subject used peptone systematically before meals, and after a certain period chocolate failed to produce the anaphylaxis after an appropriate test. The immunity was not permanent, for when the peptone was discontinued chocolate produced the crises as before.

Hygiea.

April 30, 1920. lxxxii, 8.

Spanish Influenza in the Sahlgren Hospital.—Wallgren states that from July 12 to December 31, 1918, 1311 cases of influenza were received into this institution. Of this number 94 died within the first 24 hours. The total mortality was 30.4 per cent. The men showed the higher death rate and 20 to 30 was the age period most favorable for mortality. In 77 per cent. pneumonia was present with a death rate of 50 per cent. There were 86 cases of empyema with a mortality of 56 per cent. Cardiac disease and pregnancy aggravated the prognosis. Those who took to bed early in the disease withstood the latter better than the others. No plan of treatment was isolated as superior to others. Pfeiffer's bacillus was not found.

Chancroidal Infection of a Year's Duration Cured by a Specific Serum.—Reenstierna describes an interesting case in which a chancroidal bubo, having suppurated, gave rise to a persistent ulcer which resisted all attempts to heal it, including the paquelin. The absence

of other pathogenic factors was shown by the autoinoculation test, which was positive, and the presence in pure culture of the Ducrey bacillus. Ulceration extended from the spine of the ilium to the substance of the scrotum, and the greatest length of the ulcer was nearly 10 inches. There was considerable constitutional reaction, including fever. The cutireaction of Ito with streptobacillary vaccine was positive, and after a single injection for therapeutic purposes there was a notable improvement. This injection sent the temperature up to nearly 104, and a second smaller one still higher. No other injections are mentioned and healing occurred in a surprisingly short time. Only airol powder was used as a dressing.

El Siglo Medico.

April 17, 1920, lxvii, 3462.

Case of Chronic Hemorrhagic Sepsis.—Munoyerro y Calvin relates the history of a case regarded by him as interesting and extraordinary. His communication is only a preliminary one. The beginning of the episode was in the fall of 1915, long before the pandemic of influenza, and the author has been unable to find a parallel in literature. The patient was a woman of 26, with negative antecedents. When first attacked there was a temperature of 42.2 C. The condition became confirmed with periods of remission and exacerbation and the author did not personally see the patient until some months had elapsed. He found her in bed in fair general condition, regularly nourished and remarkably free from symptoms of an objective character. Physical examination discovered nothing. There was a temperature of 30 C with attacks of nosebleed, the patient was pallid with a saburral tongue and there was little else to be learned. A provisional diagnosis of tuberculosis was made but abandoned soon after. The condition has persisted to the time of writing and the author submits the following as the summation of the symptomatology: Fever without chilliness, the highest temperature being 39 C. She has not been afebrile for a single day. But if any food articles are given other than milk and fruit juices the temperature may shoot up to 41 and upward. Even the blandest starchy foods cannot be tolerated. Hemorrhages occur—epistaxis and rectal hemorrhage (no hemorrhoids) and at one time hematuria. On the other hand there has been no menstruation for 2 years. Albuminuria is one of the constant symptoms. There are digestive disturbances—saburral tongue, anorexia, nausea and frequent vomiting. The woman is notably hysterical with anesthetic zones and absence of pharyngeal reflex. Finally there are insomnia and cephalalgia. It is evident that in such a case only a blood examination can clarify the situation and the case has been extensively studied from this angle. One by one various blood states have been excluded, including the acute fevers and tuberculosis. The sole positive find has been a bacillus originally described by Fraenkel and Pielsticker as belonging to the group which causes hemorrhagic sepsis which the author concludes to be the cause of all the mischief. An autovaccine prepared from this germ has been employed and seems to have caused a sharp diagnostic reaction. The affection seems to have been favorably modified by the vaccine treatment, but the recurrence of severe reactions has caused it to be abandoned for the time.

Brazil Medico.

April 10, 1920, xxxiv, 15.

Cocainomania in Brazil.—Vieira de Almeida, after a narration of the early history of cocaine addiction in which few Brazilian authorities are quoted takes up the subject as it is seen in Rio and Sao Paulo. According to the secular press there exists in the Paulistic capital a club of cocaine addicts, known as the *Club de Morte*. In local parlance cocaine is termed *Pó*, a word of uncertain derivation (which recalls the fact that in New York it is known as "snow," "happy dust," etc.). The sale of the drug is largely in the hands of unscrupulous people, who make a special industry of it and peddle it about. The *Club de Morte* is known to have lost five of its members recently by death, so that it has already qualified for its name. Two Rio Chinese are mentioned as dealing jointly in the two drugs—opium and cocaine. Each partner is responsible for one of the two drugs. In the same city a barkeeper is mentioned as having sold cocaine as a side line. A certain barber is said to have smuggled several kilograms of cocaine into Rio from some European port. The demimondaines are among the chief consumers of the drug, and the night bars frequented by these women serve as centers of distribution. The laws against the sale of cocaine appear to be general and directed against the illegal sale of poisons in general. There is no mention of special narcotic laws with the exception of a special penalty in the Sanitary Code of the State of Sao Paulo for the sale of "anesthetics," which includes cocaine and opiates. The laws against the sale of poisons are clearly intended for the prevention of assassination rather than addiction. Since no statistics of addiction are mentioned which correspond to the records of Bellevue in New York we can obtain no idea of the actual amount of damage done to the public health; but according to the daily press addiction is widespread and there is urgent need of a crusade against certain pharmacists and other illegal venders of the drug.

Tonsillar Sepsis.—The question of the existence of a septicemia which originates in the tonsils and is primary and quite distinct from other affections is discussed by de Rezende. Septic tonsillitis may have a varied incidence, and may develop after any clinical form of inflamed tonsil. The epidemic form due to the *Streptococcus hemolyticus B.*, which has been seen repeatedly in North America, is also known to exist in Sao Paulo. The tonsil is enough of a menace on this count alone to justify its routine extirpation. This conclusion is reached without any regard for the existence of numerous other infections which proceed from the tonsil, as acute rheumatism, nephritis, appendicitis, the slow form of endocarditis, etc., etc.—*Brazil Medico.*

Survival of Quadruplets.—Pinard, having come upon quadruplets aged five years, took pains to learn the particulars of their accouchement and obtained the testimony of the attending midwife and obstetrician. The former, who, of course, first saw the case, recognized multiple gestation. Labor lasted two days. The first child presented by the vertex and was extracted with forceps. Twenty minutes later another bag of waters ruptured and the second child presented, breech first. A third bag ruptured and this infant also presented by the breech. The fourth child presented by the vertex. Postpartum hemorrhage made it necessary to deliver the placenta, which was single, although associated with four gestation sacs. The babies weighed in the order of birth 1,900, 1,950, 2,000 and 2,100 gms. Credit for the survival was due alike to the faithfulness and intelligence of the midwife, accoucheur, and parents, and the children have thus far never been ill.—*Gazette des Hôpitaux.*

Malaria in the Balkans.—According to Dr. Regina Flood Keyes of Buffalo, N. Y., an American Red Cross physician who has lived in the Balkans for several years and who has been decorated by the French, Greek and Serbian governments for operations performed under heavy bombardment, the backwardness of the Balkan peoples is attributable to two causes, sand-fly fever and malaria. "The Red Cross fight against typhus, smallpox, cholera and sex diseases in the Balkans attracts much attention in the press," says Dr. Keyes, "but our real work out here is the struggle to down malaria. More British soldiers died or were incapacitated by malaria in the Struma Valley during the war than were killed in the taking of the Grande Couronne. The whole littoral of the eastern Adriatic from Fiume down to Avlona is a hotbed of malaria and sand-fly fever, while the northern shore of the Aegean from Salonica to Constantinople is even worse. America, if she is going to play her rôle in the world, must do for the Balkans what she did in the Panama Zone. These peoples must be taught drainage, how to kill the mosquito and to maintain domestic sanitation. It is a work of years, but we have made a good start in the last thirty months. Malaria causes the all too obvious despondency of the Balkan peoples."

Book Reviews.

GENERAL AND DENTAL PATHOLOGY, with Special Reference to Etiology and Pathologic Anatomy. A Treatise for Students and Practitioners. By JULIO ENDELMAN, M.S., D.D.S., Professor of Special Dental Pathology, College of Dentistry, University of Southern California; Editor of the Pacific Dental Gazette; Member of the Southern California Dental Association, the California State Dental Association, and the National Dental Association; Corresponding Member of the Société Odontologique de France, Honorary Member of the Sociedad Odontologica de Chile, etc., and A. F. WAGNER, A.M., M.D., Professor of General Pathology, College of Dentistry, University of Southern California; Pathologist and Autopsy Surgeon of the County and City of Los Angeles; Member of the Los Angeles County Medical Society, California State Medical Association, American Medical Association, etc. With 440 illustrations, of which 340 in the Section on Dental Pathology are original, and four colored plates. St. Louis: The C. V. Mosby Company, 1920.

THIS is a happy combination of general and dental pathology, with rather more of the former than is usually found in books intended for dental students and practitioners, which is a particularly good feature of the work. The tendency hitherto, now happily diminishing, has been for dental students to get merely a smattering of general pathology, hardly more than sufficient to give them the vocabulary of the science, and then to plunge right into the special part, ignoring the fact that no one can acquire a real knowledge of special pathology in any branch unless the study is firmly grounded on the foundation of general pathology. In this book of about 800 pages, the first 212 are devoted to general pathology and the following 573 to special dental pathology. This is sufficient to give the dental student all that he absolutely needs to know of general pathology, though, of course, it will not meet the requirements of the medical student. The latter, however, might with profit study the section on dental pathology in this book, for it will supply him with knowledge that he cannot find presented so completely and so clearly in the ordinary works on general pathology. The illustrations in the dental section are capital; they are from original sources, well reproduced from photographs and *x*-ray pictures, and clearly printed on calendered paper. At the present time, when the danger to health and life from foci of infection in teeth and alveoli is so fully recognized—even exaggerated—it behooves the medical man to have more than a mere smattering of dental pathology, and the necessary knowledge can be easily and pleasantly acquired from this book.

COLLECTED REPRINTS FROM THE GEORGE WILLIAMS HOOPER FOUNDATION FOR MEDICAL RESEARCH. Volume IV, 1918-1919. San Francisco: The Department of Research Medicine of the University of California Medical School.

THIS volume contains twenty-nine reprints of articles that have been published, chiefly in 1919. A series of six on the metabolism of bile acids are especially noteworthy, while another series of four on the effects of chloroform upon the liver are also worthy of comment. The Department of Research Medicine has a very large staff both of permanent and volunteer workers, and apparently carries on a large amount of research, which presumably is represented only to a comparatively small extent by the work here presented.

WHEELER'S HANDBOOK OF MEDICINE. By WILLIAM R. JACK, B.Sc., M.D., F.R.F.P.S.G., Physician to the Glasgow Royal Infirmary, Lecturer in Clinical Medicine in the University, Glasgow. Sixth Edition. Edinburgh: E. and S. Livingstone; New York: William Wood and Company, 1920.

THIS new edition does not show any marked changes; still, there are some alterations in the arrangement of the topics, and a few new articles, on Landry's paralysis, caisson disease, compression paraplegia, and myasthenia gravis. The editor has added a new section on the "Medical diseases of the war," containing articles on Trench fever, Spirochætosis ictero-hæmorrhagica. War nephritis, Trench foot, and War neuroses (shell shock). There is a large amount of material condensed in this little volume, and the book can be strongly recommended to students preparing for examinations in Practice.

THE DISEASES OF INFANTS AND CHILDREN. By J. P. CROZER GRIFFITH, M.D., Ph.D., Professor of Pediatrics in the University of Pennsylvania, Philadelphia; Physician to the Children's Hospital of Philadelphia, and to the Children's Medical Ward of the University Hospital; Consulting Physician to St. Christopher's Hospital for Children, Philadelphia; Corresponding Member of the Société de Pédiatrie de Paris. With 436 illustrations, including 20 plates in colors. Two volumes. Philadelphia and London: W. B. Saunders Company, 1919.

THIS comprehensive treatise on pediatrics, with its numerous illustrations, charts and tables, forms a useful addition to the equipment of the general practitioner and the pediatrician. The author has succeeded admirably in his avowed purpose of reviewing the subject of medical pediatrics in as complete a manner as seemed desirable without attempting to make it encyclopedic. Surgery and the special branches with the recognition of which physicians treating the diseases of children should be more or less familiar are included. Extensive footnote bibliographic references are given throughout the volumes, but no index of authors or collective bibliography. The index to the first volume comprises 26 of its 885 pages, while that of the second volume occupies 58 of its 657 pages.

The subject matter of Volume I is arranged in two divisions, each with its series of chapters. The first division covers general subjects (anatomy and physiology of early life; hygiene; breast-feeding; artificial feeding in the first year; foods other than milk; special named mixtures and proprietary foods; diet after the first year; diet in illness; characteristics of disease in infancy and childhood; symptomatology and diagnosis; morbidity and mortality; therapeutics in early life). The second division deals with diseases, including diseases of the new-born; infectious diseases; general and nutritional diseases; diseases of the digestive system.

Volume II continues the discussion of diseases, including diseases of the respiratory system; diseases of the circulatory system; diseases of the nervous system; diseases of the muscles, bones, and joints; diseases of the blood, spleen, and lymphatic glands; diseases of the ductless glands and internal secretions; and diseases of the skin, eye, and ear. Both the metric and the English systems of measurements are used throughout. The author has unfortunately deferred to the wishes of the publishers in the matters of spelling and punctuation, and so in a manner defaced what would otherwise have been many fair pages.

A TEXT-BOOK OF DERMATOLOGY. By J. DARIER, Physician to the Hôpital Saint-Louis, Member of the Academy of Medicine, Paris, France; Honorary Member of the American Dermatological Association, etc. Authorized translation from the Second Edition edited with notes by S. POLLITZER, Ex-President of the American Dermatological Association, Corresponding Member of the French Society of Dermatology and Syphilography, etc. Illustrated with 204 engravings and 4 colored plates. Philadelphia and New York: Lea & Febiger, 1920.

THE general didactic plan followed in the first edition of this useful work has been retained. A few sections have been rewritten and elaborated more or less in accordance with newer ideas or for other reasons, notable among these being those dealing with anaphylaxis, phagedena, the sarcoids, the gangrenes, the cutaneous atrophies, inguinal epidermophytosis, and the dermatomycoses. Other changes involve the review of the general interpretation of tuberculosis, congenital syphilis and the xanthomata. New paragraphs or chapters have been added covering the dyskeratoses, cutaneous diphtheria, the leishmanioses, the cutaneous leukemias, and the tophi of gout. The serodiagnosis of syphilis and the treatment with the arsenobenzols are brought up to date. Thirty-nine pages of the text are devoted to therapeutic notes, which are based on the author's personal experience. For quick reference this part of the book is of very practical value to the student or the inexperienced dermatologist.

Society Reports.

EIGHTY-EIGHTH ANNUAL MEETING OF BRITISH MEDICAL ASSOCIATON.

Held at Cambridge, June 25-July 2, 1920.

(From Our London Correspondent.)

National Health Insurance Act.—Among the affairs discussed by the representative body of the British Medical Association at its last session on June 29 was the question of the National Health Insurance Act. With regard to its effect on tuberculosis, Dr. Baskett of Rayleigh, Essex, moved a resolution calling attention to the slackening in the fall of tuberculosis mortality, resenting enforced association with a measure which, prima facie, seemed, and on strict investigation might prove to be, prejudicial to the national health, and instructing the council to institute an inquiry into the effect of the act upon the nutrition of the poor. Dr. Baskett said tuberculosis ran riot in Europe owing to the concomitants of poverty. It had been greater in this country since the insurance act, because that act had caused many people to become poorer, and their power of resistance to disease to become diminished. Dr. S. Noy Scott of Plymstock urged the necessity for investigation and said the tables produced by some county councils would not bear the light. Dr. Douglas of Fife contended that the main causes of tuberculosis in recent years had been the alteration in diet, principally through the shortage of fats, the large portion of the population that had worked in a vitiated atmosphere while making munitions, and the fact that the public health service had been crippled in this country by the medical profession doing war service abroad. The insurance act, whatever its imperfections, might do a great deal of good. Dr. Brackenbury of London said they might all agree that the insurance act was not performing the function which some of its short-sighted but enthusiastic admirers declared it was going to perform with regard to tuberculosis. "But for us to say," he continued, "that because the rise in tuberculosis mortality is coincident with the passing of a certain act of Parliament it has been caused by that act would be absurd." The resolution was defeated. The conference gave its support to the proposal that two medical men should become candidates for Parliament to watch the interests of the profession. Dr. H. B. Brackenbury of London was favored as one of the candidates. On the question of public health and poor law an opinion was expressed in favor of poor law hospitals being available for receiving paying patients who should be attended by their own doctors, and the council were instructed to inquire and report on the situation.

Honorary Degrees Conferred by Cambridge University.—In connection with the visit of the British Medical Association to Cambridge honorary degrees were conferred on June 29 upon the undermentioned members of the medical profession: Sir Thomas Clifford Allbutt, Regius Professor of Physic and president of British Medical Association; M. Jules Bordet, president of the Faculty of Medicine and director of the Institut Pasteur at Brussels; Dr. Simon Flexner, director of the laboratories of the Rockefeller Institute for Medical Research; Professor Piero Giacosa, Professor of Materia Medica and Experimental Pharmacology at the University of Turin; Sir George Henry Makins, president of the Royal College of Surgeons; Sir Norman Moore, Bt., president of the Royal College of Surgeons. The degree in each case was that of Doctor of Law (honoris causa) and was conferred by the vice-chancellor, Dr. Giles, Master of Emmanuel College. Four gentlemen were unable to be present to take their degrees, viz., M. Albert Calmette, subdirector of the Institut Pasteur at Paris; Dr. Harvey Cushing, professor of Surgery at Harvard University; Major-General William Crawford Gorgas, formerly Surgeon-General, U. S. Army, and Sir Patrick Manson.

The President's Address.—On the evening of June 29 in the Cambridge University Senate House the presidential address was delivered by Sir T. Clifford Allbutt, and was a review of medicine in Great Britain. Sir C. Allbutt is a charming and cultured speaker and his address abounded in witticisms and apt allusions. He said that when one turned to public medicine one was met by two chief problems which called instantly for solution—general practice and the voluntary hospitals. An official doctor, he said, would be as alert and as progressive as a country parson, whose service was not much kindled by the chances of promotion to an archdeaconry or a bishropic; while to shift an official doctor from place to place would be to cut the inner threads of those intimacies which they were now declaring to be the clues to the detection of diseases at their sources. Yet, as things were, the independent practitioner was isolated; even in a town he was apt to make a little orbit for himself, to drift out of intimacy, perhaps into some jealousies, with his brethren; he lacked mental incentive, and gradually let slip occasions of scientific reunion and renewal. Indeed, he could not readily leave home to attend public and scientific meetings, so that too often, as Morant complained, "Medical men do not think or express themselves in a statesmanlike way." His time even at home was so broken up that he lost the habit of study. He might leave his hospital school full of ardor and in rapid growth, but in practice his ardor cooled and he dropped into routine; or, at any rate, such was his peril, and so less and less might the doctor feel himself a member of a great profession; he might drift out of public affairs, his outlook and sympathies might shrink, his work become a trade, and his medical neighbor his "opponent."

Panel practice, he continued, for some time discredited by its hereditary taint of the club of infamous memory, and by the continual dearth of the means of its development, should, if duly provided, expand into a large, honorable, and even universal department of medical work; the terms of engagement were to be more liberal; the clockwork was complete. But how was the practitioner to rise to higher standards of modern science and skill when no means of investigating disease, or of making an intimate diagnosis, were provided for him? He was well aware that the modern methods of medicine depended on such means as *x*-rays, a battery of stains, and other cultural and biochemical apparatus; and not only an education in the use of these, but also the time to give to them. What should we think of a regiment of recruits called out to fight the enemy but unprovided with weapons or munitions? If the doctor were near a university center he could get blood tested for morphological elements, or for sugar, or for nitrogen content, excretions analyzed, bacterial examinations, and vaccines made, and so forth; but it was imperative that these opportunities, now confined to a few, should be universal. Moreover, if they were to be fruitful, the practitioner must consult personally with the scientist. These plants, then, and their staffs must be established in all districts, together with a much larger provision of cottage hospitals. Cambridge University and its sisters were sending out every year bands of young graduates quite competent to deal with disease in all its forms, and to use refined means of diagnosis, if those means were supplied. If not, how could they be blamed if they fell into some stagnant routine? In district laboratories panel work would be paid for by the Ministry of Health; for private practice a tariff of fees would be agreed upon. A considerable sum for the commencement of these local centers was contained in the stillborn budget of 1914. As to the voluntary hospitals, he omitted what he had written because the report of the Consultative Council had covered a much larger ground, and so ably that his passing reflections would be of little use. The dilemma between the lack of funds and the fear, almost an assurance, that public grants in aid would discourage private munificence might be avoided if, on proof of efficiency, grants in aid were offered in some proportion to the amount raised by voluntary effort. To range up the poor law infirmaries with other hospitals and schools would enrich our clinical fields beyond all anticipation.

Award of Prizes and Medals.—Immediately after the presidential address the association's gold medal of merit, awarded to the late Capt. N. G. Chavasse, was received by his father, the Right Reverend F. T. Chavasse, Bishop of Liverpool, who made a touching and

eloquent little speech. The Stewart prize was presented to Miss Harriette Chick, D.Sc., in recognition of her own work and that of the band of scientific women associated with her in the investigations into the means for preventing scurvy and beriberi in armies and among populations suffering privations. The Middlemore prize was presented to Dr. Harry Moss Traquair for his essay on perimetry, inclusive of scotometry, its methods and its value to the ophthalmic surgeon.

Surgical Treatment of Gastric Ulcer.—On June 30, in the surgical section under the presidency of Sir George H. Makins, a discussion was held on the surgical treatment of gastric ulcer opened by Sir Berkeley G. A. Moynihan and Dr. Charles H. Mayo. Sir Berkeley Moynihan, referring to the origin of gastric ulcer, said that most of the causes of this condition lay within the abdomen. However, he strongly advised a thorough examination of the buccal cavity for alveolar abscess, and so on. He believed that in the majority of cases medical treatment was ineffectual, because as commonly applied it was doomed to failure. He was of the opinion that withholding fluids for a few hours before operation was radically wrong, and especially so in the case of gastric ulcer. He gave large quantities of fluid before operation. Gastroenterostomy was the operation usually done for gastric ulcer, and for years it did a great deal of good, until it came to be used for all kinds of gastric ulcers. The operation was often badly done, and the cases were badly selected. Symptomatic diagnosis was not to be depended upon, and several instances were cited to prove this point. Chronic ulcer preceded carcinoma in not less than 10 per cent. of cases. Gastroenterostomy alone had been abandoned by Moynihan. The operation did not prevent recurrence of gastric ulcer or occurrence of carcinoma. It was to be regarded as the second best operation for this condition. He recommended the use of the finest catgut, that of silk or thread not being necessary. He thought Balfour's operation was good and he had learned much concerning this operation from the Mayos of Rochester. He pointed out that gastric ulcer was a more serious disease than was generally realized. Athletes in every branch of sport suffered from duodenal ulcer, none from gastric ulcer. These respective ulcers were found in different types of patients, as Hurst had shown. Early and correct diagnosis of gastric ulcer was the main thing. Gastric ulcer was rare and serious. According to his view there was only one operation for gastric ulcer, namely, partial gastrectomy. When this was done everything was done, and the patient was cured. Moynihan emphasized the necessity for paying the most exact attention to all details, for after all it was the little things that counted.

Dr. Charles Mayo said in part that gastric ulcer was more common in males than in females. According to the statistics of the Mayo Clinic, duodenal ulcer occurred four times more frequently than gastric ulcer. He insisted that the medical treatment was mainly dietetic. Duodenal ulcer rarely developed malignancy. Gastric ulcer was not caused by traumatism and perforation was not so serious as it was believed to be. The *x*-rays were the best means of diagnosis. A correct diagnosis could be made by this method in 95 per cent. of cases. Cancer of the stomach rarely occurred with high acidity. He described the technique of the operations for gastric ulcer employed at Rochester, Minn. Sherren's operation had been improved upon by Balfour. He laid emphasis upon the wisdom of using catgut sutures. According to the figures collected by Hunter of the New York Life Insurance Company the operative mortality of gastric ulcer was 3 per cent. over normal, while that of duodenal ulcer was less than normal.

Mr. Herbert Paterson said that from the clinical standpoint it was argued by some that gastrojejunostomy was solely mechanical and had no physiological effects. He held, however, that scepticism is a sure precursor of belief. Gastrojejunostomy was not a purely mechanical operation, but exerted a definite physiological effect. With regard to the contention that malignancy is not infrequently grafted upon a gastric ulcer he was skeptical. He believed that those ulcers which developed cancer were inherently malignant and, of course, this was not the case with the ordinary gastric ulcer. He put it that either malignant disease does not develop on gastric ulcer or gastrojejunostomy is a cure for cancer.

Mr. Burgess said that the object was to get rid of gastric ulcer, to abolish the pathological basis at the back of the ulcer, that is, the hyperacidity. In his opinion hyperacidity was best cured by gastroenterostomy. Gastroenterostomy alone was often insufficient, and the logical combination was excision of the ulcer and gastroenterostomy, of which the latter was the essential part. The most effective routine method was partial gastrectomy. Burgess thought that the physiological effect of gastroenterostomy had been proved up to the hilt. After dealing with the technique of the operation, he laid stress on the supreme importance of after treatment, of which careful diet and taking an alkaline were the fundamental features.

Mr. Charles Ryall was in favor of gastroenterostomy from the physiological standpoint. Conditions must be always considered, but he did not believe in laying down the rule that partial gastrectomy should be performed on all gastric ulcers. In his opinion the employment of the cautery was dangerous. Too great importance was attached to the possible connection between chronic gastric ulcer and cancer.

Dr. Finney began by apologizing for still wearing a uniform, and went on to say that his country had a good deal of difficulty in getting into the war and more difficulty in getting out of it. He remarked that he had been through all the gamut of operations, and failed in a sufficient number of cases to produce skepticism. Therefore, he was never cocksure, and thought it was unwise to lay down hard and fast rules. All cases should be judged by the conditions found. Finney also disbelieved in any sure method of diagnosis. He had opened the abdomen and even the stomach, and then didn't know whether an ulcer was there. As said before, he believed in performing the operation which was deemed to be best suited to the conditions found.

Vitamines.—Perhaps, on the whole, the most interesting discussion of the meeting was one held in the Section on Medicine, dealing with the position of vitamines in clinical medicine. Sir Humphrey D. Rolleston presided over this section. Dr. Gowland Hopkins, Professor of Biochemistry at the University of Cambridge, opened the discussion by reading a paper in which he pointed out that the modern conception of a deficiency disease was not, of course, based wholly upon a belief in the existence of vitamines. There might be quite other factors of deficiency in a diet which would produce clinical symptoms, but the hypothesis of vitamine deficiency played a large part in current views concerning the chief examples of the conditions to be discussed. The idea of existence of such substances as those called vitamines arose quite inevitably from the fresh facts concerning nutrition which were gathered by means of experiment and observation at about the beginning of the present decade. There should have been, as Hopkins had always maintained, nothing particularly startling about these new facts. It was always an assumption that proteins, fats, carbohydrates, and certain minerals represented the whole nutritional demands of the animal. Directly these constituents of food were fed really pure it was found that they were not. The only matter for surprise was that certain substances, produced like all others by the plant, should prove so important, though present in so small an amount. Professor Hopkins emphasized the point that in what he was about to say he refused to speak of the vitamine "hypothesis." Vitamines, though still of unknown nature in the chemical sense, were not merely hypothetical. In nearly every case that was to be considered it was, he admitted, still an hypothesis that the particular disease depended upon vitamine deficiency, but in respect to the broad aspects of nutrition as a whole, the importance of these factors was proven. But he had found that there was at the present moment some skepticism concerning the whole question, particularly perhaps among certain members of the medical profession. The fact that he had met it lately in high quarters accounted for the particular direction he was giving to his opening remarks which might seem unnecessarily defensive. Some of this skepticism had been stimulated by or was a protest against quackery;

the quackery which always dogged the footsteps of honest scientific work and the promulgation of sound views concerning human nutrition. It was well, indeed, that the subject about to be discussed should be approached critically, but disbelief in the very great importance of qualitative deficiencies in the diet, quantitatively of small moment in the production of nutritional errors was to be deprecated. Not long ago, in a professional discussion, a physician whose authority in medicine is of the highest, spoke of the "vitamine stunt." To be just he was probably applying that much-abused word only to a vitamine hypothesis in the etiology of a particular disease. It was here, according to him, a "stunt," succeeding other stunts which had failed. Hopkins felt at the time, however, perhaps wrongly, that the implication was more general. Now, whether deficiency diseases are many or few, and even if it were ultimately shown that in the strictest sense there were none, the conception of vitamines is no stunt. It is based upon experiments as conclusive and as carefully controlled as any in biological science.

Referring to scurvy, the speaker pointed out that if there was one clinical condition in which the influence of deficiency seemed obvious, direct, and but little complicated, it certainly was scurvy. The manifestations of scurvy seemed to him to provide a bridge between the unequivocal results of experiments and the conditions more complicated and more difficult of interpretation which must be admitted to exist in some other cases. For surely the evidence that scurvy is a deficiency disease in the strictest sense seemed to be well-nigh unequivocal. The historic certainty that it was intimately related to diet took on a more definte form when the general idea of accessory food factors arose. This extended the conception of specific functions in nutrition, functions which were independent of energy supply. It brought the antiscorbutic factor into a class. Experiment, which had always the advantage over clinical observation in introducing quantitative methods and permitting of controls had certainly strengthened the evidence. Moreover, evidence for the deficiency hypothesis had, in the case of scurvy, accumulated of late from the laboratory, from the ward, and from the camp. Some might still look to infection as, at any rate, a secondary cause, but he could not, as he read the evidence, see any reason for this, except an obsession that some sort of positive factor must be called into account for every disease. Whether or not there were secondary factors in the etiology of the disease, there was, of course, no doubt about the prime importance of the food factor in treatment. Until laboratory investigations were undertaken, there were no satisfactory measure of the relative richness of various foods in the antiscorbutic substance. The recent qualitative studies at the Lister Institute had yielded results of extraordinary importance in this respect, and would put the therapeutics of scurvy upon a really scientfic basis.

As for rickets, the disease concerning the origin of which there has been and is a wide divergence of opinion, Hopkins expressed himself as remaining a firm believer in the influence of a specific diet deficiency, at least in experimental rickets as displayed in dogs, because in Dr. and Mrs. Mellanby's experiments he had seen carefully controlled observations showing unequivocal results. With regard to the clinical experiments of Drs. Hess and Unger, which seemed to show that deficiency in the fat-soluble vitamine had little to do with rickets, Hopkins trusted that he had read the accounts of these experiments without bias, but he felt that they failed to set the question at rest. That more than one factor was concerned in the causation of rickets seemed sure, but the relative importance of the different factors remained to be determined. Miss Hariette Chick, who has been doing work and making observations among the underfed young children of Vienna, expressed some of the ideas suggested by her experience. She drew attention to the fact that the absence of one or other of the accessory food factors might make the difference between health and disease. Regarding the food value of apples, or perhaps the antiscorbutic value of apples, she stated that lemon juice was found to be five times more valuable than apple juice. Dr. D. Dayell, a woman physician who also had been in Vienna recently, described some of the conditions among the child population there. There was, she said, no child of nine months which could be considered normal in that famine-stricken city. At the age of four months they began to show signs of malnutrition, and then feeding the nursing mother on butter had a wonderful effect on the child. When the mother was given 20 grams of cod liver oil daily the milk improved in quality, but not in quantity. The child also received 5 grams of cod liver oil daily, and grew rapidly. The enormously nutritive effect of a diet which contained fat soluble vitamine was demonstrated in the majority of cases. Butter was a sheet anchor of treatment, all of which is evidence to show that rickets is due to dietetic causes. The remarkable effect of intensive fat and cod liver oil treatment was strikingly shown in the case of a twin brother and sister. The girl came into the hands of Dr. Dayell and her colleagues when 5 months old, but the boy remained under the same dietetic conditions as before. In a few months, while the boy was still an ill nourished, miserable specimen of childhood, the girl, who had been given plenty of fat, had developed into a normal, well nourished baby.

Lieutenant-Colonel McCarnson, I.M.S., spoke next, and among the many interesting and instructive data he gave was the information that his experiments on monkeys seemed to prove that the late Dr. Charles Mercier was correct in his contention that improper diet tends to affect injuriously the mental powers, for these experiments showed that when young monkeys were deprived of their proper food their brains ceased to develop. Their brains increased or decreased in accordance with the kind of food they were given.

Dr. Alfred Hess, speaking of milk, said that milk pasteurized by simple heating did not lose its nutritive effects to the extent that commercially pasteurized milk did. He also said that dried milk, when properly dried, retained its nutritive properties. Scurvy had been cured by dried milk which had been kept for some months. Proper preparation was essential. The antiscorbutic vitamine was peculiarly susceptible to heat, and this milk must be prepared on scientific lines. Mistakes were often made in the diagnosis of scurvy and rickets. Lack of fat-soluble vitamine did not play the important part in the causation of rickets that lack of antiscorbutic vitamine did in scurvy, and yet he believed that rickets was largely a dietetic deficiency disease.

Dr. G. Still said that in the elucidation of the origin of what were known as deficiency diseases, more progress would be made if there were greater cooperation between the clinician and the laboratory worker. He suggested that inheritance might be a factor in the causation of rickets and the personal equation must be considered. According to Still baked potato is the best antiscorbutic, considerably more effective than orange juice.

Dr. Leonard Williams said that all diseases had their origin in dietetic deficiency. Civilized people lived on an artificial diet, on cooked food. Uncooked food contained the vitamine element which was comparatively absent from cooked food. He said there were two chief reasons why people ate cooked food; one was that it was more palatable, and the other reason was the fear of microbes. He pointed out that this fear was illusory, and in fact bacteria were our best friends. He advised an intensive vitamine treatment by means of a diet of uncooked food, which was better than drugs.

Dr. C. Muthu said that he quite agreed with Dr. Leonard Williams that all diseases could be attributed more or less to some food deficiency. Experiments on fresh and stale vegetables and fruit, conducted at the Mendifs Hills Sanatorium with the aid of a galvanometer, showed that the life of animal or vegetable protoplasm depended upon its electromotive force, and that the fresher the vegetables and fruits the more intact were their electrical properties and the vitamine and food accessories, and that the staler and more cooked the food the greater its electrical diffusion and destruction of its enzyme properties. The nutritive value of a food seemed to depend upon its freshness or raw state, which insured healthy and active enzyme and vitamine conditions and easy digestion and assimilation. Civilization meant stale and cooked food, frozen

and canned food, artificial and adulterated foods, in all of which there was a deficiency and destruction of enzyme properties and food accessories which laid the foundation for pathological changes and diseased conditions. The food question was therefore of vital importance to the health of a nation. Tuberculosis was a deficiency disease, and the great war had proved that famine and starvation led to chronic malnutrition, rickets, and tuberculosis. A disease like tuberculosis was an expression of hunger—hunger for a fuller and more natural life—for more fresh air and fresh food, and more congenial surroundings. Let us improve the well-being of a nation and we shall go a long way in the direction of eradicating deficiency diseases.

Annual Temperance Breakfast.—On the invitation of the National Temperance League, Sir Clifford Allbutt and many members of the association breakfasted in the hall of the University Union Society. Sir G. Sims Woodhead, Professor of Pathology at Cambridge University, spoke of the benefits of abstinence from the general standpoint. From what one had heard, he said, men who were not total abstainers had come back from America enthusiastic in the belief that by her dry policy she had taken a step which was going to place her very far forward in the international race. Mr. McAdam Eccles, surgeon at St. Bartholomew's Hospital, London, said the public looked to the medical profession to give no uncertain sound regarding the value to health or otherwise of alcohol. If it was physiologically unsound they should tell the scientific truth and pave the way for the will of the nation. Sir Clifford Allbutt said that alcohol, when taken intemperately during the war, was distinctly on the side of inefficiency. Alcohol was a disadvantage to mountaineering, as he had experienced, and he had little doubt that that applied to the whole work of life. During twenty of the hardest years of his life in Leeds he had been a total abstainer, and was very much the better for it.

Cancer Research.—In the section of pathology, Dr. J. H. Murray, Director of the Imperial Cancer Research Fund, dealt with the present position of cancer research. Dr. Leach of Liverpool, who took part in the discussion, referred to the hope expressed by surgeons that there might be an early diagnosis of the disease. He felt that that was a vain hope because sufferers would not see a surgeon until they had some definite symptoms of the disease. By the gradual accumulation of post mortem anatomical investigation they were able to a fair degree to see now the trend of cancer. He thought the results had been very promising. If they considered cancer of the breast, uterus, and rectum at the present time treated by operation, something between 40 and 50 per cent. of the patients remained free of it for a period of about five years. They could not do anything like that 15 years ago, and he would not be surprised if 15 years hence that number were very considerably increased.

Venereal Disease in Women and Children.—In the section of venereal diseases, the disease in women and children was dealt with respectively by Dr. Morna Rawlins and Dr. Leonard Findlay. Many of the speakers drew attention to the fact that there was still a good deal of ignorance respecting the treatment of venereal disease. Sir James Galloway pointed out that the intensive treatment of syphilis sometimes brought about other diseases. Dr. Marion Mackenzie, who has done much work at the prenatal stage, urged that women who were infected with syphilis should be instructed how not to have children. The meeting was almost unanimous in the view that venereal disease should be made notifiable. Dr. Alcock expressed the opinion that that would be a very difficult matter in the smaller towns, where people were all known to one another. In some small areas, however, notification might be made to the county authorities or even to London headquarters.

Dr. E. W. Turner of London thought that there should be compulsory treatment for infected persons, but admitted that it was a matter on which public opinion might take years to come to this way of thinking.

Voluntary Hospitals and State Supported Patients.—One of the most interesting meetings of the week was that of practitioners, who gave their services free in voluntary hospitals to consider the position which had arisen through hospitals treating State supported patients. The meeting, which was largely attended, was presided over by Sir Cuthbert Wallace of St. Thomas's Hospital. Professor Bolan of Newcastle-on-Tyne said that the representative body had seriously considered the situation and had accepted the view that for all work undertaken at voluntary hospitals for soldiers and sailors, whether discharged or not, for any disease or injury connected with the war, the medical staff should be adequately remunerated. They ought to make their position clear in view of the prospect that State-aided work in hospitals was going to be greatly extended in the immediate future. It was hoped that before long insured persons would be able to receive institutional benefits; that would revolutionize the basis on which they had been accustomed to work.

Mr. McAdam Eccles of London indorsed the view put forward that if they declined to accept adequate pay it would mean State exploitation of the profession. Dr. L. Stephens said he believed the Labor Party would support them in a reasonable demand. When he told labor men that some doctors worked thirteen and one-half days out of a year for nothing they said, "You must be mugs to do it."

Eventually a resolution was passed approving the action of the hospital committee of the association with regard to the remuneration of the staffs of the voluntary hospitals for work done on behalf of State aided patients and promising support in bringing the subject before the notice of the governing bodies of the voluntary hospitals of the country.

Section of Medical Sociology.—Sir George Newman, Chief Medical Adviser to the Ministry of Health, opened the meeting by discussing the State and the future of medical practice. He said that whatever else the profession gave up, they must not part with the particular genius of individualism. People talked of the nationalization of the medical profession. It simply could not be done, and Sir George promised that so far as he was concerned as an instrument and a servant in the matter, he would do his best to see that it was never attempted. He was fed up with stunts here, stunts there, and stunts somewhere else which had no possible relation one to another. The profession feared the imposition of some cast-iron system, some form of so-called nationalization, the institution of a whole-time civil service. What we seemed to need in the abstract was a single unit of health government with subcommittees for necessary purposes. There was also needed an extension and coordination of medical provision and an adequate method of medical education. The claims of the State on the profession had greatly increased, owing to the advance of medicine and its manifold application. A new and closer relationship between them was inevitable. It could be made of profit to the public interest only by good understanding. The State should never take out of the hands of the general practitioner the patient whom he was willing and competent to handle on reasonable terms. The speaker pointed out that the medical practitioner, apart from the fact that he might be called upon to undertake official duties in the public service, was liable under statute in the following respects: (1) He must certify births and death and notify all births within thirty-six hours; he must notify cases of infectious disease, of industrial poisoning and of verminous children. He must also be ready to vaccinate and to certify the removal of infectious cases to hospital. (2) He may be called upon to inspect and certify for house disinfection and be prepared to issue certificates for the removal and burial of dead bodies. (3) He may be required to inspect and condemn in regard to nuisances and insanitary house property; or inquire into unhealthy or insanitary areas. (4) He must know something of the ill effect upon health of dangerous or offensive trades or of unsound food. (5) He must be competent to diagnose all forms of mental disease. (6) He must be available to respond to the requirements of the local sanitary authority for the provision of medical assistance and treatment of the poorer inhabitants of the district in which he lives. (7) He is liable to a series of duties in regard to workmen's compensation and pension claims. (8) He may be called in by a midwife to assist in cases of emergency. (9) The local education authorities may avail themselves of his services in connection with the treatment of children and young persons.

Sir Wilmot Herringham, speaking from the consultant's standpoint, argued that there would continue to be room for the consultant. There was the sage reflection that two heads were better than one to satisfy the anxieties of the patient and his friends. At the present time he added there were two classes who obtained the best treatment to be found in the country, the rich and the poor. The former could afford to pay large sums and to have every requisite and comfort during illness, and the latter were treated in hospitals and were probably the better served of the two. The middle classes came off very badly. Sir Wilmot declared that he should like everything that was so admirably organized for the poor to be placed at the disposal of the deserving middle class. Mr. E. W. Morris, house governor of the London Hospital, situated in the heart of the poorest district of London, and which is in dire financial straits, dwelt on the hospital outlook. In his opinion, considering the enormously increased cost of running the voluntary hospitals, the time had come when patients should as a matter of duty contribute to the cost of their treatment. He would take the plunge. He firmly believed that the day of partly staffing voluntary and teaching hospitals had gone. The time had come for the provision of a properly remunerated and whole-time clinical staff.

Mr. D. I. Jenkins, secretary of the Labor Party Advisory Committee of Health, said that until the passage of the Insurance Act it was extremely difficult for the average working man to obtain any kind of medical attendance. He went on to say that the institutional treatment of tuberculosis as now practised was the most colossal failure that the country had ever attempted. Better far to put these patients into a lethal chamber than to hold out fake hopes of saving them. They of the Labor Party were not asking to spoon feed the workers. The medical profession should educate them. Certain work caused certain diseases, and they believed those diseases could be avoided if research was adequate. They did not ask the profession to accept the proposal of full-time State medical service without giving the profession a measure of interest and control in it, and they were quite prepared to pay for it. Dr. Macdonal of York estimated that a State medical service would cost forty million pounds sterling a year. Sir Wilmot Herringham said Mr. Jenkins, who represented the Labor Party, was the only advocate present of a State service.

ASSOCIATION OF AMERICAN PHYSICIANS.

Thirty-Fifth Annual Meeting Held in Atlantic City, May 4 and 5, 1920.

DR. HERMANN M. BIGGS, PRESIDENT, IN THE CHAIR.

First Day—Tuesday, May 4.

President's Address.—Dr. HERMANN M. BIGGS of New York, in addressing the Association, said the first part of the President's duty was a sad one, namely, to record the losses by death which the Society had sustained during the past year. This time the names of Sir William Osler and Dr. Abraham Jacobi, men of untiring energy and striking intellect, were upon the list, as also those of Dr. H. C. Wood, a noted teacher, and Dr. E. E. Southard, whose name had been scheduled to appear upon the present program.

It also devolved upon the President to present to the Association some topic dealing with the general or educational aspects of medicine. Dr. Biggs therefore chose as his subject the status of medical practice in rural communities. There was noticeable a great lack of hospital and laboratory facilities and of high class medical men, which condition had become so acute that some solution of the problem must be forthcoming. Much had been heard of a widespread demand for some form of health insurance, modeled upon the German or the British plan. Such legislation would influence medical practice for the worse and not for the better. Another inevitable tendency was for health authorities to enlarge the scope of their work, and although some physicians thought this undesirable, government aid to the practice of medicine seemed bound to take this form. In the country as a whole there existed an actual shortage of physicians, and men tended to concentrate in the larger cities. Higher requirements as to entry into medical schools had brought about a diminution of 50 per cent in medical students, and the relatively inadequate rewards offered to the profession compared with other pursuits, still further depleted the ranks. The supply of nurses also was growing more and more inadequate, though the demand was greater. Nursing schools found it impossible to obtain enough nurses, and the absence of domestic servants in the rural districts added to the problem. It therefore became more necessary that patients should be admitted to well-equipped hospitals. Such hospitals, however, were not accessible to country people and country hospitals were small and poorly equipped. The increase of cost of maintenance of hospitals was making increase in their number impossible. There was also a shortage of public health workers, owing to inadequate salaries paid to health experts along all lines. In hospitals it was so difficult to obtain internes that a shortage of 15 to 45 per cent was evident on all sides; many State institutions for the insane had become merely custodial in nature, on account of shortage of medical attendance. When one came to inquire as to the status of physicians in rural communities it was found that in one typical community counting on 54 physicians, all of them had averaged 28 years in practice. The drift from the farms to the cities, on account of lack of educational facilities in the country, was another phase of the situation. To remedy this increasing evil the government must adopt some scheme by which the rewards of medical practice could be made more substantial and by which rural communities could be aided to provide facilities, the richer cities contributing their share towards this purpose by means of appropriations. Recently, Dr. Biggs said, he had introduced a bill in the New York legislature. for the establishment of rural health centers to be supported partly by taxation of the district, partly by payment by the patients, and partly by State aid. Such centers would include hospitals properly equipped and divided into pavilions for the specialties, provided with laboratories, with a public health and nursing service, and with medical and nursing attendance for the schools. There should also be periodical clinics where local practitioners could be assisted by consultation with specialists in regard to the diagnosis of obscure cases of illness. There should be a full-time health officer and the building would be a center for all public health activities of the district. This plan would be expensive, but all scientific medical care was expensive. This bill was not passed, because sufficient time had not been allowed for its discussion, but it was likely to receive favorable consideration. Representatives of almost every class were in favor of it. By this means medical practice would be made more attractive and lucrative in the rural districts. The only bodies that had given their opposition to the plan were the New York County Medical Society, the King's County Homeopathic Society, and the Christian Scientists.

Refinement in Methods of Auscultation of the Lungs by Electrical Means.—Drs. W. CHARLES WHITE and L. O. GRONDAHL of Pittsburgh made this presentation. Examination of the physical condition of the normal and the abnormal lung, in regard to their readiness of sound-conduction, was made. This work included study of (1) sound producers; (2) sound conductors; (3) sound receivers. The first and third could be modified; the second not. The sound producers included the inspiratory and expiratory mechanism of the body; the voice, whispered and spoken; percussion; certain explosive sounds such as râles in the lungs; friction sounds. The sound recorder has hitherto been the human ear. The conductors were the body tissues; the air confined in columns in the lungs or in the stethoscope. The objection to the human ear as a sound recorder was its fatigability, the tiring of the ear representing an economic loss in the study. Thus a study was attempted with the idea of recording sound in some more invariable and permanent fashion. Working in a pneumophysical laboratory and reproducing the records made, on charts, fairly constant results were obtained. It was found that percussion was fairly constant as a sound producer and that, as the volume of the lung increased from the apex down-

ward, the volume of sound increased. Intermediate sounds, those produced between the bell of the stethoscope and the interior of the lung, were difficult to understand and interpret. A wide difference between tracheal, bronchial, and vesicular murmurs was shown. The difference between colon, liver, heart, and lung percussion was noted, each having its characteristic record.

Dr. L. O. GRONDAHL, who explained the mechanism used, said that the apparatus consisted of a telephone transformer and amplifier used in conjunction with a string galvanometer. The objection to the amplifier was that it mechanically amplified all sounds alike and thus one could get sounds that one did not want to hear amplified. The instrument as used would give a permanent record, the vibrations of the strong corresponding to the variations in the pressure curve, the intensity of the sound being registered by the amplitude of swing of the string; the pitch, by the frequency of vibrations, and the quality of the sounds being marked by the character and shape of the curve. A tone of pure sound would give a pure sound wave. Complicated breath sounds did not give a pure sound wave. It was easy to see by the records the difference between sounds of different kinds, as, for instance, between resonant lung and dull lung. The great difficulty was in eliminating extraneous sounds. In the stethoscope one heard the sound one wanted to hear, in this instrument everything was equally presented. The problem was to distinguish sounds of different frequency. With the telephonic receiver connected with an alternator one could pick out a sound of any frequency required.

Dr. H. A. CHRISTIAN of Boston, said that at the meeting of the National Research Council an endeavor had been made to bring together a group of biologists interested in the physical side of their work and a group of physicists interested in the biological side of their study, so that the fundamental qualities of biological material, which in the last analysis were probably physical, could be studied from this combined point of view. Hitherto there had been a great gap between these two branches. The working committee consisted of Dr. Williams of New York, Professor Ives, Dr. Bovee of Boston, and Professor Lilly of Clark University.

Dr. FRANCIS WILLIAMS of Boston asked if, when the amplifier was used, was there any difficulty from external noises, as for instance from the passing of street cars or automobiles. He wondered if, with the use of the filters spoken of, it would be possible to exclude undesirable noises.

Dr. GRONDAHL, in closing, said that as soon as one began to use the amplifier, one's troubles increased. So far, in regard to external noises, exclusive of the noises in the stethoscope, there had been no difficulty. The motors, when placed too near the instrument, had been a disturbing factor, but these were easily placed at a convenient distance.

Some Observations on Chronic Arthritis.—Dr. GEORGE DRAPER of New York read this paper which was a preliminary communication. In studies made on meningitis in the army it was found that persons infected, were all of a type that presented a certain similarity in external bodily appearance. Following this idea of external characteristics being in some way related to liability to certain diseases, a study was undertaken of persons presenting the arthritic complex. This was apt to appear most frequently in women, and was associated with menstrual irregularities and with pregnancy. The pulmonary arthropathies were related to chronic bronchitis and asthma. The patients often presented skeletal characteristics suggesting acromegaly. The blood picture was found to be typical. Nervous fatigue, hives and urticaria were included in this syndrome. Chronic arthritis represented profound constitutional disturbance, probably related to endocrine pathology, involving sometimes the thyroid, but more often the pituitary. The effects of bee-sting therapy were reported, not so much because of therapeutic properties, but because they emphasized the relationship of protein shock as expressed by hives and angioneurotic edema, to the group of diseases in which chronic arthritis and asthma figured so prominently.

Dr. EMANUEL LIBMAN of New York said he believed that there were very important points in Dr. Draper's paper. He thought, personally, that infection attacked the joints because of a previous condition of the patient, the ductless glands having been the cause of disturbed metabolism. Dr. Draper had said that he found arthritis was associated with a sort of subthyroid condition. This had been previously discussed under diatheses, but one had also to explain those metabolic disturbances. Certain physicians thought of certain diseases in patients of a certain type. Dr. Delafield used to say, in regard to dysentery, that he could look at a man in New York and tell what was the matter with him although he might not be able to do that in Chicago or in Manila. This question no doubt had a bearing on drug idiosyncrasies. One could look at an individual and say what idiosyncrasy he would present to a certain drug.

Dr. R. ROBINSON said he was very much interested in hearing Dr. Draper speak of a patient's reaction to bee stings. During a trip in the mountains of Pennsylvania one of the party had been stung by a hornet and five minutes after developed intense edema of the face, difficulty of vision, urticaria, and general weakness. After half an hour, vision improved. There was a very intense urticaria all over the body, and rapid and weak pulse. This may have been some form of anaphylactic reaction.

Dr. HENRY A. CHRISTIAN of Boston said that Dr. Walter had made charts showing the heredity in cases of asthma, and from his studies had come to the conclusion that the factor that was hereditary was the protein sensitization. There was no inheritance of sensitization to any particular form of protein; many of the idividuals had no symptoms and no disease, except sensitiveness to one or another protein. Many others had asthma; arthritis was common. No particular disease might be inherited but the general principles of inheritance of sensitiveness seemed to correspond to the Mendelian law.

Dr. KOPLIK of New York said, in regard to children, that a large number of them suffered from asthma, and many gave reactions to sugar in the form of eczema. An outbreak of eczema would relieve the asthma. Often one could trace in the parents of these chlidren a sensitization. They were affected with "acidity" and showed local spots of eczema. Some of the children complained of joint pains; these did not have asthma, so that it seemed as if this reaction was selective and attacked certain children in certain organs.

Dr. S. SOLIS-COHEN of Philadelphia said that this was all part of a much larger question. There was a peculiar inherited familial liability to certain disturbances of the autonomic nervous system and the endocrine glands which manifested itself in different groups, in different families and in different members of the same family, and in one individual at different periods of time, under varying conditions. The difference in aspect depended upon two additional factors: One was the difference in the special exciting cause and the other the conditions determined in the individual himself. These cases should be analyzed from three standpoints: (1) hereditary liability; (2) particular exciting cause; (3) particular local determinant. Osler, in his studies in 1887, pointed out the whole relationship of these disturbances in sensitive persons. He discussed horse asthma, hay fever, pseudo-appendicitis, angiospasm, etc., in a group of persons who had a tendency to metabolic disturbances and presented insufficient carbohydrate and fat metabolism. Persons who showed glycosuria and diabetes seemed to have a distinct resistance to tuberculosis and to carcinoma. On the other hand individuals suffering from carcinoma or tuberculosis escaped these disturbances. Dr. Cohen said he could not pretend to give the explanation, but the facts were very noticeable. This discussion took in only a corner of a very large field.

Dr. LEWELLYS F. BARKER of Baltimore said he thought Dr. Draper had made a very laudable attempt to correlate disposition to infection and the effects of infection. In discussing constitutional make-up one should ask how far did constitutional peculiarities make the individual liable to infection, and how far did endocrine disturbance modify the make-up after

infection had taken place. In regard to the arthritic diatheses, there was evidently a predisposition to arthritic infection. That the endocrine glands had much to do with external habit was established, but one should study the endocrine make-up preceding the infection. Arthritis often led to endocrine disturbance. The thyroid was upset by infection and responded by hyperplasia. Infection in the lungs might be through hypophyseal disturbance. It was hard to determine how much disturbance preceded infection and how much was secondary to it.

Dr. DRAPER in closing said that this was a very complex problem. Dr. Robinson had spoken of the edema of the face following a hornet's sting. In the literature, sudden deaths had been recorded from bee stings about the head, although such persons had been previously stung about other parts of the body without bad result. This discussion had automatically turned into one on asthma. Dr. Koplik had mentioned the alternation between eczema and asthma. There was evidently a pituitary influence in the asthmatic; and the skin disturbance might possibly be adrenal in origin. Dr. Barker had summarized the whole situation so far as infection was concerned.

Effect on Blood Pressure and Blood Nitrogen of the Ingestion of Large Amounts of Fluid.—Dr. JOSEPH L. MILLER of Chicago presented this communication. Experiments were conducted by giving large amounts of fluid to see the effect obtained on the non-protein nitrogen. The water was introduced by the Rehfuss tube, 2½ liters every three hours, till hydremia was produced, and the blood nitrogen was then determined. The urine output was measured and the patient was weighed before and after each period of the water intake. The patients tested had high blood pressure and a steady rise was observed. In one man the blood pressure rose form 160 to 280 mm., and the weight from 124 to 142 lbs. The next day the weight and blood pressure fell, but he complained of dyspnea and distress. Water administered to the same patient at night caused the blood pressure to rise from 170 to 260 mm. and the weight to rise 9 lbs. The blood urea was 34 mg. urea nitrogen per 100 cc. blood before the test, and after the test slightly more. There was a 50 per cent. reduction in uric acid, the creatinine was unchanged. In the other patients (3) tested, the results were comparable. The conclusions were that ingestion of large amounts of fluid had no effect on the urea nitrogen, though there was reduction of the uric acid. When large amounts of water were passed (as in one patient) the blood pressure was not affected.

Dr. HARLOW BROOKS of New York asked if that was distilled water, or ordinary tap water.

Dr. ROWNTREE of Minneapolis asked if the reader of the paper had made any studies of nitrogen excretion. He would particularly like to know about the uric acid disturbance. Did any of the patients develop edema?

Dr. AUSTIN said that in normal persons the urea excretion was increased by increasing the intake of water at the rate of 3 to 5 liters a day, but beyond that point increasing the urinary output did not increase the urea.

Dr. F. M. ALLEN of New York said that in regard to drinking of large amounts of water, there were types of cases where the tension gould go up with drinking large amounts of water. These were the normal tension cases. In the hypertension cases where the water was eliminated rapidly the tension did not increase. If one gave these patients salt the tension would go up and if a patient with a pressure of 200 got salt then there would be fireworks. In one type of normal pressure there was a tremendous lag of excretion and the blood would show a volumetric increase but there was no rise of pressure because the patient got edema. The blood showed great reduction in soluble substances and nitrogenous constitutents. When excretion was increased the distilled water swept out some of the chloride and there was a fall in blood pressure.

Dr. E. P. JOSLIN of Boston said that in considering the elimination of nitrogen one should bear in mind the total metabolism of the individual. In the usual quantity of liquid drunk the metabolism was little changed; with a large quantity metabolism was affected. Unless one remembered this metabolic change one might not account correctly for the nitrogen excretion.

Dr. LOEVENHART asked if the rise in pulse pressure was due to rise in pulse rate. Was there an increase of cardiac output per beat?

Dr. H. A. CHRISTIAN of Boston asked if there was a diuretic or non-diuretic effect

Dr. H. O. MOSENTHAL of New York said that in considering this problem one conclusion would not apply to all cases for the reason that a diuretic effect produced by water would vary very greatly. Water ingested in large quantities instead of causing diuresis might result in oliguria; at times it might produce diminished water content of the body. The effects on blood pressure might be interpreted from two different points of view: (1) a definite nervous effect on the individual; (2) the tension of the nervous system might produce rise in blood pressure.

Dr. MILLER, in closing, said that none of the patients showed any edema. There was a definite diuresis. One patient passed 3,700 c.c. between 9 A.M. and 6 P.M.

Acute Psychoses in Diseases of the Heart.—Dr. DAVID RIESMAN of Philadelphia read this paper. He said that acute mental disturbances sometimes appeared during the course of heart disease with such startling suddenness as to disconcert the attending physician and to prove a severe shock to the patient's family. These disturbances varied, being apt to take the form of hallucinations, of confusional states, of acute mania, or of delusions, especially delusions of persecutions. Often the patient would state that he heard the sound of bells, or smelt some unusual odor, or occasionally the face of a man or a woman would be seen, which appeared and vanished. It should be explained to the patient that such illusions were caused by anemia of the brain. In acute pericarditis acute mania sometimes presented itself, and it would be well in all sudden cases of acute mania to examine for pericarditis. With lesions of the aortic valve delusions of persecution were sometimes noted. The relation of these psychoses to the heart condition might be accidental, but frequently the heart disease was the causative agent. Renal insufficiency, acidosis, and drug intoxication might be factors. Digitalis had at times been held responsible, but, considering the enormous frequency with which this drug was administered, it was unlikely that it was the cause of acute mania or other acute psychoses, seeing that the latter were rather rare.

Dr. GEORGE BLUMER of New Haven said that many of these cases were of syphilitic origin, especially those disturbances accompanying aortic lesions.

Dr. HERRICK of Chicago said that these disturbances developed largely as a result of the circulatory inhibition in the brain, and there was often very distinct evidence of toxemia. The disturbance of metabolism resulted in an accumulation of toxic material in the blood. Occasionally toxic material was introduced, for example, alcohol or digitalis, or occasionally bromides. Morphine, hyocine, and bromine were often given with too free a hand. One other fact had been noted, namely, the hopefulness of some cardiac patients; some it was true, were irritable and nervous, but in some cases their hopefulness was comparable to that seen in acute phthisis. Dr. Blumer's point was well taken; aortic disease was often syphilitic, but it did not often have mental symptoms.

Rebreathing and Ergometer Determinations as a Method of Estimating Cardiac Efficiency.—Drs. ALFRED STENGEL, C. C. WOLFRETH and L. JONAS of Philadelphia presented this paper, read by Dr. Stengel. Studies were made, using the rebreathing apparatus of Henderson, thus producing anoxemia. It was endeavored to test cardiac efficiency by this method. According to Henderson compensation for exertion was brought about by increase in respiratory work and increase in circulation. Haldane, however, did not think that these compensated for lack of oxygen. Thus opinions were conflicting. In the studies undertaken a bicycle ergometer with 6,000 foot pounds of work was used, with a Douglas bag for respiration. Patients with pneumonoconiosis and with valvular lesions were studied. On the whole the results on anoxemia did not furnish the valuable data hoped for.

Dr. MCKERNON said that these oxygen want experiments had to be studied with very great care; recently one well-known physiologist died as the result of oxygen want experiments.

Dr. ROWNTREE of Minneapolis said that in the army aviators were classified according to the elevation they could stand, 18, 15, or 8 thousand feet; the latter corresponded to the type Dr. Stengel showed on his last two charts. The ability to stand anoxemia had a relation to cardiac disease. One must consider myocardial involvement. There were a number of normal individuals who gave various reactions and the tests should be made with great care. They were very important from a psychological point of view. Some of the patients presented psychological phenomena and symptoms resembling an attack of petit mal, although no evidence of circulatory collapse.

Dr. STENGEL said this was a valuable method for studying anoxemia, but whether one could pick out the circulatory reactions was doubtful. Some cases with marked myocardial lesions responded the same way as did the controls, so that the cases could not be diagnosed by this means. One patient showed a momentary loss of consciousness.

Effects on Cats of Digitalis Lutea and Digitalis Thapsi, as Noted During Intravenous Injection, with Simultaneous Electrocardiographic Tracings.—Dr. R. E. MORRIS and Dr. S. MARX WHITE, presented this paper, read by Dr. White. Three methods of estimating digitalis dosage were in use: the frog method, the guinea-pig method, and the cat method of Hatcher. In these studies the latter was used. There was a wide variation in the percentages of the lethal dose. With varying doses changes in the waves of the electrocardiograph in the ventricular complex, and in the various degrees of block in the bundle branches were noted. These changes were comparable with those produced by other species of digitalis. The changes noted in individual variations in the effects might have some bearing on studies of absorption by the gastrointestinal tract.

Dr. ROBINSON said that this series was very similar to that published by Joslin and himself but that he thought the lethal effects were obtained a little earlier in their work, than the figures belonging to this preparation of digitalis. The method was of value as one could determine the quantitative action in animals as compared with that in man. About 25 per cent of the lethal dose would give the same effect as one obtained in patients. This new form of the drug might be more readily obtained in America, than the older form.

Dr. WILDER TILESTON of New Haven asked whether this drug had been used sufficiently in man to say whether it was as efficacious as the other, and without injurious effects.

Dr. WHITE, in closing, said that he did not think the results, according to their tables, were very closely comparable, but there was no difference apparently in the lethal dose. As regards clinical administration, thapsi was much more closely related to purpurea. Lutea had been given to 40 patients and there was a lessened amount of nausea and vomiting. The effects in man were equal to those of purpurea. The great accuracy of this study might have had some influence, as the speaker said that purpurea had never been given under such scientifically accurate measurements.

The Total Metabolism in Diabetes.—Dr. E. P. JOSLIN of Boston read this paper. Metabolism estimations should be made in regard to height, weight, age and sex. In woman the metabolism was 6 per cent. lower than in man, and with each year of life metabolism decreased by 7 calories. In diabetes Benedict had noted metabolism both above and below the normal. Studies made before 1914 showed different results to those made after that time when Dr. Allen had started his metabolism experiments. The newer methods showed increase of life due to wiping out of diabetic accidents. Before 1914 acidosis was a factor. There was no evidence to show that acidosis increased metabolism. Levulose increased metabolism 17 per cent. Metabolism could not be judged by pulse alone, although there was a relationship and pulse readings should be carefully made. Where the metabolism was 660 calories per sq. meter of body surface, the pulse would be 60. Studies must be made also as to sugar and non-protein nitrogen in the blood.

Dr. F. M. ALLEN of New York said that diabetes was a disorder in which the total metabolism was involved. Over-feeding the patient raised his metabolism. The patient must accept his lowered metabolism, then he could live indefinitely, one must not try and drive his renal function.

Chemical Studies on Edema.—Drs. FREDERICK M. ALLEN and J. W. SHERRILL of New York presented this paper. Analyses for urea, creatinine, chlorides, bicarbonates, sugar, and sometimes acetone were made of over 40 exudates from various parts of the body in various conditions, chiefly nephritic edema and the bicarbonate edema of diabetics. No distinctive differences were found between the cases. The chief general characteristic was that the concentration of the inorganic constituents was higher in the exudate than in the blood plasma, so that the fluid accumulation seemed to correspond to osmotic laws, irrespective of the clinical conditions producing it. The relations of the organic substances were variable, but the distribution of all of them between blood and exudate was always unequal. On feeding various substances, the concentration of all constituents in the blood was much more easily and quickly altered than that in the exudate. Lowering the plasma bicarbonate by exercise or forced breathing did not increase the bicarbonate in edema fluid. The fullest study was made upon a young man with heavy albuminuria and casts, good renal function as tested for urea, chlorides, and phenolsulphonephthalein, and marked edema which resisted all dietetic restrictions. The chemical relations between blood and edema fluid resembled those found in cases which responded readily to diet, and also the results of feeding sugar, protein, sodium chloride, sodium bicarbonate, and hydrochloric acid were similar. There was a very marked delay in the excretion of water, with great dilution of the blood and increase of edema; but the edema still persisted under a dry diet which raised the hemoglobin and red cell count above normal. As the edema seemed unexplainable by renal retention, chemical differences, or permeability of membranes, it could be accounted for hypothetically only by mechanical factors, such as abnormalities in the capillary circulation.

Blood Analyses in Some Ophthalmic Conditions.—Drs. J. W. SHERRILL and FREDERICK M. ALLEN of New York read this paper. Dr. Allen said there was a certain notorious frequency of association of certain ocular disorders with various metabolic disorders, especially of cataract and retinitis with diabetes, nephritis, and hypertension. The therapeutic relationship proved that the metabolic trouble was either the primary or the exciting cause of the eye trouble. Thus, diabetic cataract was prevented by proper dietary control of the diabetes, though such treatment did not cure the lens changes after they had begun. Diabetic retinitis could both be prevented by dietetic treatment and arrested after it had begun. Much was also accomplished by diet for the eye troubles of nephritis and high blood pressure. An investigation was therefore naturally suggested into the metabolic state in various ophthalmic disorders in which the etiology had seemed obscure. Reference was made first to 7 cases of retinitis occurring as a prominent feature in metabolic disorders (diabetes, nephritis, hypertension, separately or combined) under treatment in the writers' hospital. The retinal changes were in the form of hemorrhages and exudation, together with secondary optic atrophy in 2 cases. In all 7 cases the ocular and the general condition were severe and progressive. One patient with combined diabetes and nephritis was in the terminal stage and already blind. Two patients with nephritis and hypertension had low plasma chlorides to start with; their hypertension was benefited but not entirely overcome, and the same was true of their retinitis. In the other 4 cases (2 diabetic, 2 non-diabetic) the retinitis was arrested, even when the blood pressure was not brought fully to normal. Aside from the usual diet for diabetes, emphasis was laid upon salt-free diet as the effective therapy in all these cases. Another hospital patient had diabetes, high blood pressure, incipient cataracts, and severe progressive myopia. Diet and reduction of the blood pressure by salt privation had given such encouraging results in the eyes to date, that a metabolic examination and possible diet treatment were suggested in other cases of progressive myopia. Analyses of the blood for sugar, urea, and chlorides in 7 clinic patients with retinitis, 19 with

cataract, and 13 with miscellaneous disorders revealed altogether 7 cases of diabetes, but otherwise gave no constant results. Dietetic treatment was not attempted in these cases. Similar examinations in 36 cases of chronic simple glaucoma revealed 6 cases of diabetes. It was striking that the plasma chlorides were above 600 mgm. per 100 c.c. in 31 cases, and in the other 5 were 595, 594, 588, and 563 mgm. per 100 c.c. One of these patients had been taken into the hospital for trial of salt-free diet. His renal function tests, especially the urea index and the chloride threshold, had been found normal, and he had had no edema; nevertheless an abnormal tendency to chloride retention had been demonstrable. At first, with plasma chlorides 610 mgm. per 100 c.c., his introocular tension was R 45, L 43. After 3 to 4 weeks of salt-free diet the chlorides were reduced to 565 mgm. per 100 c.c., and the intraocular tension fell to R. 34, L. 32. A test to determine whether salt addition would raise the intraocular tension was still incomplete. The observations did not indicate that salt was a cause of glaucoma, and the fall of tension in the single case might be purely accidental; but there was a possibility that salt-privation might be to some extent beneficial in such cases. Two cases of retinitis of unknown origin, referred by oculists for metabolic examination, had proved especially interesting. These patients had normal blood pressure and normal response to real tests, except that the plasma chlorides and the chloride threshold were high. Salt-free diet was used in these cases with decided benefit. In 1 case the improvement was apparent only to the oculist, as the damage was too advanced for restoration of vision. In the other case the retinitis had halted and the vision had risen from 20/70 to 20/30. The study was still incomplete, but a conclusion was warranted that a considerable number of ocular disorders would call for metabolic examination and treatment. The principal or only "toxin" responsible for many cases of retinitis seemed to be common salt. The judgment in any individual case should be based upon accurate tests and not upon a general assumption. Also the diet was a matter requiring skill in both planning and preparation. The patient who was merely directed to avoid salt generally did not succeed in avoiding it to the necessary degree of thoroughness, and in many instances institutional care was necessary for success in the diet treatment.

Dr. ALLEN said he did not want to make people believe that chlorides were to be blamed for every kind of condition. In diabetes there was high blood sugar, iritis in the eye and a tendency to infection in all parts of the body, arteriosclerosis, gangrene, and various systematic disorders. One had to prevent the high blood sugar. Many of these patients got on with high blood sugar, and no complications. Also one might have high chlorides in the blood without complications. Still, there were disturbances with high chlorides and chlorides were the strongest osmotic agents; thus abnormal retention could cause many disorders, edema, arterial hypertension, and some skin disorders. One author attributed the convulsions of eclampsia to high chlorides. The nervous disorders of epilepsy and the psychoses with edemas in cardiac conditions might be phenomena of chloride retention. One should study salt retention to see what it did and what it did not do, and discard other influences.

Experiments with the Influenza Bacillus.—Dr. RUSSELL L. CECIL of New York City, made this presentation. He said that previous efforts to transmit influenza to man by inoculation with the influenza bacillus had been for the most part unsuccessful. These failures might have been due to one or more of several causes, namely, (1) Natural or acquired immunity on the part of the subject. (2) Insufficient dose of the culture. (3) Loss of virulence in the culture used. In the experiments reported by the author, six healthy volunteers were inoculated in the nose and throat with a strain of *B influenzæ* freshly isolated from a case of clinical influenza. Preliminary cultures showed that only one of the volunteers was a *B. influenzæ* carrier, and he denied ever having had the disease. Three out of the six volunteers gave a history of influenza during the epidemic of 1918; the other three denied having had influenza at any time, though they admitted frequent exposure. Two of the volunteers received the washings from chocolate blood agar slant cultures of *B. influenzæ* (⅛ to 1 slant) in each nostril. Two others received the peritoneal exudate from a monkey with *B. influenzæ* peritonitis (0.1 c.c.) in each nostril. The last two received a six hour chocolate blood broth culture of *B. influenzæ* (0.5 c.c.) in each nostril. Five of the six volunteers developed definite signs of infection, premonitory symptoms appearing four to six hours after inoculation. Headache and general malaise were soon followed by rhinitis, pharyngitis, and mild conjunctivitis, and in three instances by tracheitis. Backache was present in two cases; general muscular aching in two. Definite leucopenia was noted in three cases; in the other two the leucocytes were unaffected. Fever was absent in all five cases. Two of the patients were confined to bed for 24 to 48 hours. The symptoms lasted two to four days, except in one of the tracheitis cases in which they persisted for ten days. Strange to say, the *B. influenzæ* carrier developed signs of infection but this ran a mild course. Smears from nasal discharge and from sputum of infected cases showed pus cells and influenza bacilli, sometimes in large numbers. Cultures gave influenza bacilli, often in practically pure culture. In several cases, influenza bacilli persisted in the secretions two weeks or more after inoculation. None of the volunteers developed pneumonia.

Further Studies on Influenza.—Dr. E. C. ROSENOW of Rochester, Minn., presented this paper. He said that the importance of the streptococci, including the pneumococci, during the epidemic of 1918, had been emphasized. Injections of streptococci were followed by a leucopenia corresponding to the leucopenia in the patient from whom the strain came. In the epidemic of 1918 there was a high mortality rate early in the epidemic, but later the character of the disease changed markedly. In experimental work the organism was found to change with animal passage. The pathologists also noted a change in the character of the lung lesions which occurred early and late in the epidemic. The strains tended to lose in virulence. The second animal passage was most virulent in the trachea; in the peritoneum virulence was high and remained high. From a careful study of the statistics of the epidemic it was quite evident that the changes in mortality were very largely due to changes in the virulence of the microorganism.

Dr. C. H. BUNTING of Madison, Wis., said that in 1920, in the epidemic in Madison, daily blood counts were made to throw light on the leucocytic findings. There was an almost immediate leucopenia and inhibition of the marrow cells. In the lung cases there was immediate leucocytosis which occurred before the clinician could tell what had happened. This coincided with the first clouding of the lung in the *x*-ray picture. It would seem that there was inhibition of the marrow, as in typhoid fever. It was found that the bacillus of Pfeiffer produced most profound bone-marrow changes in rabbits. Evidence would seem to be rather in favor of the Pfeiffer bacillus, than of the pyogenic cocci, on account of the bone-marrow picture.

Dr. KOBER of Boston said that he thought it might be of value to recall facts as to the epidemic constitution of the atmosphere. This was evident in malaria and scarlet fever. In agriculture there was a great difference in the quality and quantity of crops of vegetables and fruits which was attributable to meteorological influence. Why should not a similar influence have an effect on unicellular organisms?

Dr. JOS L. MILLER of Chicago said that a leucopenia was noted in a streptococcus epidemic associated with measles. There was frequently leucopenia in streptococcus pneumonia.

Dr. E. C. ROSENOW, in closing, said that contact played an important part in the epidemics, though the reason was not known. There was increase and decrease in the virulence of organisms. The type of reaction in the animal might change completely although the organism was the same throughout. To draw the conclusion that the oncoming leucocytosis with the occurrence of the pneumonia was due to a secondary invader, might not be true. Prolongation of resistance might change the organism so that there was no leucopenia, but a leucocytosis instead.

(*To be continued.*)

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

HERMAN'S DIFFICULT LABOUR. Revised and enlarged by CARLTON OLDFIELD, M.D. 573 pages with 198 illustrations. Published by William Wood & Company, New York.

TEXT-BOOK OF OPHTHALMIC OPERATIONS. By HAROLD GRIMSDALE, M.B. Second Edition. 438 pages with illustrations. Published by William Wood & Company, New York.

THIRTY-FIFTH ANNUAL MEDICAL REPORT OF THE TRUDEAU SANATORIUM, together with Tuberculosis Studies. 127 pages.

ADVANCED LESSONS IN PRACTICAL PHYSIOLOGY. By RUSSELL BURTON OPITZ. 238 pages with illustrations. Published by W. B. Saunders Company, Philadelphia.

THE DAWN OF MODERN MEDICINE. By ALBERT H. BUCK, M.D. 288 pages with illustrations. Published by Yale University Press, New Haven.

WIENER ARCHIV FÜR INNERE MEDIZIN. By RUDOLF KAUFMANN, M.D. 242 pages. Published by Urban & Schwarzenberg, Berlin and Vienna.

THE MEDICAL CLINIC OF NORTH AMERICA. May, 1920. 306 pages with illustrations. Published Bi-Monthly by W. B. Saunders Company, Philadelphia.

ANNUAL REPORT OF THE UNITED FRUIT COMPANY (MEDICAL DEPARTMENT) 1919. 95 pages. Printed by the Press of Geo. H. Ellis Co., Boston.

TWENTY-THIRD ANNUAL REPORT OF THE LOOMIS SANATORIUM for the year ending October 31, 1919. 95 pages with illustrations.

KLINISKE LINSESTUDIER. By HARALD G. A. GJESSING. 354 pages. Published by Harald Lyche & Co.

THE GREAT WAR AND THE R. A. M. C. By Lt.-Colonel F. S. BRERETON. 300 pages with 9 maps, 1 plan and 2 appendices. Published by E. P. Dutton & Co., New York.

TRANSACTIONS OF THE AMERICAN PEDIATRIC SOCIETY. Volume xxxi, 1919. 270 pages with illustrations.

ANATOMIE DES MENSCHLICHEN GEHIRNS UND RUCKENMARKS. By PAUL FLECHSIG. 121 pages with illustrations. Published by George Thieme, Leipzig.

THE FACULTY OF THE COLLEGE OF PHYSICIANS AND SURGEONS. By DORIS U. JAEGER. 24 portraits. Published by Paul B. Hoeber, New York.

HEART TROUBLES, THEIR PREVENTION AND RELIEF. By LOUIS FAUGERES BISHOP, M.D. 422 pages, with illustrations. Published by Funk & Wagnalls Company, New York.

UNIVERSITY OF IOWA STUDIES. Vol. 1. No. 6. June, 1920. Published by the University, Iowa City.

X-RAY OBSERVATIONS FOR FOREIGN BODIES. By HAROLD C. GAGE. 83 pages, with illustrations. Published by C. V. Mosby Company, St. Louis.

RADIOGRAPHY. By ROBERT KNOX, M.D. 64 pages, with illustrations. Published by C. V. Mosby Company, St. Louis.

CANADA'S WORK FOR DISABLED SOLDIERS. 149 pages, with illustrations. Issued by the Department of Soldiers' Civil Re-establishment, Ottawa.

CARE AND FEEDING OF INFANTS AND CHILDREN. By WALTER REEVE RAMSEY, M.D. 290 pages, with 123 illustrations. Published by J. B. Lippincott Co., Philadelphia.

THE PRINCIPLES OF ANTENATAL AND POSTNATAL CHILD PHYSIOLOGY. By W. M. FELDMAN, M.D. 693 pages, with 6 plates and 129 illustrations. Published by Longmans, Green & Co., New York.

THE SURGICAL CLINICS OF CHICAGO, June, 1920. Vol. 4. No. 3. 202 pages. with 52 illustrations. Published by W. B. Saunders Company, Philadelphia.

THE USE OF COLLOIDS IN HEALTH AND DISEASE. By ALFRED B. SEARLE. 120 pages. Published by E. P. Dutton & Co., New York.

HUMAN PARASITOLOGY. By DAMASO RIVAS, M.D. 715 pages, with illustrations. Published by W. B. Saunders Company, Philadelphia.

Therapeutic Hints.

Nausea and Vomiting of Pregnancy.—C. Henry Davis gives the following plan of treatment: (1) A carefully taken history will usually reveal any previous gastro intestinal disturbance, nervous disorder, or other physical conditions which might make the patient more sensitive to the disturbed metabolism of pregnancy. The physical examination will reveal any source of local irritation or infection, which is to be removed. Pus pockets, infected tonsils, bad teeth, uterine displacement, and acute cervicitis may tend to increase the nausea and vomiting of pregnancy, but should be regarded as predisposing rather than causative factors. (2) Put the patient to bed if vomiting is severe. It may be sufficient to keep the milder cases in bed until one or two hours after breakfast, but when possible it is better to keep them there until noon. (3) Use an anti-acid dry type of diet such as is used in the nervous type of vomiting among the non-pregnant. Allow no liquid within the hour before meals or the first one and one-half hour after. The patient may have enough milk to moisten her cereals but no other liquid. This diet should be high in carbohydrate and low in fats and proteins. Milk may be taken between meals. (4) At least three pints of water daily, preferably alkaline water, is given between meals. Pineapple and orange juice may be given. (5) Alkalinize the system by the use of alkaline water or sodium bicarbonate. The alkaline treatment continued throughout pregnancy. (6) Stomach lavage may be needed. This may be accomplished by having the patient drink several glasses of tepid water each containing one-third teaspoonful of baking soda. (7) Sodium bromide is of value in the cases not controlled by the simple change in diet and alkaline treatment. Ten to fifteen grains may be given in a little hot water thirty minutes to one hour before taking food. Cerium oxalate, two grains every half hour for three consecutive doses, is at times useful in cases of simple nausea, but is of no value in the more severe. The use of cocaine is not favored. (8) Corpus luteum extract is administered hypodermatically when there is a history suggesting ovarian insufficiency, and in cases with a history of early abortions. (9) Cases approaching the pernicious stage require a special nurse and should be in a hospital. If seen early before the marked dehydration and severe acidoses, stop all food and liquid by mouth and give 2 per cent to 5 per cent glucose solution per rectum. A retention enema of 250 c.c. of the glucose solution containing from 30 to 60 grains each of sodium bromide and sodium bicarbonate may be given. As the nervousness is controlled reduce the bromides to 30 grains. After twenty-four to thirty-six hours, the patient may be allowed very small amounts of fluid and later solid food by mouth. Fluid may also be given by means of a duodenal bucket as advocated by Kanavel in 1916. (10) Severe cases seen after marked dehydration is present should have 800 to 1000 c.c. of normal saline solution under the breasts. When possible, they should have an 18 or 20 per cent glucose solution in triple distilled water given intravenously according to the technique of Woodyatt, Wilder, and Sansum.—*Wisconsin Medical Journal.*

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Original Articles.

DILATATION OF THE BRONCHI.

A REVIEW OF FORTY CASES OBSERVED JUNE, 1918—JUNE, 1919.*

BY JABEZ H. ELLIOTT, M.B.,

TORONTO, CANADA.

LIEUTENANT-COLONEL C.A.M.C.

ALTHOUGH dilatation of the bronchi was mentioned by Störck in 1761, the first anatomical and clinical account of the disease was given us by Laennec in 1819. In his first edition he says: "The organic lesion which I am about to notice seems to have been hitherto entirely overlooked both by the anatomist and the practitioner." He then proceeds to give "a short account of this rare lesion," and details two cases furnished him by M. Cayol, who as a medical student in 1808 first directed his attention to the affection. Six years later, in his second edition he writes: "The dilatation of the bronchi without being a very common affection, is, however, much less rare than I long conceived it to be . . . within these last six years I have met with a great many instances of it."

The frequency with which this disease is confounded with tubercle of the lung and chronic bronchitis has led me to record some of the cases which I have seen during the past year. It is not a rare disease and its presence is frequently overlooked. The cases reported represent most but not all of the cases seen during this period.

A number of case histories have not been available for this short review. Most of the cases were returned soldiers paraded before me for recommendation as to disposal. The remainder were cases seen at the special chest clinics at St. Michael's Hospital and the Hospital for Sick Children, with five from other sources.

I shall not attempt within the limits of this paper to discuss morbid anatomy or the treatment of the affection.

The disease is usually secondary to disease of the bronchial wall, lung, or pleura. J. K. Fowler, in a study of 35 cases with autopsy reports at Brompton Hospital during a period of seven years, analyses the origin thus:

	No. of Cases
Acute bronchitis	1
Chronic bronchitis	7
Syphilitic stenosis of the bronchi	1
Pressure on bronchi by a mediastinal growth or an aneurysm	1
Foreign bodies in the bronchi	2
Bronchitis and asthma	1
Bronchopneumonia	5
Lobar pneumonia	2
Chronic pneumonia and cirrhosis of lung	5
Pulmonary tuberculosis	4
Pleurisy and empyema	3
Hydatid cyst of the kidney	1
Spinal curvature	2

*Read at the 35th annual meeting of the American Climatological and Clinical Association.

Lord of Boston and Boggs at Johns Hopkins have published cases which point to influenza as a causative factor, and the studies of influenza in the epidemic of last winter have shown us the intense inflammation and destruction which take place in the bronchioles in the virulent forms of this disease. In the severe cases which have recovered we may expect that some at least will have permanently damaged bronchial walls and numerous cases of dilatation will surely develop.

In gas poisoning, bronchiectasis has occasionally resulted, doubtless from the damage done to the bronchi and aided by a degree of pulmonary fibrosis which has followed the purulent bronchopneumonia or bronchiolitis which was not infrequent after chlorine and mustard gas.

Diagnosis is summarized thus by Samuel West: "For the diagnosis of bronchiectasis we require (1) evidence of the existence of a cavity, and (2) reasons for believing that the cavity is a dilated bronchus. The first may be a matter of fact, the second of opinion, and thus the diagnosis of bronchiectasis must in the nature of things be nearly always uncertain and often impossible. The bronchiectatic organ of the cavity is a matter of opinion only, and if it be difficult, as it so often is, after death, even with the help of the microscope, to decide the question, it must be frequently impossible during life.

"Stokes laid down the rule that when the signs of cavity had existed long without change, and without the development of phthisis, especially if the cavity were in the base of the lung, the diagnosis of bronchiestasis was justified. It is at any rate upon these data that the diagnosis is usually made, but as no account is taken of the fact that similar cavities may develop as the result of suppuration or gangrene after pneumonia or in the course of chronic tuberculosis, the data are obviously insufficient. It is always misleading and often incorrect to speak of such cavities as bronchiectatic, and it would be more accurate to describe them by the term chronic excavation of the lung, which in fact involves no theory."

The diagnosis of bronchiectasis when such marked clinical signs are present, can usually be made, though difficult when the lesions are apical as illustrated by the cases recorded by McCrae and Funk. A generation ago the diagnosis of tubecle of the lung was rarely attempted except in the presence of cavity signs or of grave constitutional symptoms associated with changes in percussion note and on auscultation. Yet with practically no addition to

our armamentarium other than the demonstration of the tubercle bacillus, earlier diagnosis was made and to-day even before the appearance of positive bacteriological findings and in the presence of only slight physical findings we do not hesitate to make an early diagnosis.

The time has come when the diagnosis of dilatation of the bronchi may frequently be made in absence of definite cavity signs. Only within the past three years is there anything to be found in the literature of the subject to help one in diagnosing the condition early. Ewart in Allbutt and Rolleston's "System" considers that when originating in a general bronchitis, dilatation in its earlier stages can only be inferred. As to its differentiation from phthisis, he considers that bacteriological examination of the sputum now decides the question after consideration of the clinical history, the general clinical state and aspect and the physical signs. McPhedran, in his excellent article in Osler's "Modern Medicine," also emphasizes the value of history in the diagnosis. With careful attention to these points as outlined, a diagnosis can in many cases be inferred long before the presence of physical signs of extensive or long-standing disease.

When the presence of the disease is inferred, the diagnosis can, in the majority of cases, be confirmed by the *x*-ray examination. It is only in recent writings that the value of the *x*-ray has been pointed out. In a valuable text book on the *x*-ray brought out only last year in English, the statement is made that the *x*-ray is practically of no service in the diagnosis of this disease and this appears to be the attitude of most writers on respiratory disease, even of recent years. This, I am certain, is due entirely to the use of the single plate which is of value only in the case of large dilatations or of dilatations of the main bronchi. Even the stereoscopic plate as produced in many hospitals is of little service; frequently the plates lack the detail necessary for outlining the bronchial tree, but roentgenograms of the chest, properly made, usually show the dilatations beautifully, and after seeing what can be done by an expert operator, one cannot fail to recognize what an enormous waste is going on in the production of inferior work, which fails to demonstrate this not infrequent bronchial lesion. Stereoroentgenograms are as important in the diagnosis of early or deep-seated bronchiectasis as is the tubercle bacillus in the absolute diagnosis of tubercle of the lung.

CASE I.—Ray, S. G. October 23, 1918: Had bronchitis on enlistment and the cough has not since cleared. The chest shows no signs of disease but in view of his persisting cough *x*-ray plates have been ordered. Stereo-*x*-ray plates show bronchioles left upper lobe dilated longitudinally. Saccular dilatation of bronchioles in left middle and lower areas near the hilus and extending into the lower lobe. None of these dilatations extend far from the hilus. Left hilus, upper and lower, shows heavy cotton wool shadowing with radiations. Right hilus shows markings branching into the right interscapular area with a few small nodes, which are also present in lower lobe branches on the right. Right diaphragm clear but irregular.

Diagnosis: Chronic bronchitis with bronchiectasis.

CASE II.—Pte. Chapple. Age 30 years. Spent four months in hospital with diagnosis tubercle of lung, onset with pleurisy. Half of time in bed, half as an up patient with transient fever. No tubercle bacilli any time present. July 7, 1918: General condition fair. Weight stationary, with loss of 20 per cent. Morning cough, varies with posture. Dyspnea on exertion. Pain left lower chest. Working ability six hours. Sputum one ounce, fetid, periodic, increased lying down. Tubercle bacilli found while under observation.

Physical examination shows slight retraction, lower left chest with inspiratory indrawing sixth space. P.M.I. fifth space, nipple line. Localized dulness fifth and sixth spaces with faint breath sounds with constant consonating râles and sibili. Slight clubbing of fingers. *X*-ray shows bilateral dilatation of bronchi. Multiple bilateral saccular about right and left hilus but most marked in left, also right from hilus to base. Evidence of old tubercle about the hilus.

Diagnosis: Tubercle of lung with bronchiectasis about hilus but particularly left lower lobe.

CASE III.—Pte. P. G. Age 20 years. Height 62 in. Weight 175 lbs. Two years ago inflammation of lungs, in bed over a month, since then well until June, 1918, three months after enlisting, when following exposure on route march, took cold, and cough has persisted. July, hæmoptysis. 2 ounces. Physical examination. September 8, 1918: Right supra-clavicular fossa deeper than left. V.R. and V.F. slightly increased over right lower lobe behind. Breathing harsh over right side with prolonged expiration at right apex. Moist râles brought out by coughing over right lower lobe behind. Sputum examination negative for T.B. Temperature over 21 days (July 20-August 9) subnormal except for rise to 99.2° on August 6, when he had a hemorrhage. Referred M.D. No. 2 as tubercle of lung.

October 10, 1918: Nothing abnormal found on examination beyond slightly impaired resonance in left first and second interspace. Adventitious sounds are absent. Finger tips are cyanosed with swelling at back of nails. *X*-ray plates show dilatation of bronchus near the hilus on both sides. His present condition is due to chronic bronchitis which is complicated by bronchiectasis. Sputum negative for T.B. Temperature range normal. Lost 12 pounds weight. Cough in mornings with 2 drachms grayish phlegm. Slight feeling of general weakness.

Diagnosis: Bronchiectasis about right and left hilus with hilus tubercule.

CASE IV.—Bandsman M. June 29, 1918: Has had cough one year. Of late has had frequent hæmoptysis, one drachm to one ounce. Cough frequent. Sputum one ounce daily, influenced by postural change. The overseas diagnosis was bronchitis with debility. Physical examination shows marked general emphysema with left basal pleurisy and high adherent diaphragm. Fingers are slightly clubbed. *X*-ray examination shows general heavy shading of bronchial tree. Dilated bronchi in left lower lobe with shadows suggestive of old hilus tubercle.

CASE V.—Pte. B. C. S. Age 45 years. 60 in. 133 pounds. Heavy colds every winter for past six years. Became worse with wet weather in England. Returned to Canada because of bronchitis. June 28, 1918: Weakness, persistent cough and shortness of breath on moderate exertion. Sputum two ounces daily, mucopus, odorless. Sternum is rather prominent. Deep antero-posterior diameter. There are localized râles with slight dulness in second right interchondral space also below fourth rib right anterior and lateral. There is marked clubbing of fingers and thumbs and great toes. No T.B. in sputum. Temperature normal. Has chronic cough. Wassermann—negative. *X*-ray plate shows bronchiectasis right upper lobe second space also in right lower lobe out from hilus, about left hilus also the bronchi of left lower lobe are dilated. Right diaphragm high.

Diagnosis: Bronchiectasis, right upper and lower lobes, and about left hilus.

CASE VI.—Lieutenant R. M. October 12, 1918: He states he had a slight cough last autumn and carried on until his trench fever and shell gas poisoning in November. He has about one-half ounce mucoid sputum and sleeps poorly. He is short of breath on exertion and has lost 20 to 25 pounds in weight. His condition is probably aggravated by exposure following the torpedoing of his ship en route from England. On examination the chest is flat and both apices narrowed and dull on percussion, especially on the right. Breath sounds are normal, but there are fine râles over the left clavicle. Percussion resonance is impaired on each side

to the second rib. Repeated examination of the sputum showed no tubercle bacilli. *X*-ray plates indicate a quiescent healed tuberculosis of the right upper lobe, chronic bronchitis with bronchiectasis in the right upper lobe.

CASE VII.—Cpl. F. E. G. Age 26 years. Subject to winter colds. Had pneumonia three times before enlisting. Influenza August 10, 1918, at Niagara Camp, followed by pneumonia. June 12, 1918: Troublesome cough. Sputum becoming free. Good color. Nutrition fair, though says he has lost 30 pounds of which has regained 6 pounds. Left chest lags and moves less than right. Resonance impaired below fifth rib anterior, sixth axilla, sixth posterior. Little movement of lower border of left lung. Showers of moist râles over whole left lung after cough, greatest at lower part and superficial. February 25, 1919: No elevation of temperature. Still many superficial crepitations over lower lobe apices posteriorly. Examination of sputum shows presence of many bacteria—pneumococcus, staphylococcus, *streptococcus catarrhlis*, etc. No tubercle bacilli. March 7, 1919: Poor movement of lower border of left lung anteriorly, few crepitations axillary line. *X*-ray shows slight scoliosis to left. Left Diaphragm high. Heart displaced to left. Right hilus, heavy and matted. Vertical bronchus and first and second interspace branches are heavy with few densities, small, at bifurcations. Lower lobe trunks are heavy and wide and matted in inner third. Left bronchial tree from first space is heavy and trunks are irregularly wide, especially anterior branches which can be traced to periphery where pleura appears thickened.

Diffuse bronchiectasis of middle area of left lung. Slight about right hilus. There are old tuberculous deposits. Sputum examination. February 28, 1919, tubercule negative, January 3, 1919, mucopurulent, polymorphs + +, monos. + +, epith. + +, Gram. + cocci + +, streptococci + +, pneumococci + +, catarrhalis Gram + bacilli + +. Eight subsequent examinations of sputum, tubercle negative.

CASE VIII.—Gunner H. D. W. Age 20 years. Height 67 in. Weight 127 lbs. Cough persistent since pneumonia, 1917. Treated in hospital and sanatorium for one year as tubercle of lung. August 23, 1918. General condition fair. No loss of weight. Marked weakness associated with prolonged rest in bed and frequent severe hæmoptysis. Cough rather continuous. Sputum two ounces daily usually intimately mixed with pink. Frequent hemorrhage one to four ounces, odorless. No T.B. at any time. The patient is pale, but well nourished. Physical signs almost nil. Few rhonchi posterior left, disappeared with cough. *X*-ray shows marked widening of the large bronchi in both lower lobes.

Diagnosis: Bronchiectasis. No definite evidence of tubercle.

CASE IX.—Pte. T. C. 30 years. 69 inches. 140 pounds. Bronchitis began in England, 1900. Was in a sanatorium nine months. Came to Canada following spring, where he made marked improvement. Had a slight winter cough subsequently but not troublesome until he enlisted and went to England in 1916. Complains of weakness, and shortness of breath after slight exertion such as going up stairs and walking fast. Coughs a good deal, especially in the mornings, with expectoration, two ounces of dark yellow mucus. High sternum above, clavicles prominent. Chest movement fair, same on both sides. No definite dullness, no bronchial breathing. Diffuse sibilant râles at apices and bases, no moist râles; no clubbing of the fingers. No record of fever. Repeated sputum examinations T.B. absent. *X*-ray stereo shows lung quite clear. No heavy deposits to suggest tubercle. Bronchial tree shadow rather heavy in lower lobes with dilatation in the right tree.

CASE X.—Gunner F. W. G. Age 28. 69½ in. 136 pounds. Health good prior to enlistment though always subject to colds. Admitted to hospital, England, January 18, 1918, as purulent bronchitis. Invalided to Canada, May, as bronchitis. October 22, 1918: Shortness of breath after slight exercise, slight cough, sputum has gradually lessened, only a trace. Had pain in subclavicular region, none now. Expansion fair and equal. Harsh breathing under left clavicle. No dulness. No adventitious sounds. Stereoscopic plates show dilatation of large bronchi left and right. Repeated sputum examinations show no tubercle bacilli. Wassermann: Negative.

CASE XI.—Pte. J. M. Age 20 years. January 11, 1919: Cough has persisted for one year. Influenza overseas eight months ago while in hospital in England with G. S.W. left forearm. Loss of weight 14 per cent. Cough particularly at night, varies with posture. Sputum one drachm, periodic, no blood, more lying down. T.B. absent on repeated examinations. Pain upper and lower left chest. Physical examination—Friction rub left infrascapular with high diaphragm, restricted excursion. An area over left third rib anteriorly with a few râles after cough. Fingers and toes clubbed. Because of wasting of muscles clubbing appears greater in left hand. *X*-ray stereo shows unilateral multiple saccular dilatations about upper pole left hilus associated with numerous small calcareous shadows, diaphragm fixed with slight pleural thickening at base. Left vertical bronchus mottled. Pulmonary area clear.

CASE XII.—Pte. Fitz. Age 30. Two months ill 1903 lead poisoning. Pneumonia at Valcartier, 1916. To France November 3, 1917. Became wheezy and short of breath. Sent to England as G.S.W. arm and asthma, November 1, 1918. Invalided to Canada with amputated right arm and tubercle of lung. Six months in hospital. An up patient with transient fever. July 10, 1918: Working ability, nil. He is thin, weak. Almost continuous cough. Sputum not varying with posture, three ounces, particularly morning, odorless. No T.B. on repeated examinations.

Physical examination shows moderate emphysema. Impaired resonance to second rib right and left with little movement. Both S.S. fossæ dull. No râles. Localized area left infrascapular with dulness, bronchoves. breathing and constant, localized small râles. Marked clubbing of fingers. Slight clubbing of toes. Stereo-*x*-ray shows old tuberculous lesion left and right apex with bilateral cylindrical and saccular bronchial dilatations in right and left upper lobes and also in left lower lobe. Numerous calcareous shadows in hilus. Right diaphragm slightly blurred.

Diagnosis: Bronchiectasis with healed tubercle of lung.

CASE XIII.—Pte. F. H. F. Age 22 years. April 24, 1919: Pleurisy and pneumonia at age of five years. Family moved from England to Canada on account of this boy's health, three years later. Since coming to Canada has had no illness but has always had cough and sputum. Dyspnœa on exertion and frequent colds with only temporarily increase of sputum. Enlisted early in 1916, went to England, August, 1916; France, December, 1916, and carried on in line until gassed in September, 1918. Invalided to England. Severe gas poisoning. Discharged from hospital February, 1919, and returned to Canada for demobilization. There is considerable cough and one ounce purulent sputum daily. There is about eight pounds loss of weight. Fingers are somewhat short and stubby.

Chest: Right lower chest moves less than left. Impairment of resonance over whole right chest especially from apex to second rib and to spine of scapula, and below fourth rib in front and eighth rib, posteriorly. Whispered voice increased over right upper lobe and expiration prolonged with a few whistling rhonchi. Over lower dull area many medium moist râles are heard; expiration not especially prolonged. No marked difference in vocal fremitus or resonance. Right diaphragm is high and adherent. *X*-ray shows many dilated bronchi.

Diagnosis: Bronchiectasis and fibrosis of right apex.

CASE XIV.—Pte F. H. R. Age 31 years. 65 In. 142 pounds. Patient has had cough and sputum since 1903 when he had "slow pneumonia," in bed 6 weeks. Has had "pneumonia" on several occasions, but only ill for a few days. Some cough has persisted. He has never lost weight except for a short time while in France. He has convergent strabismus of left eye antedating enlistment. There is slight stammering which dates from childhood. There is moderate amount of cough and very small amount of purulent sputum. There is dyspnea after moderate exertion. There is marked retraction of left chest with very little movement during respiration. There is heaving praecordial pulsation extending out to axillary line in fifth inter-

space. The right side of the subcostal angle is much greater than left. There is high pitched skodaic resonance with bronchial breathing and no râles over the left upper chest with absolute dulness below fourth rib in front. There is evidence of large cavity extending from axillary region at level of fourth and fifth ribs to scapular region at level sixth and seventh ribs. Cracked pot resonance, metallic râles, amphoric breathing, pectoriloquy. The fingers are slightly clubbed.

Diagnosis: Fibrosis of left lung with bronchiectasis.

CASE XV.—Pte. L. M. Age 30 years. 65 in. 118 pounds. Cough dates from May, 1917, with history of chronic bronchitis. September 25, 1918: There is considerable cough with morning expectoration which is purulent and sometimes sanguineous. There is considerable wheeziness. Dyspnœa is present after moderate exertion, *e.g.*, running 30 yards.

Sputum about two ounces in 24 hours. There is moderate clubbing of fingers. Chest is semi-rigid with moderate kyphosis. There is some impairment of resonance of right upper lobe. Breath sounds are every where harsh with sonorous and sticky râles, heard both behind and in front of chest, especially over lower lobes posteriorly. *X*-ray shows multiple bronchiectasis about hilus and portions of both lower lobes. Sputum has never shown tubercle bacilli.

Diagnosis: Bronchiectasis, principally lower lobes right and left, with emphysema.

CASE XVI.—Pte. D. M. Age 32 years. 69 inches. 137 pounds. Enlisted May, 1915. First taken sick in February, 1918, with cough and pains in chest. Was sent to hospital in France and then to England.

April 2, 1919.—Is not feeling up to his general health; coughs a great deal during the day and night, expectoration one cup yellow green phlegm, odor is foul. Sleeps fairly well and is propped up in bed, which gives him relief. Shortness of breath on climbing flight of stairs slowly. Pulse 82, resp. 20, sitting; touching ground 10 times, P. 120, resp. 26, with distress, returns to original in 1½ minutes. Apex beat at nipple line.

The man is rather poorly developed and nourished. Has cyanotic tint to face. Marked clubbing of fingers. Breath very foul. Chest emphysematous, moving as a whole. General hyper-resonance, cardiac dulness almost lost. Numerous râles heard posterior part of chest, disappearing on coughing. Stereo plates show right hilus dense, lower pole heavy and heavy bronchial roots to lower lobe. Bronchus heavily shaded and appears to have an irregular diameter. Left hilus somewhat heavily shaded but less than right. In area between fourth space anterior and eighth space posterior are mottled shadows of irregularly dilated bronchi. Lower lobe bronchial tubes overlying heart shadow show cylindrical dilation. Left first costal cartilage calcified, more so than right.

Diagnosis: Bronchiectasis. Disability practically total because of very troublesome cough and odor present in sputum.

CASE XVII.—Pte. E. A. W. S. Age 29 years. [illegible] in. Weight 142 lbs. Has been subject to winter colds for years. Has not been without cough and sputum since he went to England, June, 1917. Pleurisy of left side, February and March, 1918. Examination on February 18, 1919. There is cough with purulent sputum about 2 oz. in 24 hours. There is dyspnea after moderate exertion, *e.g.* running 50 yards. Sputum has never shown presence of tubercle bacilli. There is a fetid odor to the sputum and to the breath after coughing.

Fingers are clubbed. Hands are cyanotic. Right chest is slightly smaller than left, with slight droop of right shoulder. Right nipple lower than left but right subcostal angle is not narrowed. Slight diminution of expansion of right chest. There is slight change in percussion note over left lower lobe; there is a blowing quality to inspiration around angle of left scapula and rhonchi are heard with cough in this area and around axilla. Stereo-*x*-ray of chest shows diaphragm normal, moderate scolosis, convexity to right, in region seventh, eighth and ninth ribs. Right upper chest slightly smaller than left; Right hilus is heavy with fluffy shadows in lower pole. Upper three-quarters right lung is fuzzy with bronchial trunks faintly outlined. Lower trunks are matted. Lower lung area is clearer than normal. Left hilus shows fluffy shadows with a number of calcareous shadows well out. Vertebral trunk is dilated to apex. Middle area of left lung —bronchial trunks difficult to trace because of irregular shading. Lower lobe trunks are heavy and blur outline of heart shadow. They appear definitely dilated from fourth to seventh rib outside heart shadow and especially in cardiophrenic angle.

Diagnosis: Diffuse bronchiectasis of left lower lobe and generalized bronchitis.

CASE XVIII.—Spr. E. J. P. Age 17 years. Invalided to Canada as tubercle of lung. March 11, 1919: Cough slight, when he walks fast it is worse, spits up a brownish sputum, never coughs at night or in the morning. No night sweats. Weight increasing. Repeated sputum examination show no T. B.

March 13, 1919.—Expansion equal and good 3 inches, chest well-formed, symmetrical, very slight impairment resonance, right, down to third rib. Right diaphragm high but freely movable. Right front from third to sixth rib and along same level in axilla a few bubbling or gurgling râles, increased after cough. In this area whispered voice is increased. On left side, middle and lower areas, an occasional piping rhonchus is heard.

A provisional diagnosis was made of chronic bronchitis with bronchiectasis. With cough persistent since childhood and no increase on service, to T.B. found at any time and physical signs principally in lower lobes, absence of fever during months of observation, diagnosis of tubercle of lung is not concurred in. History of having hemorrhage fits in with bronchiectasis. *X*-ray shows moderate high diaphragm, normal shape, broad heart shadow, right border lost in heavy right hilus shadow. All bronchi about right hilus show dilatations, some extending well out into the middle pulmonary area and along vertical bronchus well to the apex. On left side also sacculated dilated trunks close to hilus. The left vertical bronchus is mottled as well as dilated. The picture is one of bronchiectasis about the hilus but extending into lung on right side, possibly some old inactive peribronchial tubercle about the vertical bronchi.

Diagnosis: Bronchiectasis, present on enlistment but aggravated by service.

CASE XIX.—Pte. W. L. C. Age 33 years. March 13, 1919. Has lived in California and Mexico for past seven or eight years. Was born in Regina and went South because he was subject to colds. In the South he was comparatively free of colds. On the way to England in April, 1918, he caught cold and was unable to get rid of it. Soon after arrival began spitting up blood,—streaking of sputum. Was sent to hospital, Bramshott, about June 1—diagnosis hemoptysis. While there frequent examinations of sputum never showed presence of T.B. but streaking of sputum continued. Last noticed in sputum about one week ago. Cough is variable and spasmodic. Becomes very troublesome after a fresh cold of which he has had four in last month. Sputum is much increased after colds and is usually blood streaked. Amount at present is about one-fourth sputum cup.

April 3, 1919.—Complaining to-day of steady cough, spits up some clots of blood and a good deal of yellow mucus or brown stained sputum. No night sweats. Weakness after walking brings on severe coughing spells. There is wheezing frequently in A.M.

Chest: Wide subcostal angle, short and broad chest. Semi-rigid. There is impaired resonance of right apex down to third rib with prolonged expiration and a few rhonchi. Posteriorly over right lower lobe are many whistling rhonchi which clear with prolonged coughing. Similar over lower lobe of left lung but less marked on right side. *X*-ray shows dilated bronchi about right hilus, some dilatations about left.

Diagnosis: Bronchiectasis.

CASE XX.—Spr. H. C. Age 20 years. June 21, 1918: Had spent two years in hospital and sanatorium as tubercle of lung. Pleurisy left base at 14. Examination shows the general condition good. Working ability one-quarter. Slight weakness. Loss of weight 5 per cent. Dyspnea on exertion. Pain lower left chest. Sputum two ounces, fetid, periodic, more on lying down and especially on back. Many organisms present. No T.B. at any time. Slight dulness with cavernous breathing and consonating râles in localized area fourth to sixth

space, left anterior. Left infrascapular slightly dull with distant cavernous breathing and bronchophony. Slight clubbing of fingers, none of toes. No fever recorded during two years in hosiptal. *X*-ray shows left upper main bronchus dilated, heavy left hilus with multiple localized dilatations in left lower lobe. Shadow of calcareous deposit in left hilus.

Diagnosis: Bronchiectasis left, particularly lower lobe.

CASE XXI.—G. Wilkins. Age 40 years. January 31, 1919. Nine months in hospital. No previous illness. Three months in bed. Began with symptoms of chronic bronchitis. Sputum more on lying down. T.B. absent on all examinations. Fetid odor. Marked clubbing of fingers and toes.

Physical examination shows an area of impaired resonance about and below inferior angle of left scapula with coarse bubbling râles almost consonating, with bronchial breathing. Chest generally barrel shaped with area C.D. lost. *X*-ray shows multiple saccular dilatations in left lower lobe well out from hilus with dilatation of the larger trunks.

CASE XXII.—H. M. Age 26 years. Height 67½ inches. Weight 140 pounds. Three years ago weighed 163 pounds; 1 year ago, 146 lbs. Gassed, 1916. Invalided home. Discharged March, 1917. States he was cured of chest trouble before re-enlisting in June, 1917. Influenza, May, 1918. March 3, 1919: Patient states that he has had a cough for over two years with small quantity of sputum; says he has blood in sputum once or twice a week. Some difficulty in breathing at times. States he lost 42 pounds following influenza last May. Feels nervous all the time. Since influenza appetite has been poor. Nauseated at times and has vomited once or twice. Formerly had some gastric disease but this has disappeared.

Physical examination shows nutrition fair and color good. Expansion fair and equal. Negative on percussion and auscultation except for an occasional sonorous râle. Heart sounds clear. Pulse 90 at rest, 120 after exercise, touching floor 12 times. Resp. 32 with some dyspnea. Patient coughs frequently.

March 11, 1919. Sputum is blood stained—with small clots and a pinkish tinge to whole—several examinations negative to tubercle.

April 22, 1917. Chest is semi-rigid. No retraction or impairment of resonance, equal and fair expansion of chest. Lung borders move well. Few sonorous râles heard over both lungs posteriorly, otherwise respiratory murmur is normal. *X*-ray shows bronchial tree well outlined with definite dilatations of bronchi in lower lobes especially in right. No evidence of tubercle of lung. Sputum is blood tinged especially after "colds," which are frequent. Examination of sputum is negative for tubercle but contains considerable flora of pyogenic organisms. Pulse at rest 76; after flight of stairs, 104. Returns in one minute with slight respiratory distress. There is cough with mucopurulent blood stained sputum, 3 oz. in 24 hours. There is some substernal pain at nights, worse after a fresh cold. There is dyspnea after exertion, *e.g.* running 75 yards.

Diagnosis: Bronchitis with bronchiectasis.

CASE XXIII.—Pte. J. C. M. Aged 20 years. Height 68 inches. Weight 126 pounds. No previous illness. Gassed September 7, 1918. Medical sheet records conjunctivitis, laryngitis, burns of scrotum, bronchitis. November 26, 1918. Cough tightness across front of chest, short winded. General condition good, color and nutrition excellent. Voice a little hoarse. Chest shows scattered moist râles, but the breath sounds are otherwise clear and normal. September 1, 1918. Right upper chest is smaller than left, with slight dullness along right clavicle and down to third rib. Both apices are narrow, right more so than left. Breath sounds are harsh everywhere, with high-pitched musical râles, especially over both lower lobes posteriorly.

January 14, 1919. There is little sputum but considerable cough. There is dyspnea after moderate exertion; is easily fatigued. Few mucous clicks heardover right upper lobe posteriorly, expiration prolonged over both upper lobes in front. February 20, 1919. No T.B. in sputum on repeated examinations. There is cough with morning purulent sputum 3 oz. in 24 hours. There is dyspnea on moderate exertion, *e.g.* running 75 yards. The *x*-ray reveals extensive fibrosis throughout the chest, particularly marked on the right side. Along the course of the right vertical bronchus and extending out into the first and second interspace trunks on this side, there is considerable matting, small fibrotic nodules are frequent, and these extend far out into the periphery of the lung tissue. The left hilus is thickly studded with calcified nodules and the vertical bronchus shows considerable matting, and numerous calcified nodules along its course also. In the left hilus, however, are small bronchiectatic cavities. This is present in a less marked degree in the right hilus also.

Diagnosis: It is difficult to arrive at an accurate interpretation of these plates, but it is my opinion that a double process is represented here, that in the hilus being bronchiectasis, and that extending up into the apices and the interspace trunks, probably being an old tuberculous infection. There is no gross disease, and no very extensive localized lesion and no evidence of present activity.

Small localized saccular bronchiectasis in both lung roots and probably tuberculous involvement in the apices and vertical bronchi. Bronchitis and bronchiectasis with quiescent pulmonary tuberculosis.

CASE XXIV.—Pte. J. R. Age 30 years. Pleurisy left base, 1915, preceded by bronchitis. Chronic bronchitis, winters, 1916-1917. In hospital six months as tubercle of lung, as up patient with transient fever. No. T.B. in sputum. Working ability one-quarter.

July 14, 1918. General condition good. Loss of weight 8 per cent. More or less continuous cough, varies with posture ; sputum two ounces, odorless. Dyspnea on exertion. Pain left lower chest.

Physical examination shows a lessened movement of left chest with contraction in area fourth to seventh rib anterior and axillary, with marked dullness and loud bubbling consonating râles. Corresponding posterior area about angle of left scapula with dullness and coarse râles. A few crepitations about right nipple. Fingers and toes clubbed. *X*-ray shows unilateral localized saccular dilatation in left lower lobe with associated slight hilus shadows and heavy bronchial shadows. Left diaphragm blurred.

Diagnosis: Bronchiectasis left lower lobe.

CASE XXV.—Pte. B. Cough began June 14, 1916, day after gunshot wound of thigh. Returned to Canada, December, 1916, as chronic bronchitis. Readmitted Spadina Military Hospital, June 1, 1918. Severe cough, three ounces of purulent sputum. Fingers clubbed.

Physical examination shows dullness with signs of multiple small cavities, left lower lobe; some rhonchi over right lower lobe. P.M.I. displaced outward, no movement of left lower lung border. *X*-ray shows no movement left diaphragm, high, adherent. Hilus shadows heavy in the left lower lobe. Behind and outside heart shadow, heavy bronchial shadows rather flocculent with multiple dilatation of bronchioles. Heart much to left.

CASE XXVI.—Ethel M. Age 14 years. March 17, 1919. Cough from infancy, began at two weeks of age, aggravated by whooping cough at six months and two attacks of measles. Troublesome cough. Sputum 4 ounces daily, purulent, odorless, frequently blood-streaked. Nutrition good. Fingers slightly clubbed. P.M.I., fifth interspace outside nipple. Left chest moves little and upper lobe impaired. An area of dullness, right infrascapular. Uncertain and shifting râles and rhonchi throughout the chest. Sputum repeatedly negative to T.B. Tuberculin—no reaction. Under the *x*-rays the ribs appear horizontal. Dilatation of bronchi about right and left hilus, extending further on the right. General increased clearness of lung.

CASE XXVII.—H. B. Age 8 years. January 20, 1919. Cough for three years following measles and pneumonia. Several coughing spells daily with much sputum each time. Half cup 24 hours. Sputum yellow. No odor. Physical examination shows the child to be pale and thin. Fingers clubbed, cyanosed at tips. Left chest contracted. Shoulder and nipple low and left costal margin indrawn. Visible precordial pulsation third, fourth, and fifth space. Dullness to left of heart extending to axilla and left infrascapular with uncertain bubbling râles, not consonating. *X*-ray shows wide dilatation in bronchial tree, left lower lobe

laterally and anteriorly, left diaphragm high and left chest contracted. Some dilatation in right hilus. Tuberculin—no reaction.

Diagnosis: Bronchiectasis left lower lobe, slight about right hilus.

CASE XXVIII.—Lewis T. Age 8 years. March 6, 1919. Had whooping cough at five. Always delicate. Subject to bronchitis but in fair health until last June, when he had a bronchitis which has persisted. At times is less but does not clear. Late in February had influenza. He has severe vomiting spells every day for past week, result of severe cough. Sputum one-half cup daily.

Physical examination reveals a very thin and pale child. Fingers bulbous, tips cyanosed. Chest thin. Expansion poor at bases. P.M.I. diffuse in fifth space. A few scattered râles over lower front right and left posteriorly. Marked dullness left infrascapular with bronchial breathing and consonating bubbling râles. Right infrascapular, slight impairment of resonance with numerous non-consonating râles.

Diagnosis: Bronchiectasis of lower lobes, greater on left side. Tuberculin test negative.

CASE XXIX.—Florence W. Age 24 years. Admitted October, 1918, following serious hemoptysis. Had been at sanatorium one year for tuberculosis. Cough for three years following severe cold. Sputum gradually increased to two ounces daily, frequently pink in color, no odor, no tubercle bacilli found while in hospital and none during year at sanatorium. Fingers and toes clubbed. Slight reaction to tuberculin. Left lower chest moves slightly. Infrascapular dullness with limited area of high pitched bronchial breathing and consonating râles, also bubbling râles. *X*-ray shows numerous dilatations through left lower lobe, a few in right.

CASE XXX.—Joseph L. Age 31 years. January 23, 1919. Cough since March, 1915. Is positive had no sputum until two months ago when ill with "lung trouble." Cough has persisted, but the man has been at work since December, is losing weight, debility increasing, working in dusty occupation. Temperature normal. Lost eight pounds. Is thin. Coughs mostly night and morning with half cup of sputum.

Physical examination is negative. Sputum contains no tubercle bacilli. *X*-ray shows dilated bronchi about right hilus limited to larger divisions.

CASE XXXI.—Minnie M. Age 32 years. June 6, 1918. Cough since December, 1916. Pleurisy, 1917. Sputum increasing to ten ounces daily. In June, 1917, hemorrhage two drachms, August 2 ounces. August, 1918, four ounces, and began to develop unpleasant odor which still continues. Still has occasional hemoptysis, one ounce to a cupful often preceded by pink sputum. Odor now unpleasant. Repeatedly negative for T.B. Skin does not react to tuberculin.

Physical examination.—Lower border of right lung high, moves little. Numerous localized râles somewhat consonating, and tubular quality to breath sounds right infrascapular. Occasional râles left infrascapular with no change in breath sounds. *X*-ray shows numerous dilatations in bronchi of right lower lobe lying in dense pulmonary shadow. Slight dilatation of left lower bronchial divisions.

Diagnosis: Bronchiectasis, particularly right lower lobe.

CASE XXXII.—Madeline S. Ten years of age. January 29, 1919. Some cough for three years following pneumonia, aggravated by influenza October, 1918. Since then troublesome cough persists with ten ounces purulent sputum. Is pale, finger tips cyanosed and slightly clubbed.

Physical examination.—Right infrascapular area dull, as is axillary below fifth rib and the anterior part of lower lobe area; bubbling râles present in dull area. Diaphragm appears fixed. No reaction to tuberculin. *X*-ray shows right diaphragm high in its inner third with adhesions. Hilus shadows heavy in upper poles; lower left is hidden by pulmonary shadow which extends out beyond heart border, in this are seen dilated bronchial divisions. Some dilatation close to left hilus in lower lobe.

Diagnosis: Bronchiectasis with fibrosis of right lower lobe and basal pleural adhesions.

CASE XXXIII.—Frances B. 2½ years. February 26, 1919. Cough since measles six months ago, both day and night, loose, mucous, but does not expectorate. Mother thinks she swallows "a lot of phlegm." General condition good, no fever, does not react to tuberculin. There is an area of dulness with faint bronchial breathing and bubbling râles and rhonchi about inferior angle of right scapula. *X*-ray shows slight contraction of right chest, heavy hilus shadows right with some dilated bronchi in lower lobe. Some scattered peribronchial densities in left upper lobe.

Diagnosis: Bronchiectasis, right lower lobe.

CASE XXXIV.—Fred G. Age 8 years. Has had a chronic cough for five years. One previous admission to hospital for bronchitis, three years ago. Always a weak frail child. His mother has chronic bronchitis. June 1, 1919. Poorly developed, poorly nourished, appears delicate. Coughs often, single, loose. Fingers slightly clubbed. Chest expansion equal, resonance slightly diminished over right infrascapular. Showers of small râles in both lower lobes posteriorly, more intense on right. No reaction to tuberculin. No T.B. in sputum. *X*-ray shows multiple small saccular dilatations well out from hilus in right lower lobe, a few in left. Main divisions not dilated.

Diagnosis: Bronchiectasis of smaller bronchioles lower lobes, principally right.

CASE XXXV.—Arthur C. Age 12 years. Had cough since influenza, November, 1918. Admitted to hospital, April, 1919. Because of discharging ear with presence of diphtheria bacilli, was transferred to isolation hospital, re-admitted when clear. June 1, 1919. Yesterday coughed up two ounces bright red blood, sputum ordinarily two ounces, heavy purulent, occasionally stained with blood. Patient is well developed, well nourished, but very pale. Fingers and toes slightly clubbed. Temperature rises usually to 100° in the afternoon.

Physical examination reveals signs of high adherent right diaphragm with cavity signs and consonating râles about inferior angle right scapula, coarse râles and rhonchi general throughout right lower lobe. Little movement right lower chest, occasional rhonchi left lower lobe. Does not react to tuberculin. No T.B. in sputum. *X*-ray shows widely dilated right main bronchus and branches in lower lobes. Increased density of pulmonary shadows with high immobile right diaphragm.

Diagnosis: Bronchiectasis involving particularly larger divisions right lower lobe with old basal pleurisy.

CASE XXXVI.—J. P. T. Age 33 years. Cough in morning since pleurisy, 1908, recurring attacks of pneumonia since, always confined to left lower lobe. Sputum two ounces daily, purulent, rarely blood stained. June 9, 1919. Left chest much contracted, anteroposterior diameter two-thirds that of right, trachea passes behind inner end of left clavicle. P.M.I. fifth space outside nipple, little movement left chest. Harsh breathing above, marked dulness fifth rib to base axillary and posterior with cavity signs and bubbling râles. *X*-ray shows extensive fibrosis throughout left lung, particularly in lower lobe with widely dilated main bronchial branches. Mediastinum displaced much to the left, general contraction of left chest with kyphosis and marked scoliosis.

Diagnosis: Bronchiectasis, left, involving the larger branches, with fibrosis of left lung.

CASE XXXVII.—I. H., 23 years of age. Cough since childhood, sputum always free, purulent, rarely confined to bed but no day free from cough. Completed college course satisfactorily.

February, 1918. Sputum four ounces daily, purulent, no fever, general condition fair, fingers clubbed. In left lower lobe axillary and infrascapular, slight dulness with harsh breath sounds and many bubbling râles a few râles and rhonchi L.U.L. from second rib down to dull area. *X*-ray shows heavy bronchial shadowing general in lower lobes and left upper with dilatation of main trunks about left hilus, upper and lower, with involvement of smaller branches in lower lobe.

Diagnosis: Bronchiectasis about left hilus and in left lower lobe.

CASE XXXVIII.—R. C. Age 21 years. Cough each winter since childhood; in 1912-13-14 persisted through

summer, takes cold easily. First examination, March, 1913. April, 1915, general condition excellent. Good color. Troublesome cough. Sputum two ounces, purulent, no odor. Limited movement lower left chest with dulness lower axillary and infrascapular, distant bronchial breathing and many bubbling râles. March, 1919. Developed into a big strong young man. For past two years cough and sputum have been lessening but subject to increase at times in winter. Now has little and works steadily. Dulness has lessened. Left diaphragm moves little, no bronchial breathing in left lower lobe but a few râles present with cough. Fingers less clubbed. *X*-ray in 1913 showed heavy wide bronchi in lower lobes, greater in left.

Diagnosis: Bronchiectasis in left lower lobe bronchi, bronchitis lessening, almost recovered from symptoms.

CASE XXXIX.—S. A. M. 33 years. Cough for four years gradually increasing sputum at first mucoid, then muco-purulent and occasionally foul. After 1½ years brick-colored sputum appeared occasionally and during past year is more frequent. In latter part of 1918 had frank hemoptysis of two to four ounces, several times in a week, and again twice in 1919. Always rather delicate but at work steadily except during hemoptysis. March 12, 1919. Sputum about three ounces, frequently blood stained. No. T.B. at any time. Has been diagnosed tubercle of lung. Physical examination of chest, negative. *X*-ray shows dilated primary and secondary bronchi in both lower lobes.

CASE XL.—M. F. 33 years. Seen in consultation February, 1919, with influenzal pneumonia right lower lobe. In addition to the general involvement there were cavity signs about inferior angle of scapula with coarse consonating râles. Fingers clubbed. As a child he had chronic cough and at about eighteen years of age was told he had a bronchiectatic cavity in right lower lobe and that his symptoms might increase as he grew older. On the contrary, his symptoms gradually lessened and for some years he has been free from cough except for occasional bronchial colds.

Diagnosis.—Bronchiectasis with recovery from symptoms, the physical signs persisting.

The case histories give the bare outlines of onset, symptoms and physical findings. In some cases the original files were not available when the preparation of this paper was begun, and as a result a few are incomplete, being made up from short sketch notes. In all but CASE XL, *x*-ray plates were made, and in two others neither the plates nor their readings were available for this paper. Thirty-seven roentgenograms have been studied and most of these were stereoscopic.

Age.—In the series the age incidence has been from 2½ to 40 years, 7 were children and 33 were adults, of whom 25 were soldiers.

Cough.—In two children, cough was present four and six months respectively and in three soldiers for six months; in seven other adults and one child was present under two years and in four others under three years, and in the remainder from three years upward, there being one record each of 15, 16, 17, 18, and 19 years cough.

Onset.—In twenty of the series the onset of the cough was associated with a bronchitis which became chronic. In seven the onset was dated back to a pleurisy, though in three of these there was an associated bronchitis. In seven pneumonia appears to have been the factor, and in these seven, one had many recurring attacks and was a complication of measles, and one of influenza. Three others are definitely traced to influenza and one to measles. Three are the result of enemy gas. In three the onset is not clear.

Clubbing of fingers was noted in 22. It was possibly present in more.

Hemoptysis.—In twelve there was spitting of blood in quantity of a teaspoonful or more and in five of these the hemoptysis was large.

Odor.—An unpleasant odor was present in the sputum of only six. This is a minor point in diagnosis and if absent should not influence the clinician in his diagnosis. Stress is laid upon this symptom in the older text-books, but it is not to be looked for in a large proportion of cases where diagnosis is made early.

Amount of Sputum.—In children it is difficult to estimate quantity of sputum. In the adults it has usually been one to three ounces in twenty-four hours, in four the amount has been less than this and in two there was none—they had become symptom free though physical signs persisted. Three had four ounces, one six ounces and only one as much as ten ounces.

Physical Signs.—Physical signs which would localize the lesion were absent in seven cases, and in eight others were suggestive but insufficient to localize.

Previous Diagnosis.—This was usually chronic bronchitis, tubercle of lung, suspect tubercle of lung or clinical tuberculosis (T.B. not demonstrated). In two, dilatation was diagnosed and in two others mentioned as probable.

Tuberculin.—In thirteen of the fifteen civilian cases reported the intracutaneous test was applied. Of the thirteen, four gave a slight reaction and nine did not react. Six of the children were tested and none reacted.

Localization.—All were lower lobe or perhaps in some middle lobe cases. Many showed some upper lobe involvement. Last year I reported one upper lobe case but none has been met with in this series with the lesion principally in the upper lobe.

Conclusions.—Bronchiectasis is not a rare condition and will be frequently met with in a special chest clinic. It is to be differentiated in its early stages from bronchitis and tubercle of the lung, in its advanced stages from pulmonary abscess and tuberculous cavity.

Hemorrhage is frequent and may be slight or severe.

Repeated examinations of the sputum for tubercle bacilli must be undertaken. Given purulent sputum which on a series of examinations shows no acid fast bacilli, the diagnosis of tubercle of lung is not justifiable until other chronic respiratory diseases have been excluded.

Clubbing of the fingers and toes is a very suggestive symptom.

In differential diagnosis a careful clinical history and a study of the symptoms and physical signs will usually determine opinion but the stereoroentgenogram is invaluable.

Nutrition has been good in most of the cases and is of some assistance in differentiating from tuberculosis.

X-ray Findings.—The single plate is of value only in the diagnosis of dilatations of the main bronchi or their primary divisions, and is not always satisfactory here. For dilatation of the smaller divisions or in the presence of much peribronchial infiltration and pulmonary fibrosis the stereoroentgenogram is necessary. It is an invaluable aid in diagnosis.

11 SPADINA ROAD.

THE CLINICAL VALUE OF SYSTEMATIC HISTORY-TAKING IN GALL-BLADDER DISEASE;

WITH CORROBORATIVE SURGICAL FINDINGS IN A SERIES OF TWELVE ILLUSTRATIVE CASES.*

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THE most important procedure toward the diagnosis of gall-bladder disease, including gallstones and stones in the common duct, is systematic history-taking. Much depends upon the type of history taken, however, and unless certain points are dwelt upon with considerable emphasis, the history is more apt to be misleading than it is helpful.

In order to take a careful gall-bladder history, there is one requirement of primary importance; that is, time. Very valuable data will be missed if attempts are made to hurry through the history, whereas, on the other hand, information of little value will often be interpreted as being of great importance. It is not necessary to listen to the patient tell his story, first because he will wander far away from the subject, and secondly because it uses valuable time and results in a general tangle of ideas as regards the case. More valuable information will be obtained if questions are asked the patient.

The most common complaint given by patients suffering from gall-bladder disease is "pain in the stomach," or "stomach trouble." A less common complaint is "pain in the right upper quadrant of the abdomen." And yet it is true that a huge number of these cases have gone on for many years with this complaint, and in most instances their symptoms have been treated rather than the actual cause of their trouble. This has been termed "snap-

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TABLE SHOWING FORM OF HISTORY FOLLOWED, WITH FLUOROSCOPIC, X-RAY AND SURGICAL FINDINGS.

No.	Sex	Age	Complaint	Duration	Aggravated by Food	Vomiting.	History of Previous Attacks	Requiring Hypo.	Character of Pain.	Referred Pain.	History of Jaundice.
1	F	36	Pain in stomach.	15 yrs.	Yes. 2-3 hrs. after or immediately after meals.	No.	Yes.	No.	Sharp pain at times, epigastric region and at right costal margin.	No.	No.
2	F	37	Pain in pit of stomach	10 yrs.	No.	Yes.	Annually repeated attacks.	Yes.	Sharp pain at times in pit of stomach.	Right subscapular region.	With the attack 1 yr. ago.
3	F	54	Pain in stomach and nervousness.	7 yrs.	Usually after meals.	No.	More or less constant with some periodicity.	No.	Distress in epigastrium.	No.	No.
4	F	32	Pain in upper abdomen.	11 yrs.	Yes.	No.	Yes.	No.	Sharp pain at right costal margin thruout upper abdomen. Lately frequently and worse.	No.	No.
5	F	26	Pain in stomach and abdomen.	7 mos.	Not as a rule.	With each attack; brown bitter vomitus.	1st attack 7 mos. ago. Sharp pain in stomach, vomiting, chills with jaundice.	Yes.	Sudden sharp pain in epigastrium.	Right subscapular region.	Yes.
6	M	21	Pain in stomach beginning after meals lasting 1½ h.	1½ yr.	Yes.	No.	Continuous.	No.	Sharp pain in stomach immediately after eating lasting, 1½ hrs.	Lower left quadrant of abdomen.	No.
7	M	19	Pain in stomach.	4 mos.	Slightly.	No.	Continuous.	No.	Burning sensation in stomach; worse when walking.	Occasionally to right subscapular region.	None.
8	F	33	Stomach trouble anorexia.	10 yrs.	Yes.	No.	Yes.	No.	Occasional pain over gall-bladder.	Right subscapular region.	Yes, when 4 yrs. of age.
9	F	28	Pain in right abdomen.	2 yrs.	No, but aggravated by coughing.	No.	Yes.	No.	Sharp pain at times at right costal margin, aggravated by coughing.	No.	Since childhood, quite marked at times.
10	F	57	Pain in pit of stomach.	3 mos.	Yes.	Yes.	3 mos. ago.	Yes.	Sharp pain in pit of stomach.	Right subscapular region.	With first attack.
11	F	48	Pain in stomach piercing through to back.	2 yrs.	Yes. Warm drinks especially.	Not until a week ago—pain was so intense.	No.	No.	Constant pain, piercing through to back.	Both shoulders and arms to elbows; worse in right shoulder.	None.
12	M	59	Pain in stomach and liver trouble.	12 yrs.	Food eased at times.	Yes at times.	Not until 3 weeks ago.	No.	Dull pain in stomach and in right upper quadrant.	Right subscapular region and back.	None.

diagnosis," the results of which method are perfectly obvious.

On the other hand, regardless of the history, it is advisable to examine these patients with the fluoroscope as well as to make a careful study of their *x*-ray plates, in order that such conditions as gastric and duodenal ulcers, carcinoma and lues of the stomach may be found or eliminated, as the case may be. In a certain percentage of cases the *x*-ray has been of considerable help in making a diagnosis of gall-bladder conditions. Therefore, it is not my purpose to outrule the importance of either fluoroscopy or *x*-ray, but rather to emphasize the importance of correct history-taking.

I have tabulated a series of twelve consecutive cases observed at the Jones Clinic, in which cholecystectomy was done, either because of the presence of chronic cholecystitis or because of the presence of gallstones, to illustrate the clinical value of systematic history-taking. I particularly want to refer to the cases with the complaint of "pain in the stomach." Unless a systematic method of taking such histories is followed, a conclusion might very easily be drawn that would suggest the presence of gastric or duodenal ulcer, because there are so many symptoms common to each condition. (See table.)

Let us review the important points of value that are common to nearly all, as well as valuable toward a differential diagnosis.

1. First of all, the majority of the cases show the condition to be of long standing.

2. Several of the patients stated that the condition was aggravated by food, either immediately or two or three hours after meals. At this point, if we were to follow out an ulcer history, we could very easily obtain enough points to make a conclusion of ulcer. It shows the necessity of following out the gall-bladder history in a systematic way.

3. Vomiting has been common in those cases with a history of previous sudden and severe attacks.

TABLE SHOWING FORM OF HISTORY FOLLOWED—(*Continued*)

PRESENT JAUNDICE	PREVIOUS ABDOMINAL OPERATION.	BELCHING GAS.	PERIODICITY.	ABDOMINAL EXAMINATION.	DIAGNOSIS MADE PRIOR TO ANY LABORATORY TESTS.	FLUOROSCOPIC FINDINGS.	X-RAY DIAGNOSIS.	SURGICAL FINDINGS
None.	Appendectomy 1 yr. ago.	Yes.	Yes.	Tenderness throughout right abdomen; marked over gall-bladder.	Duodenal ulcer or cholecystitis.	Duodenal deformity.	Duodenal ulcer.	Gall-bladder large—Collapsed with difficulty. Chronic cholecystitis.
Slight.	None.	Yes.	Worse in the Fall.	Tenderness elicited only at ensiform.	Chronic cholecystitis.	Negative stomach and duodenum.	No opinion.	Chronic cholecystitis, gall-bladder full of pea-sized stones. Chronic appendicitis.
No.	Hysterectomy 12 yrs. ago.	Yes.	Yes.	Questionable mass in epigastrium. Tenderness over gall-bladder	Chronic cholecystitis with 10% chance of carcinoma of stomach.	Reflex spasm on greater curvature near pylorus. Duodenum filled easily.	Lesion of stomach.	Gall-bladder hard, white with appearance of fibroid tumor. Contained pus and full of stones. Ulcer of lesser curvature of stomach, suspicious of beginning carcinoma.
No.	Appendectomy 14 yrs. ago.	Yes.	Yes.	Slight tenderness at right costal margin.	Chronic cholecystitis.	Not made.	Not made.	A very large gall-bladder, chr. cholecystitis; filled with small stones. Stones in upper and lower portions of common duct.
Marked.	None.	Occasionally.	Slight attacks within 7 mos.	Tenderness over gall-bladder and appendix.	Chronic cholecystitis with gall-stones and stones in common duct. Chr. appendicitis.	Not made.	Not made.	Gall-bladder full of stones. 4 stones in common duct. Chr. appendicitis.
No.	None.	Yes.	Worse at times.	Tenderness in epigastrium and over gall-bladder.	Chronic cholecystitis or duodenal ulcer.	Small duodenum. Stomach neg.	Cap deformity. Duodenal ulcer.	Chr. cholecystitis with adhesions to duodenum. Chr. appendicitis.
No.	None.	Yes.	None.	No tenderness elicitable.	Chronic cholecystitis and appendicitis. possibly duodenal ulcer.	6-hr. meal in caecum. Stomach small with active peristalsis. Duodenum fills easily but not completely.	Slight suggestion of gastric lues.	Chr. cholecystitis and appendicitis.
No.	None.	Yes.	Yes'has gone 2 or 3 months without pain.	Negative.	Chronic cholecystitis with stones. Chr. appendicitis.	Stomach and duodenum negative.	Hyperperistalsis. Negative stomach and duodenum.	Cholecystitis. No stones. Gall-bladder was constricted 1 in. from its pelvis. Glands felt along common duct. Chr. appendicitis.
Slight.	None.	No.	No.	Tenderness high in right hypochondriac.	Cholecystitis.	Not made.	Not made.	Chronic cholecystitis and appendicitis. Fecolith in appendix.
Severe.	None.	Yes.	2nd attack.	Tenderness over gall-bladder.	Acute exacerbation, chronic cholecystitis with stones—also stones in common duct.	Not made.	Not made.	Chr. cholecystitis with gall-stones—4 stones in common duct. Carcinoma at head of pancreas.
None.	None.	Slight.	Worse in cold weather.	Questionable mass in epigastric region.	Chronic cholecystitis with stones.	Negative stomach and duodenum.	Negative.	Chr. cholecystitis, with stones There were two large ovoid stones one inch in length and several smaller ones.
None.	None.	Yes.	None.	Marked tenderness over gall-bladder.	Chronic cholecystitis.	Negative stomach and duodenum.	Negative stomach and duodenum.	Chronic cholecystitis, with adhesions between gall-bladder and duodenum. Chronic appendicitis. A small haemangioma cavernosum on the edge of the liver.

4. A history of previous severe attacks, especially if a hypodermic injection was required at that time, is indicative of gallstones. If we add to this a history of previous jaundice, there is a stronger possibility that stones are present in the common duct. Unless there is jaundice present at the time of examination, there are apparently no other means of diagnosing common duct stones.

5. The character of the pain is exceedingly important. Sharp pain in the right hypochondriac or epigastric region is more indicative of stones, whereas dull pain in that region is more indicative of chronic cholecystitis.

6. Referred pain, especially to the right subscapular region, seems more prevalent in cases with stones, although it can be present to a marked degree in cases of chronic cholecystitis.

7. A symptom common to nearly all in this series is the belching of gas. This one symptom accounts for a lot of serious consequences. For example, with a complaint of stomach trouble and the belching of gas, the snap-diagnosis is too frequently made of "chronic indigestion," "inflammation of the bowels," or the like. The patient is treated with some remedy that apparently may relieve him, or tide him over until the symptoms return again, or possibly several times. In one of the cases herein mentioned, the patient was so treated for a period of 12 years, and yet he had every symptom of the conditions found at the operating table. Is it not perfectly obvious that more careful history-taking is absolutely essential in the diagnosis of these cases?

8. Periodicity, so characteristic a symptom of duodenal ulcer, might be mentioned as being more or less common in gall-bladder disease also. However, in gall-bladder histories, the statements of previous severe attacks is of considerably more importance than periodicity.

In the table I have also made mention of the abdominal examination. In all but two of the cases, definite tenderness could be elicited in the region of the gall-bladder. In two of the cases, the presence of a mass was suspected. I bring out this point simply to illustrate how this physical finding compares with the histories, and how valuable in the way of a diagnosis it is.

The fluoroscopic and *x*-ray findings are mentioned because in a certain percentage of gall-bladder cases these findings are valuable. In addition, both of these procedures have considerable value, as regards the elimination of other possible conditions.

The diagnosis given is the "tentative diagnosis" that was set down after the history and complete physical examination were finished, previous to any laboratory tests or *x*-ray observations.

Summary.—These few cases illustrate the value of systematic history-taking in the diagnosis of gall-bladder disease. The valuable relation between the history and abdominal physical findings is also well shown. In the order of their importance, we could mention the following points as being more or less diagnostic: History of long standing stomach trouble, or pain in the right upper quadrant of the abdomen; previous attacks of sharp pain in the right upper quadrant of the abdomen associated with or without jaundice; history of such intense pain that a hypodermic injection was required (stones); pain referred to the right shoulder, possibly to both shoulders, or downward across the abdomen; feeling of distress, or aggravation of the symptoms after meals, associated with the belching of gas.

The physical finding of paramount importance is the presence of tenderness in the region of the gall-bladder. This can easily be elicited upon deep palpation. If tenderness be present, comparison with the opposite side should always be made. The absence of tenderness on the left side in such cases is a very valuable sign to add to the diagnostic points of gall-bladder disease.

In conclusion, therefore, it should be emphasized that gall-bladder histories require time, as well as a systematic method of taking them. By following a routine form in taking histories in such cases, the making of a diagnosis otherwise difficult will be greatly simplified.

A STUDY OF THE NATURAL SARATOGA-NAUHEIM BATHS AT SARATOGA SPRINGS, N. Y.*

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In presenting a study of the natural Nauheim baths, as made in this country, I appreciate the fact that I am entering upon the discussion of an entirely new subject of medical interest, the practical value of these baths, as a therapeutic measure, having impressed but few of the profession. The reason for this is the fact that the data available have not been sufficient to present the subject in a comprehensive, practical form with regard to just what these baths are able to do and the type of cases to which they are applicable.

The natural Nauheim baths at Bad Nauheim, Germany, have been used for many years with success in chronic heart diseases by those noted internists, Gradel, August and Theodore Schott, and their confreres, who, by their continued study of the compensatory changes presenting in individual cases, made application of these baths with a rational regime to which the profession of the world has been attracted. The early work of these physicians was entirely with the myocardial diseases with hypotension, superinduced by valvular diseases and a progressive decompensation, for which they found the Nauheim baths a positive benefit; the continued prescribing of the baths led to a wider field of application. It is only within the past two decades that the Nauheim baths have become known as an important therapeutic adjunct in the treatment of the myocardial and vascular changes incident to many forms of chronic disease; it is also within that period that the profession of all Europe and many internists in this country began to advise their patients to make pilgrimages to Bad Nauheim that they might receive the benefit of these baths under the direction of the physicians who had become famed in their application.

It is within the past ten years, when the baths

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at Bad Nauheim were no longer available, that the mineral waters at Saratoga Springs have been made the subject of intense study as to the possibility that their mineral salts might be productive of results equal to those springs at the European Spa. The discovery of an unusual content of carbonic acid gas and radium, intensifying the therapeutic value of the salts and reproducing an ideal Nauheim bath, has resulted. This study of the baths at Saratoga Springs has now continued over a period of ten years, resulting in the establishment of a comprehensive regime, surrounding the baths with special instructions as to diet, rest, exercise and taking the waters, and in addition, sufficient restrictions have been placed about the patients to attain the best results. The success of this regime could not have been achieved without recording a careful history and making a complete physical examination in each case, especially ascertaining the changes in the heart and vascular system, the determining factors in the results to be attained.

The physiological action of the natural Saratoga-Nauheim bath is exhibited as soon as the patient is immersed in the bath, by the collection of many layers of bubbles of carbonic acid gas over the entire body, which, coupled with the large percentage of natural mineral salts, creates a dilatation of all the superficial blood vessels, made evident by the immediate slowing of the pulse and the decided flushing of the skin.

This retardation of the pulse continues during the entire bath, as exhibited by the pulse recorded before, during and after each bath, which shows a decline of six to twelve beats to the minute. Correspondent with this fact is the very deep reddening of the skin and the decided tendency to perspiration, even in a bath of an indifferent temperature of 98° F. The continued slowing of the pulse during the entire bath is significant that the dilatation of the arterioles extends more deeply than the superficial circulation, reaching the deeper vessels, as is evidenced by the progressive retarding of the pulse, which has slowed the entire circulation; the blood of the deeper vessels passes into the dilated arterioles, thereby relieving the work of the myocardium and left heart, with a resulting lengthened diastole, creating a longer rest to the heart in its cycle and an opportunity to recover its nerve function.

The increased length of the diastolic pause is the most potent result attained by the Nauheim bath, this pause being extended from one-tenth to one-fifth of each minute during the bath and retaining this control for many hours, thus affording to the weakened myocardium and its nerve function an extension of time by which to achieve an adequate compensation.

The retardation of the pulse, coupled with improved metabolism and the recovery of compensation, are the determining objects to be attained in a course of Saratoga-Nauheim baths, as some of the patients for whom these baths are prescribed present at examination a high tension regular pulse, while others present a weakened impulse, a result of a long continued hypertension or an acute infection with a resulting hypotension. Another type of cases, superinduced by one of the chronic diseases, can be influenced only up to a certain point, while others, induced by a functional toxemia, respond in the shortest possible time, in both conditions the Nauheim bath achieving beneficial results, in the one case a general relief to the heart and circulation, in the other a complete cure.

One of the most gratifying effects of the Nauheim bath and one which is very early experienced by the patient is the feeling of exhilaration resulting from the adjusted circulation and improved matabolism, stimulating the nerve centers by the action of the mineral salts, carbon dioxide gas and radium content, thereby effecting a more active elimination of the products of any toxemia and stimulating an active assimilation.

The Saratoga-Nauheim bath is prescribed primarily for its effect upon the heart and circulation; but it is a clinical observation that if the nerve centers are not affected, the metabolism improved, toxic products completely eliminated, and the active initiative in the patient returned, the intent of the bath is not attained. The regime prescribed must have an effect on not only the hypertension and hypotension, but also the diseases, either functional or chronic, by which they are superinduced.

It will be seen that the regime prescribed for the heart must be applicable also in part to the associated diseases; the treatment and improvement must progress simultaneously in order that the best results may be achieved.

A course of treatment with the Saratoga-Nauheim baths consists of from twenty-one to thirty baths, extending over a period of four to six weeks, the number and frequency being suggested by the result of the examination of the patient. The baths are prescribed in series of one to three baths, followed by a rest day, at which time the regime is continued except the bath. On each rest day a complete examination is made with a view of noting progress, making any correction in the regime that may be necessary, and giving instructions for the succeeding series.

The mineral water used for the baths carries fifty-five per cent, of carbon dioxide gas, which is generally continued through the entire course of baths.

The length of the baths as prescribed for the Nauheim patients varies progressively from seven minutes up to twenty or twenty-five minutes, as may be suggested by the conditions presenting in each individual case.

The temperature is the most important detail of the Nauheim bath and the most difficult of adjustment in each case. In the hypotension patients, who are always affected through their nervous system and bear the cool bath well, it may be as low as 88 or even 86 degrees F., with most beneficial results, while in the hypertension cases the temperatures are most effective and serve a greater degree of comfort to the patient when directed upward, but never above 99 degrees F., as the higher temperatures prove enervating.

A rest of one hour is advised after each bath in order that the circulation may be adjusted and the physiological action of the bath may be amplified; if sleep is obtained so much advantage is gained in exhilarating composure to the nervous system, which may in the hypotension pa-

tients, be followed by a light massage at first and later by gymnastic exercises, as prescribed in the individual case.

The gymnastic exercises conceived by Schott and also the graduated grade walks suggested by Oertel, as an adjunct to the baths, have proved of the greatest benefit to patients affected with a myocardial relaxation.

The contra indications to prescribing the Nauheim baths are: decompensation associated with an irregular, intermitting heart action with tachycardia; general anarsca or even a considerable edema of the limbs with some ascitos; severe or repeated attacks of angina pectoris, or a dilatation of the left heart. However, some of these patients, after a long rest, are sufficiently improved that the baths prove of great benefit and become the means of a partial recovery.

The after cure is the continuation of the active cure at to diet, rest, exercise and taking the waters, either at the Spa, in the mountains or at the seashore, allowing the system to adjust itself after pursuing the regime. The patient must be advised with the same precision as to just how strenuous and also how quiet he may be, as for his original treatment. It is my experience that the patient who follows instructions as to his after cure, accumulates as much improvement as during the routine of the curative regime.

The patient with a low systolic tension is advised to follow the bath regime by a stay at the seashore, where he may participate moderately in ocean bathing, cool sprays and baths, but should refrain from taking hot baths of any kind or any active exercise, as tennis, running or jumping; he may walk and take exercises, also play golf moderately a part of each day.

The hypertension patient may go to the seashore but better inland or in the mountains—not high, taking moderate exercise, preferably golf, one hour at a time twice daily. Patients who have been the subjects of a constant arterial tension above 200 mm. of mercury, systolic, require a second course of treatment each year, that the cardiovascular tension and metabolism may be maintained at a more even ratio, and with less strain upon the myocardium and gastro-intestinal tract.

In all cases the regime that has been pursued during the treatment was prescribed in part for the disease with which the patient is affected, hence it should become to him the continued regime of his future living.

In the preparation of this paper I have utilized the clinical observations and tabulated histories of four hundred and six patients, for whom it has been my pleasure to advise a regime, including the natural Nauheim baths, the results of which have been of such decided benefit to patients and have impressed me with a deeper appreciation of the value of one of the most important therapeutic assets of which this country can boast—the Saratoga mineral waters and baths.

The series of cases that came under my observation during the past five years includes two in 1915, eighteen in 1916, fifty-three in 1917, one hundred and two in 1918 and two hundred and thirty-one in 1919, exhibiting the rapid development of the work as soon as a rational regime was established and the attendants could be trained to appreciate the importance of each detail of the bath.

These patients represented 137 males and 269 females, 148 of whom recorded a low arterial tension and 258 a high systolic pressure, reflected from the many diseases and infections with which these patients were affected.

Hypotension cases by ages:

10-20,	20-30,	30-40,	40-50,	50-60,	60-70,	70-80,
2	5	28	57	46	16	4

Hypertension cases by ages:

0	6	33	71	105	35	8

The etiological factors of hypotension were found in the anaemias, nerve exhaustion, valvular disease, and the toxaemias of la grippe, influenza, malaria and auto-intoxication, each proving a debilitating factor in the patients, the majority of whom had an associated anaemia.

The cases of low systolic pressure exhibit a debility out of proportion to their arterial tension; not that their pulse pressure is so great, but it is the reflection of the rheumatism, nephritis, valvular disease of the heart, diabetes, biliary disease, or gastric or duodenal catarrh, with which the patient is affected.

The most serious cases are those of myocardial decompensation with hypertrophy, which predominate the whole number of hypotension cases, some of whom present a low tension, while others are only moderately low or even what might be considered normal, but for the irregular, intermitting heart action with weak impulse at the apex, which is significant of very little myocardial recuperative power. The regime prescribed for these patients is rest in bed for two or more weeks, after which a bath each alternate day or with two days interval, before the succeeding bath, which is prescribed only after a complete examination, this careful regime being continued throughout the entire course.

It often occurs that these patients are business men or women or those whose duties necessitate close application; it is these patients who, having pursued a course of Nauheim baths and returned to their duties, are apt to exceed their limit of compensation and soon have undone all that had been accomplished, resulting in a relapse of an irreparable decompensation, acute dilitation or sudden collapse.

The lowest systolic pressure recorded was 70 mm. of mercury, and the greatest gains recorded during a course of the baths was 52 mm., the average gains obtained being from 15 to 30 mm., while in two cases no gain was obtained in a single course of 21 baths. It will be seen that of 148 patients recording low arterial tension, all but two of that number were benefited; in less than two per cent. of all treatments improvement was not possible.

Hypertension in the young is significant of a disturbed metabolism and assimilation, which can be corrected by a proper diet, free catharsis and the elimination of all toxic products. In middle life it is not only the result of a toxamia but also the initial stages of an arteriosclerosis coincident with one of the chronic diseases not fully defined

in some patients, while in others well developed in symptoms and pathology.

In the later decades of life we find these diseases fully developed, and the patients seeking relief from vertigo, insomnia, debility, and a variety of nervous symptoms, trying to find at different spas a regime that will procure for them a comfortable life.

In the group of cases of the type of hypertension, numbering 258 cases, 72 recorded a tension of 200 mm. systolic, or more, and nine of these patients had a tension of 250 mm. to 300 mm. systolic. These patients responded with great satisfaction, with the exception of five; these receded only 10 mm. to 15 mm. during their entire course of baths, while all the other patients responded from 20 to 60 mm. systolic.

In several patients for whom I had prescribed three or four years consecutively, I found that the pressure was reduced a little lower each year, although receding between each course, did not approach the highest recording point of the previous course of baths.

The dietetic regime in these cases, and especially in the higher registering cases, is of the greatest importance, the food prescribed must be less than the amount the digestion can take care of in the individual for whom it is prescribed. The real import is that intestinal fermentation must be reduced to a minimum, as all toxic processes affect the blood pressure, especially in patients having a systolic pressure above 200 mm.

The results that are attained by a course of the natural Nauheim baths are not entirely defined in the improvement achieved by the course of baths and the regime by which they are surrounded; but involve frequent examinations of and conferences with the patients, impressing them with the importance of each detail of the treatment, which really consists in establishing a regime of living for themselves as regards diet, rest and exercise as applied to their individual disease.

Summary of Indications.—The natural Nauheim baths are applicable to:

1. All chronic diseases having a high or low blood pressure, prescribed with a regime for that disease.

2. All diseases of the heart with hypertrophy and decompensation, without tachycardia or dyspnea.

3. Patients with an irregular and intermitting heart action, without tachycardia or dyspnea, or, with very little. In these cases the action is regulated, intermissions lessened, and hypertrophy diminished.

4. Patients with decompensation after sixty. Metabolism and assimiliation are improved, arterial tension relieved, and the myocardium strengthened.

5. Patients with low pressure from any cause. Metabolism and the debility, myocardial relaxation, and anemia are improved, which in turn elevates the blood pressure.

It is a clinical observation that with the improvement of the systolic tension the wide divergence of the diastolic tension, if any, is diminished coincidentally, demonstrating a normal reaction from the baths.

58 PHILA STREET.

PROPOSED VEGETABLE DRUG DELETIONS.*

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IN the preface to the second edition of "Useful Drugs"† we find the following statements: "It has long been recognized that the multiplicity of drugs and preparations of drugs presented to the attention of the medical profession is an evil. Leaving out of account the articles described in the N. F. and the vast number described in dispensatories and similar unofficial compilations, the number of drugs and preparations described in the Pharmacopœia alone is far too large for intelligent practical use. *Of even greater importance is the well-known fact that a considerable proportion of Pharmacopœial drugs and preparations are superflous or worthless.* Repeated attempts to eliminate such articles from the Pharmacopœia have failed because they have uniformly encountered the objection that articles or preparations are used by some physicians and therefore should be recognized and authoritatively defined."

In accordance with the general trend of medical progress less and less attention and space in the medical school curriculum are being given to those drugs and preparations that are looked upon by medical authorities as being of minor importance, questionable utility, and doubtful reliability. Some of the latest editions of standard, recognized textbooks have gone further by absolutely omitting the greater proportion of such agents. Most of us will doubtless agree that the host of substances, good, bad, and indifferent, that were introduced to us in the college courses in Materia Medica, Pharmacognosy, etc., because of their very number, materially affected our interest in the subjects and led to considerable confusion and discouragement. This has been true not only in the college of medicine, but particularly in the pharmacy college. A movement to restrict the instruction in Materia Medica in the medical schools and the examinations in Materia Medica by State Medical Examining Boards to the more important drugs was initiated by the Council on Medical Education of the American Medical Association and the Confederation of State Examining and Licensing Boards. After numerous conferences with the State Examining Boards, professors of Materia Medica, deans of medical schools, and other members of the medical and pharmaceutical professions, the Council on Pharmacy and Chemistry of the A. M. A., following a thorough and careful sifting process, published "A Handbook of Useful Drugs," which is now being used as the basis of instruction in practically every Department of Pharmacology of the medical schools, and is also being used by the large majority of State Medical Examining Boards as the basis of examinations in Materia Medica and Therapeutics. The first edition appeared in 1913 and ushered in a long looked for and thoroughly welcome change in the scope of teaching in this par-

*Presented before the Scientific Section of the meeting of the American Pharmaceutical Association and of the U. S. Pharmacopœia Revision Convention in Washington, D. C., May, 1920.

†Press of the American Medical Association, Chicago.

ticular branch of medical science. Although practically every medical school and the large majority of State Medical Examining Boards are heartily cooperating in this work, it is doubtless a fact that the larger number of our schools of pharmacy are still clinging, for some reason or other, to the old method of trying to cram the pharmacy student full of information concerning every known member of the Materia Medica regardless of its usefulness or uselessness in the treatment of disease, regardless of whether or not it is being used by the medical profession.

Why waste valuable time and energy on pyrethrum, mezereum, xanthoxlyum, matricaria, etc., of the U. S. P., and asclepias, papaveris fructus, trifolium, verbena, echinacea, and a host of others of the N. F.? Why assist, by including these substances among the drugs taken up in the courses of the pharmacy school, in attempts to retain or to introduce such substances into the U. S. P.? Why encourage movements to introduce as many substances as possible, including socalled "household remedies," insect powders and other substances infrequently used as medicines, foods, reagents, etc., simply to have official and legal standards for the same? By taking part in such movements, intentionally or unintentionally, one assists in promoting still further departure from the original idea of the Pharmacopœia. A Pharmacopœia, we are taught, is a book which defines and standardizes *certain* drugs and preparations, and whose aim is to establish definiteness for a *selected number of those substances extensively used and recognized as possessing real worth in the treatment of disease by the physician.* The U. S. Pharmacopœia was founded by the medical profession, and was at first an *exclusive physician's Pharmacopœia.* Since 1840, however, the revisions have come more and more under the control of the pharmacist, and the work is gradually becoming a manufacturer's book of specifications and standards, and less and less of a guide to the medicinal agents prescribed by the medical profession.

Why defend the presence in or the introduction into the Pharmacopœia of substances which have been proven to be of no real value in the treatment of disease by saying that they are used by some physicians and therefore should be recognized? The real worth, the absolute value of a substance as a medical agent, should be proved, such proof recognized, and the real practical value further proved by extensive use before it is admitted to the U. S. P., and all substances now in the Pharmacopœia that do not meet these requirements should be deleted. Put them in the N. F. or elsewhere if you please, but get them out of the U. S. P. and keep them out. The writer ventures to state that unless the requirements for admission to the N. F. are made somewhat more stringent, this valuable work will gradually become the dumping ground for discarded members of the Materia Medica and slowly lose its prestige.

The approach of the U. S. P. Convention with that part of the program devoted to the subject of deletions prompted the writer to attempt to secure the opinions of the members of the medical profession in the city of Atlanta concerning one phase of this important work—Vegetable Drug Deletions. Accordingly a list of 121 U. S. P. vegetable drugs (excluding active principles like the alkaloids, glucosides, etc.) was compiled and mailed to the entire medical profession of Atlanta with the request that each man study the list and then strike out those drugs that he believed it would be wise to drop from the U. S. P., giving, in each case, very, very briefly his reasons for such recommendation. It is hoped that others may carry out a similar study of the vegetable drugs in other sections and also that the chemicals of the U. S. P. may be taken up in the same fashion. A study of the prescription files of the retail pharmacies of Atlanta was also begun in order to determine what substances are actually being prescribed by the medical profession of this city. The prescription data, although incomplete, are, nevertheless, too bulky to digest and to condense at this time. It will, therefore, be completed at a later date and used as the basis of another paper. The State of Georgia has a population of about 3,000,000, with a total of about 3,442 physicians. The city of Atlanta has a population of approximately 300,000 and a total of 513 physicians. The medical schools of practically every section of the country are represented by these men. Of the 513 physicians, 387 responded to the letter sent them. Therefore, the results of the communication represent the opinions of something over 75 per cent. of the medical profession of Atlanta.

Data Secured.

The replies show that the only U. S. P. vegetable drugs concerning which there is absolute unaminity of opinion are:

1. Aloes,
2. Asafetida,
3. Aspidium,
4. Balsam of Peru,
5. Balsam of Tolu,
6. Belladonna Leaves,
7. Belladonna Root,†
8. Capsicum,
9. Cascara Sagrada,
10. Cinchona,
11. Digitalis,
12. Ergot,
13. Gentian,
14. Glycyrrhiza,
15. Hydrastis,
16. Hyoscyamus,
17. Ipecac,
18. Jalap,
19. Linseed,
20. Lobelia,
21. Nux Vomica,
22. Opium,
23. Physostigma,
24. Pilocarpus,
25. Podophyllum,
26. Rhubarb,
27. Senna,
28. Black Mustard,
29. Veratrum Viride,
30. Ginger.

†Several suggested that the leaves alone would do.

Not one of the 387 who replied recommended the deletion of any of these thirty drugs listed above.

The following table gives the list of drugs along with the percentage of the 387 Atlanta physicians that advised deletion in each case.† The foregoing thirty drugs are omitted from the list:

Acacia	10	*Aconite*	11
Agar-Agar	12	Althæa	73
Sweet Almond	45	*Starch*	10
Anise	29	Arnica	34
Aspidosperma	52	Bitter Orange Peel	40
Sweet Orange Peel	20	*Benzoin*	10
Buchu	23	Gamboge	25
Calumba	50	*Camphor*	2
Cannabis	52	Cubeb	24
Caraway	50	Eriodictyon	63
Cardamom Seed	28	Fennel	42
Chondrus	63	Nutgall	24
Cimicifuga	37	Gelsemium	10
Cinnamon	13	Grindelia	26
Colchicum Seed	8	Guarana	55
Copaiba	13	Kino	55
Clove	18	Lactucarium	68
Chrysarobin	13	Lycopodium	23
Red Cinchona	13	Manna	60
Colchicum Corm	26	*Peppermint*	10
Colocynth	8	Mezereum	76
Coriander	60	Nutmeg	26
Elaterin	13	Parsley Fruit	60
Eucalyptus	8	*Tar*	10

Frangula	60	Pyrethrum	63
Gambir	60	Rosin	30
Pomegranate	24	Sabal	50
Guaiac	13	Red Saunders	63
Humulus	52	Sassafras	61
Lemon Peel	25	*Squill*	8
Malt	23	Serpentaria	50
Matricaria	70	Spigelia	37
Spearmint	23	Stillingia	32
Musk	60	*Stramonium*	8
Myrrh	10	Storax	55
Pepo	37	Taraxacum	32
Pepper	10	Triticum	42
Wild Cherry	8	Uva Ursi	37
Quassia	23	Viburnum Prunifolium	37
Red Rose	61	*Strophanthus*	10
Sanguinaria	50	Sumbul	61
Sarsaparilla	40	*Tragacanth*	20
Scammony Root	63	Elm	50
Senega	19	*Valerian*	16
White Mustard	10	Xanthoxylum	61
Staphisagria	40		

†The drugs printed in Italics are found in "Useful Drugs." The percentages printed in Italics include 50 per cent. and above.

From the table it will be seen that 50 per cent. or more of the Atlanta physicians favor deleting the following drugs:

1. Althaea (73%)
2. Aspidosperma (52%)
3. Calumba (50%)
4. Cannabis (52%)
5. Caraway (50%)
6. Chondrus (63%)
7. Coriander (60%)
8. Eriodictyon (63%)
9. Frangula (60%)
10. Gambir (60%)
11. Guarana (55%)
12. Humulus (52%)
13. Kino (55%)
14. Lactucarium (68%)
15. Manna (60%)
16. Matricaria (70%)
17. Mezereum (76%)
18. Musk (60%)
19. Parsley Fruit (60%)
20. Pyrethrum (63%)
21. *Red Rose* (61%)
22. Sabal, (50%)
23. Sanguinaria (50%)
24. Red Saunders (63%)
25. Sassafras (61%)
26. Scammony Root (63%)
27. Serpentaria (50%)
28. Storax (55%)
29. Sumbul (61%)
30. Elm (50%)
31. Xanthoxylum (61%)

Here, then, are thirty-one vegetable drugs that from 50 per cent. to 76 per cent. of a representative body of physicians advise deleting from the U. S. P. Among the brief reasons given are "inert," "useless," "limited utility," "obsolete," "worthless," "never used," "questionable value," "no advantages over other U. S. P. drugs of similar activity," "preparations unreliable and not uniform." It is interesting to note that of the thirty-one drugs, but one (red rose) is found in "Useful Drugs." It is also of interest to note that, with the exception of red rose, the percentage of physicians advising the deletions of other "Useful Drugs" was very low, camphor being lowest with but 2 per cent. favoring its deletion, and cardamon next highest to red rose with 28 per cent. The remaining ones run close to 10 per cent.

There is not a single drug in the above list of thirty-one proposed for deletion by 50 per cent. or more of the Atlanta men that possesses any medicinal actions or virtues which demand its presence in the U. S. P. and recognition as an important medicinal agent. There is not a single member of this list possessing any useful physiological action that is not also possessed by one or more of the remaining members of the U. S. P. There is not a member of this group possessing any particular redeeming virtues that demand its recognition; therefore, why retain them?

Comments and Conclusions.—In making the few comments and drawing the conclusions which follow, the writer has tried to keep in mind the original and supposedly present objects of the Pharmacopœia, and trusts his readers will consider them from the same standpoint. No attempt will be made to comment on all of the drugs proposed for deletion, attention being given only to those about which there is a fair degree of unanimity of opinion along with a comment or two concerning a few drugs the writer believes should be included in the list of thirty-one drugs referred to above.

It was rather surprising that a greater number did not advise deleting:

1. *Aconite*, the use of which is constantly diminishing, because the dangers attending its depressant action on the heart make it a rather undesirable agent to be used as a cardiac depressant. Only 11 per cent. advocated its deletion.

2. *Squill*, a drug rather carelessly used as an expectorant in numerous "stock mixtures" and "cough remedies" as well as in prescriptions. It has physiological actions that very closely resemble those of digitalis, although it is true that the emetic action is more pronounced. However, since we have other nauseating expectorants, like ipecac, for example, with less undesirable side actions, it seems unwise to use squill, which affects the heart so powerfully. The writer is confident that the deletion of squill will mean a loss to nobody. But 8 per cent advised its deletion, although prescription files show that it is gradually falling into disuse.

3. Pepo, a drug once used as an anthelmintic, but which has been proved to be absolutely worthless. Thirty-seven per cent. advised its deletion.

4. Gelsemium, a drug looked upon by practically all authorities as a peripheral depressant of no great medicinal importance. Only 10 per cent. advocated dropping it from the U. S. P.

Very briefly, then, the thirty-one drugs listed above as worthy of being deleted from the U. S. P. might well be dropped in the Tenth Decennial Revision for the reasons there stated.

In addition to these thirty-one, it is the writer's firm belief that the following might also be dropped since they, too, possess no redeeming properties or virtues that entitle them to consideration as "important, extensively used, valuable, therapeutic agents":

Aconite (11 per cent.), Agar-Agar (12 per cent.), Arnica (34 per cent.), Buchu, (23 per cent.), Sweet Almond (45 per cent.), Cimicifuga (37 per cent.), Gamboge (25 per cent., Fennel (42 per cent.), Gelsemium (10 per cent.), Grindelia (26 per cent.), Guaiac (13 per cent.), Tar (10 per cent.), Quassia (23 per cent.), Pepo (37 per cent.), Sarsaparilla (40 per cent.), Spigelia (37 per cent.), Stillingia (32 per cent.), Pepper (10 per cent.), Taraxacum (37 per cent.), Triticum (37 per cent.), Viburnum Prunifolium (37 per cent.), and Uva Ursi (37 per cent.).

It may be desirable in the cases of the aromatic oil drugs, such as anise seed, orange peel, caraway, clove, cinnamon, coriander, eucalyptus, lemon peel, peppermint, spearmint, nutmeg, and others, to delete the crude drugs and to retain the volatile oils, since the latter are the constituents which are really desired and actually employed in prescription work.

A further study of this subject in other sections will most likely disclose the fact that there is general unanimity of opinion concerning the drugs included in the list of thirty-one above, recommended by Atlanta physicians as worthy candidates for dismissal, and possibly also add several more drugs to the deletion list.

MAJESTIC HOTEL.

THE PROBLEM OF THE EFFICACY OF TOPICAL APPLICATIONS OF METHYLENE-BLUE IN FEMALE GONORRHEA.

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CONSIDERABLE interest, with coincidental friendly controversy, has been aroused by the advocacy of methylene-blue, in a 1 per cent. aqueous solution, in the treatment of gonorrheal involvement of the lower genito-urinary tract of women. The claims upon which this microbicidal remedy has been advanced as the best local treatment as yet proposed for this malady are as follows:

1. It has a powerful gonococcocidal action, being efficient in strengths of 1 to 250,000.

2. It is nonirritating to the tissues and, on the contrary, has a decided local analgesic effect.

3. It is followed by marked clinical relief of the symptoms complained of by the patients, includin gthe burning on micturition, vaginal and vulvar soreness, and the discharge. This improvement, in most of the cases, is noted in from 36 to 48 hours after the first application.

4. There is a rapid decline in the number of gonococci with their total disapperaance, on repeated examinations, after from six to twelve applications of the blue.

5. If there is no reinfection by uncleanly intercourse the germs do not reappear in the secretions of the cervical canal after weeks of non-treatment. It is, therefore, believed to be legitimate to claim a cure in those cases in which this condition has been brought about.

6. The clinical results obtained by the blue method are greatly superior to those following the usual methods adopted in gynecological clinics and in private practice.

The claims advanced by those who question the value of the method are as follows:

1. Practically, the disease, once having invaded the deeper tissues of the urethra and cervical and uterine canals, is incurable by topical applications. Given time, however, the disease will gradually cure itself after weeks, months, or even many years.

2. As yet no scientific proofs have been adduced in support of the blue method, but only claims based on clinical results.

3. If it be so efficacious in the genital tract of women, why will it not be useful also in that of men? Gonococci are the same wherever located.

4. Methylene-blue was tried as a gonococcocide two decades ago and abandoned. Why was this?

In answer to these statements and questions it may be remarked that the clinical results alone are so gratifying to the patients as well as to the gynecologist that if for no other reason the use of the blue seems to be preferable to the use of other microbicides or to the "let alone," or non-treatment, method advocated by some.

It is true that as yet no scientific proofs have been adduced founded on thorough customary bacteriologic examinations of the secretions by the Gram method before, during, and after treatment. Such data, doubtless, will be forthcoming, whether corroborative of or destructive to the claims of the adherents of the blue method, as soon as a sufficient number of carefully studied cases have been collated to justify such publication. Many cases have been treated during the experimental stage of the use of the remedy in which careful and systematic bacteriologic examinations have not been made, only the final showing after six to twelve applications of the blue being recorded. Such cases cannot be adduced as proof, although these patients do show the clinical amelioration and have been discharged, or have discharged themselves, as cured. It is hoped that gynecological clinics and pathological laboratories over the country will institute a series of experimentations in this line. It will be a simple matter to prove or disprove the gonococcocidal value of the remedy by this method of study. If the various examinations show a diminution in the number of the germs and their ultimate disappearance from the secretions, the claim of a cure will be justified. If they show an amelioration only so long as the remedy is applied, the place of the blue in the category of gonococcocides will be established; for that is just what the various remedies now generally employed do to varying degrees. The relative value of the gonococcocides can then be readily determined. If the "let alone" method be adopted, it stands to reason that no conclusions can be reached either for or against the use of any remedy that may be proposed.

The writer has had practically no experience with the topical application of methylene-blue in male gonorrhea. Therefore, he cannot speak as to its value there. If the blue will destroy the gonococcus at one point, it should be able to do so at another, provided it can be brought into direct contact with the germs. The problem in the male would involve the accessibility to the germs. This would require restricted urethral applications with or without the use of the urethroscope.

As far as can be determined from a review of the literature since the drug was first employed in 1876, its use has been largely limited to internal administration, or, rarely, to intravenous or subdermal injections. During its passage through the body it apparently undergoes some chemical or physical change which renders it practically inert when in the urinary canal. It was doubtless this obscure change in its physical and therapeutic properties which resulted in the abandonment of the remedy when employed in the designated ways. The plea is now advanced for a direct topical use of the blue.

All that the writer invites is a fair, impartial investigation of the blue method with published reports from reliable laboratories and clinical institutions. He would deprecate as unfair a curt dismissal of the matter without adequate inquiry into its merits. His own studies thus far have been most gratifying in their clinical results, and he is ready now to pursue them further in a thoroughly scientific manner.

7 WEST MADISON STREET.

Hearsay Evidence of Physician's Declarations Inadmissible.—In an action for personal injuries evidence of declarations of a physician to the plaintiff's son as to the cause of the injury, was held hearsay and inadmissible in the presence of testimony by the physician inconsistent with such declarations.—Corpus Christi Ry. & L. Co. v. Baxter, Texas Civil Appeals, 217 S. W. 187.

RABELAIS IN LIBRARIES.

By DOUGLASS W. MONTGOMERY, M.D.,
SAN FRANCISCO, CAL.

FOR some time it has been my custom, on visiting a town, to go to the libraries to see what is to be had on Rabelais. I usually find very little and that of the most cursory nature.

The reason for this neglect of the greatest of French authors, and one of the few great literary geniuses of the world, is undoubtedly the grossness of his language, which is probably more accentuated in our literal translations than it is in the original French. Very many of the words employed by us in the common things of life are German-Anglo-Saxon, and come to us from the Saxon serfs and farm laborers, held in menial positions by their Norman French conquerors. With us it amounts to having two languages: one refined and the other vulgar.

I well remember how revolting the word "schmieren" was to an American who had lived long in Germany. She could never get used to the question: "Wollen Sie Ihr Brödel einfach oder geschmiert?" Will you have your roll dry or buttered? This repugnance was all because one word, "smear," is employed in a disagreeable sense. Anyone could give a long list of similar terms having a stronger flavor.

Rabelais employed his frank terminologies probably for three reasons: His genius led him to use the unveiled word just as it was used by the peasantry of Touraine. In addition to this, it must be remembered that Rabelais and Calvin were engaged in raising the French provincial languages into a great national language, just as Luther did a similar service for Germany. Latin was then looked upon as being the only literary language worthy of a scholar, and Rabelais was determined to show that French was capable of serving every purpose in expressing thought. Many of his long lists of words, now so tiresome to readers, had this very end in view, and he took any word that came to hand to force his point home.

Furthermore, in his time, in order to write at all freely on any subject, either in politics, science, or religion, the writer had to hide himself, and this was true of any country whether Protestant or Catholic. The Protestant (Calvin) was as bad in this respect as the orthodox Roman church. Rabelais, therefore, chose to conceal himself under a veil of buffoonery and grossness, and in this he has been so successful that he has practically hidden himself from the common sense reader ever since.

Even in his own day, the great Tourangian was so successful in concealing himself in his own works that he seems to have said almost everything that he wished to say, and yet said his say in such a way that he successfully eluded his very powerful and relentness enemies. Rathery, in commenting on one of the most objectionable chapters in Gargantua, said that this feature of it was what saved both the author and the author's works from being burnt at the stake.

It appears that the clergy of the Sorbonne, stung by some of Rabelais' remarks, entered a complaint against him, and his writings were sent to Francis I for censure. The king was so highly amused by what he read that he sent back word that he could see no evil in the book, although even in the chapter referred to Rabelais took a sly dig at the king himself.

In inquiring at a library for works on Rabelais, one is at first quite sensitive, as the guardian of literature is usually a female, who probably has taken a glance at the great Tourangian's works and has been properly shocked. Therefore, she looks upon everyone reading such a book as an old rip. She is not to be blamed, as it is only of recent years that a different view has been taken, and then only by a group of learned men, mostly French and English.

Usually, as previously remarked, the booty in any library, even the largest, is small, but one gets surprises. In Toronto I ran across W. F. Smith's translation, which has been of the greatest service to me, and I secured a copy immediately on returning home. The translation is admirable, and the notes are most elucidating. With a fair knowledge of French, and with a copy of the original, one has a complete library. As a further aid, there is the recently issued edition of Rabelais by Henri Clouzot with modernized spelling, which wonderfully facilitates reading. By the way, I recently ran across the Henri Clouzot edition in the public library in Victoria, British Columbia. Some lover of Rabelais certainly lives up in that region.

The late Sir William Osler was a great admirer of W. F. Smith, and frequently wrote to me of him, commending him as one of the greatest living Pantagruelists. His work, "Rabelais in His Writings," is excellent reading.

On another occasion I ran across a copy of the edition by Esmangart and Eloi Johanneau in the California State Library in Sacramento. This is a fine work, because of its own intrinsic merits and because it gives so many of Le Duchat's notes.

Recently I went down to Louisville on my way to see the Mammoth Cave of Kentucky. The very name is reminiscent of "La Nouvelle France," that France that extended from Quebec up the St. Lawrence, along the Great Lakes, and down the Mississippi Valley with many a long voyage into remoter regions. Its name is of a piece with that of Detroit and St. Louis, and many another. I found in the library index the name of Sir Walter Besant's work on Rabelais, and on inquiring for it they said it was out. It was probably lost, and with it the Louisville Public Library had lost its entire Rabelais collection. A further acquaintance with Louisville showed it to be a German-American city, and the beautiful library building was camouflage and did not represent the work of their own citizens, but was a gift of Andrew Carnegie.

A few days later I reached Richmond, the capital of the Confederacy, and a most interesting city if for nothing else than its individuality. Baltimore resembles it, but nowhere else do I know of a city just like it. Before the Civil War the Southern gentlemen were particularly strong on the classics, especially the Roman classics. In fact, it amounted to a weakness in them, and for long they troubled Congress with quotations from Horace and other Latin authors, until a member arose one day delivered a fervid oration in an unknown tongue. On being chided, he said it was Cherokee, a per-

fectly good American language much spoken in his district, and that he had as much right to speak it as the other gentlemen had to speak the language of the Roman tribes.

On going to the library in Richmond I felt that those who had a high regard for the older Latin literature would naturally be enthusiastic in regard to the more modern Latin dialect, the French, and that they would be especially enthusiastic in regard to the man who was the pioneer in making that language a classic. I found two editions, the old, excellent but very imperfect, Urquhart edition, and another by Alfred Wallis issued in 1897, and largely a mere reproduction of the Urquhart. This Wallis edition I had never seen before; so that I did not feel wholly unrewarded for my visit.

If, by steady, serious reading, one gets past the dunghill in Rabelais, one enters into one of the most wonderful mansions ever constructed by man. The medical references alone are well worth careful study by any physician. And it is the medical flavor throughout that induces so many physicians to read him, and I believe he has more readers among physicians than in any other class, and it is by no means valueless reading.

The modern surgeon tends to develop into a mechanic with all a mechanic's mental limitations, and the modern physician is so crowded with facts that he has difficulty in seeing the woods because of the trees. The older physicians took broader views; they had to because of the meagerness of scientific knowledge. Rabelais is peculiarly the exponent of the old Galenical medicine with its broad, free lines, and add to this his expansive humor, and an ability for character depiction equal to Shakespeare, and one sees why one obtains from him glimpses of the physical human being such as can be obtained nowhere else. Through Rabelais one may easily return to sanity even after reading attentively and prolongedly, a wearisome, minutely detailed, modern medical paper, and that is some praise. And so it may easily prevent an accident to a patient due to too intense thought and overzeal on the part of the medical man, an accident of not infrequent occurrence. In other words, it achieves what Aristotle used to call a mental catharsis, or cleaning out.

It is interesting and curious that the great Aristotle, that mighty assembler of facts, should have recognized the value of this mental catharsis, which he got by going to the theater.

323 GEARY STREET.

Medicolegal Notes.

Hospital Records Admissible as Evidence Though Bearing on Liability for Personal Injuries.—Under the Massachusetts statute of 1912, providing that records of cases kept by hospitals shall be admissible, so far as relating to treatment and medical history, but not as evidence on liability, in an action against a street railway for personal injuries, a hospital record relative to the plaintiff was held admissible, despite the statement therein that there was an odor of alcohol on the plaintiff's breath. The difficulty in applying this act arises from the nature of the entries made in hospital records. It frequently must happen that facts stated therein, which deal in the main with the patient's medical history, may also be relevant to the issue of liability, in the event of litigation. For instance, a statement of the location and nature of the patient's injuries, primarily an essential element in the history and treatment of his case, may incidentally tend to confirm or disprove his claim as to how the accident happened. So, the condition of intoxication, in the case of a patient suffering from delirium tremens, would be an important element of his medical history and treatment; at the same time it well might bear upon the issue of liability in an action to recover under the Civil Damage Law. In the Massachusetts Supreme Court's opinion a reasonable and practical construction of the statute requires that a record which relates directly and mainly to the treatment and medical history of the patient should be admitted, even though incidentally the facts recorded may have some bearing on the question of liability. The improper application of the facts recorded can be prevented by means of suitable instructions to the jury.—Leonard v. Boston Elevated Ry. Co., Massachusetts Supreme Judicial Court, 125 N. E. 593.

Compromise and Settlement of Physician's Account.—In an action for the balance of a physician's account for visits the defendant did not dispute that the services had been rendered and that the charges made for them were reasonable, but he did not admit that he owed them. On the contrary, when his attention was called to the account, as he testified, he proposed to settle on a compromise basis, and upon the plaintiff stating that his account was about $400, he stated he would pay $200 if the defendant would accept that in full. Under these circumstances he made out his check for $200, writing on it that it was in full, transmitted it by letter, calling attention to that sum, and the plaintiff cashed the check. It was held that he was bound by his act and could not claim anything beyond the $200. His reception and retention of the $200 in full payment of his account, that not being a liquidated account, that is, agreed upon by the parties, or fixed as to the amount by the operation of law, or an account stated, was conclusive on him.—Booth v. Dongan (Mo.), 217 S. W. 326.

Objection to Physician's Testimony as Privileged Must Be Timely.—In a murder case the state called a physician who testified, in rebuttal, that he called at the county jail to treat the defendant's injuries. He found that he had a cut on his wrist and another on the back of his little finger on the left hand, and gave his opinion that these wounds were not caused by a sharp cutting instrument, but that they were ragged and resembled barbed wire cuts, a number of which the physician had seen. The defendant objected to the admission of this testimony because in violation of Missouri Rev. St. 1909, § 6362, making one's physician incompetent. The physician, however, had testified without objection to the character of the wounds, and had given his opinion that they were not caused by a sharp cutting instrument. When asked for further explanation, objection was made. After the objection was made no material additional information was sworn to by him. It was held that the objection was not timely, and the privilege was therefore waived.—State v. Powell, Missouri Supreme Court, 217 S. W. 35.

Physicians Action Against Husband for Medical Services to Wife.—In a physician's action against a husband for services furnished to the wife there was, or could be found by the jury to be, authority in the wife to contract on the husband's credit for the services under controversy. It was held that the defendant husband's request for an instruction that the burden of proof was on the plaintiff to show that the defendant neglected or refused to provide his wife with the necessaries before the plaintiff could recover was improper, as wholly ignoring the question of the wife's authority and as requiring an instruction that the plaintiff could not recover except on the husband's neglect or refusal to provide necessary medical service.—Vaughan v. Mansfield (Massachusetts Supreme Court) 126 N. E. 376.

Statement That Defendant Physician Protected by Insurance Held Prejudicial.—In an action against a physician for damages for malpractice an uncalled for statement by the plaintiff's counsel in his argument to the jury, implying that the defendant was protected by insurance, was held error necessitating reversal.—Sherwood v. Babcock, Michigan Supreme Court, 175 N. W. 470.

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THE ROENTGEN RAY AS A HEMOSTATIC.

THE spleen is a mysterious organ and its functions have been determined only in part. Many of the activities that have been attributed to this organ have not been satisfactorily demonstrated and comparatively few of them are generally accepted as proven. The complete removal of the spleen is followed by such slight disturbance in the chemistry of the body generally that one is forced to the conclusion that, either the functions of the organ are of but little importance or they may readily be assumed by other organs. Pathological activity of the spleen is assumed in a number of the so-called "blood diseases" often chiefly because of the appearance of splenomegaly. Recently the spleen has been credited with a new form of activity, that of the production of a "coagulating ferment." R. Stephan (*Münch. med. Wochenschr.*, lxvii, 309, 1920) claims to have been able to combat successfully the hemorrhage in a case of purpura by exposing the spleen to the *x*-ray. He says that *x*-radiation of the spleen rapidly decreases the coagulation time *in vitro* and that this result is accomplished by stimulation of what he calls the "reticulo-endothelial cell apparatus." The platelet count is not modified. In normal subjects he was able to shorten the coagulation time to one-fourth. The maximum effect appeared in from two to four hours and then gradually subsided. It is generally believed that the roentgen ray depresses lymphoid tissue and this the author does not deny. He maintains that the reticulo-endothelial cell apparatus is wholly distinct from the lymphoid tissue of the spleen and that its reaction is different.

Were Stephan's assumptions correct we would have at hand a valuable aid in the treatment of hemorrhage of many sorts and it is hoped that endeavors will be made to corroborate or to disprove his conclusions. Many hemostatic agents have been proposed but none is uniformly applicable or satisfactory. Normal horse serum may work well but its intravenous use is not free from danger. Cephalin is limited to local application. Serum has been prepared containing prothrombin, antiantithrombin, and thrombokinase and theoretically should answer every requirement. It is said to be adaptable to intravenous use. The testing of these preparations is not simple and Hamilton proposes (*Jour. Lab. and Clin. Med.*, v, 574) that blood be drawn from the carotid artery at stated intervals, the animal being anesthetized and the coagulation time being noted as the point at which the tube of blood can be inverted without fluid being observed. He introduced the serum intravenously and found that the coagulation was shortened to one-fifth or one-sixth in the course of about 1½ hours. No figures are given as to the duration of the effect. The method can be used only for the standardization of those products which can be introduced intravenously and so is limited in its application. The use of either of the above methods, serum or roentgen ray, to combat hemorrhage, is not free from danger and should they both prove to be reliable one would choose carefully between them in each individual case. But it would be cheering to know that two such powerful agents could be obtained in case of need.

EARLY SYMPTOMS OF CANCER OF THE COLON.

To be able to diagnose malignant disease in its early stage affords the only hope of instituting curative measures or of operating in time to give relief for a comparatively long period. But the difficulty is to insure an early diagnosis. Internal malignant disease is as a rule, not discovered until it has reached such a stage that operative measures are almost hopeless. For the fact must be taken into consideration that the real criterion of a successful operation is not a low mortality rate, but rather the length of time before recurrence. It is then a melancholy truth that in the vast majority of cases of internal cancer the diagnosis is made too late to enable one by operation to prolong the patient's life to any extent. Surgeons, however, according to Mr. Seton Pringle of Dublin, writing in the *Practitioner* for July, 1920, are nowadays agreed that the prognosis following operation for early cancer of the colon is more favorable than that for cancer in almost any other part of the body. The growth remains local in the wall of the gut for a long period; it is rarely disseminated by the blood stream, and the arrangement of the lymphatic vessels and glands is such as lends itself to a true radical or en bloc operation, an operation in which the primary growth, the lymphatic glands and the lymphatic vessels connecting the two are removed all in one piece.

The results of Pringle's investigations with regard to patients upon whom he had carried out such an operation some years ago, show that 40 per cent. had recurrence within periods of less than two years, while only 30 per cent. survived more than five years. Closer investigation shows that of all the cases operated upon only 37 per cent. were uncomplicated, or what might be termed

early cases. It is Pringle's belief that most cases of cancer of the colon can be diagnozed long before the classical signs and symptoms of the disease develop, and even if a definite diagnosis cannot be made, the presence of a cancerous growth can be suspected so strongly as to justify a timely exploratory operation. He is of the opinion that the logical manner in which to approach the diagnosis of any disease is to study its pathology and symptoms and to correlate the two.

Following such a method we find that the essential pathology of cancer of the colon might be epitomized into four stages—tumor, ulceration, stenosis, and dissemination. Pringle holds that when the tumor is in the pelvic colon and cannot be palpated, the evidence of ulceration manifested by blood in the stools is strongly enough indicative of malignancy to justify an exploratory operation. As for the diagnosis of stenosis, this condition is evidenced by several signs. For example, a patient whose bowels have previously been regular finds that instead of one good motion a day he passes two or three small ones, and similarly a patient who has formerly had recourse to regular aperients finds that the same dose, instead of giving one or two fairly large motions, now produces from four to six smaller ones. Also associated with the disturbance of function there is frequently a feeling of dissatisfaction as if the bowel had not been properly emptied. The syndrome, then, comprised of the passage of blood, mucus, and pus with an increase in the number of daily evacuations, together with this feeling of dissatisfaction, is characteristic of early stricture of the bowel associated with ulceration, and the only common cause of this condition is cancer.

Taking everything into consideration and recognizing the great risks that are run by not diagnosing cancer of the colon in time for operation to be effective, Pringle urges that cancer in this locality should be treated on the same lines as acute appendicitis. Not so many years ago cases of this disease were carefully watched for the outset of so-called "indications for operation," whereas, nowadays, the only indication the surgeon requires is evidence of acute inflammation in the right iliac fossa. Similarly, he believes the persistence, without discoverable cause, of the symptoms enumerated above is sufficiently suspicious of cancer of the colon to justify an exploratory operation. Moreover, very rarely in Pringle's experience, has such an exploration resulted in a negative finding.

THE PATHOGENESIS OF PARALYSIS OF THE LEFT RECURRENT NERVE IN MITRAL STENOSIS.

THE pathogenesis of paralysis of the left recurrent nerve in mitral stenosis has given rise to numerous hypotheses, some of which have been confirmed by autopsy or by radioscopy, others based only on the interpretation of the symptoms offered by the patient. The first theory is due to Ortner, who was led to regard paralysis of the recurrent as caused by compression of the left nerve against the bend of the aorta by the considerably dilated left auricle. Autopsy had revealed this compression with the nerve thinned and degenerated at the point of compression. The second theory is due to Kraus, who found at autopsy a considerable dilatation of the left auricle, but without contact between it and the aorta. Such contact appeared an impossibility to this observer since the left branch of the pulmonary artery was placed between these two organs. On the other hand, Kraus noted that the right ventricle, which was greatly increased in size, lay on the diaphragm, having produced a kind of torsion of the heart, with the consequence that the pulmonary artery was dragged upon, and then the aorta by the intermediary of the arterial canal, and finally elongation of the recurrent ensued from the lowering of the aorta. This rather complicated theory was accepted by clinicians, or at least it was held to explain certain paralyses of the recurrent nerve in mitral stenosis at the time of compensation when hypertrophy of the right ventricle takes place. Ortner's theory was even applied in explanation of late paralyses arising in mitral asystolia. Quadrone went to the trouble of extending Kraus's theory, inasmuch as he attempted to explain bilateral paralysis of the recurrents in seven cases of mitral stenosis by displacement as far up as the subclavian artery. Soon, however, Dmitrenko, Fetterholf, and Norris took up the subject and came to the conclusion that neither Ortner nor Kraus was correct in this pathogenic interpretation. They held that the recurrent cannot be directly compressed by the auricle and that there is always an interposition of the pulmonary artery. Then Gellies reported a case of paralysis of the recurrent due to compression of the inferior laryngeal against the aorta by the left branch of the dilated pulmonary artery. Enlightened by this fact, clinicians came to the natural conclusion that the pulmonary artery must be regarded as the mediate but necessary agent for compression of the recurrent. Alexander admitted this theory and from the study of a radioscopic picture he concluded that there was, in some cases, a direct compression by the pulmonary artery without the interference of the auricle. Such is the third explanation of paralysis of the left recurrent in mitral stenosis.

What is to be thought of these three theories? In the first place, that of Kraus should be rejected, because the aortic arch is too solidly fixed to be moved by traction of the frail remains of the ductus arteriosus, and it does not necessarily follow that the base of the heart becomes lowered when the right ventricle dilates. Dilatation of the right heart is frequent in many cardiac processes and paralysis of the recurrent nerve is very rare, usually only to be found in mitral stenosis. Given the precision of the autopsy findings, it is difficult to doubt Ortner's theory, but in spite of all, it is easy to admit that the pulmonary artery becomes inter-

posed between the aorta and auricle, especially when it is recalled that the pulmonary artery is dilated in mitral stenosis. But Lian and Marcolles very properly point out that great dilatation of the left auricle is frequent in mitral stenosis, while paralysis of the recurrent is rare, and they believe that if auricular ectasis can produce compression, other factors must exist at the same time, such as an old thrombosis of the left auricle or a certain degree of chronic mediastinitis. The latter lesion seems to them essential in order to explain the inequality of the radial pulses which, according to Popoff, has been observed in a number of cases of mitral stenosis. The recurrent nerve, comprised in the products of a chronic mediastinitis, is more sensitive to the mechanical influence of a dilated left ventricle and pulmonary artery, so that in this way may be explained the recrudescence of recurrent nerve disturbances when an attack of asystolia occurs. The mediastinal inflammatory reaction provoked by a mechanical irritation is all the more readily produced, because in mitral stenosis the subjects are often tuberculous or even syphilitic at the same time. Lian and Marcolles accept Alexander's theory, but they rightly ascribe a large part in the process to mediastinitis. It is also probable that the purely mechanical theories are insufficient and that paralysis of the left recurrent is rather more the consequence of a certain degree of mediastinal inflammation surrounding a dilated left auricle. The existence of this complication of mitral stenosis should attract attention on account of the diagnostic mistakes that might arise, especially with aneurysm of the aorta.

THE EARLIEST MEDICAL MEN IN ANCIENT ROME AND ITALY.

RAULIN contributes an article on this subject in the *Gazette hêbdomadaire des sciences médicales de Bordeaux* for July 4, 1920, xli, 27. The earliest known race of men to settle in the peninsula were the Liguri, now believed to have come from North Africa, who incidentally occupied the Roman campagna, but left no monuments. Next we hear of the Etruscans who once dominated most of the peninsula and who are believed to have migrated from Asia Minor. They developed a marvelous civilization which comprised some remarkable prosthetic dentistry. The third race to reach the peninsula were the Proto-Latins—Umbrians, Sabines, etc. The first medical man in Italy whose name has come down to us was Aschagaton, a Greek, about 219 B. C. The nature of his welcome appears to indicate that he was the first practitioner having any pretensions to scientific knowledge. But he was followed by the slave-physicians in large numbers, individual members of the caste acting as medical advisers to the households of the well-to-do. These were principally Greeks and practised numerous specialties. When they had received their liberty they practised under the name of "Free Physicians."

From another viewpoint the old Romans, who anticipated so many of our economic customs, had city or public practitioners who gave first aid and realized the modern ambulance service. They were to be found at fixed posts. These or other bureaucrats also acted as district physicians to the poor and there were 14 such, one for each district. This custom prevailed in the days of the Republic, and later under the Empire.

The success of Aschagaton the Greek was followed by an inrush of medical adventurers who exploited their clients to such effect that Sylla was obliged to pass restrictive laws. Next to Aschagaton we hear of Asclepiades of Bithynia, who was a well known medical figure in Rome, dying in 96 B. C. He practised the art of Hippocrates well. Musa had the honor to be the personal physician of Octavius. Equally well known was Lucius Horatillavus, a native Italian physician, who earned a large fortune. From this time on, the medical men, beginning with Celsus, are well known to medical readers.

LATE CHLOROFORM DEATH IN HEPATIC CASES.

BRUNNER of Zurich writes briefly on this subject in the *Schweizerische medizinische Wochenschrift* for June 17, 1920, i, 25. In animal experimentation chloroform is not given if hepatic lesions are present. The author has had two experiences which convince him that the same risk obtains in man. The first occurred in 1905 when he operated on a healthy looking woman aged 52 for a postoperative abdominal hernia, the first intervention having been for adnexal disease. Sixty grams of chloroform were given in this second intervention. On the third postoperative day, after she had been doing well, icterus appeared with restlessness and benumbing of the mind and disturbed respiration. Death took place the same evening and autopsy showed pronounced hepatic cirrhosis without other finds. In 1915 he operated on a 70-year-old man with ileus and mesenteric thrombosis and the outcome was the same. In the absence of other factors it is fair to accuse the chloroform as the cause of death, this veiw being corroborated by the experience of other operators.

Speaking generally of late chloroform death the finds include a condition of the liver closely resembling acute yellow atrophy. These deaths usually follow operations for acute abdomen due to various causes in which the portal circulation is involved. In order to produce at will in the dog late choloroform death it is only necessary to establish beforehand an Eck fistula. In discussion Henshen spoke of a somewhat analogous experience in which ether was used as an anesthetic in gallstone surgery. In such cases the kidneys, liver, etc., may be compromised at the time of intervention. In all operations on the portal distribution he first tests the functions of both kidneys and liver irrespective of the anesthetic which is to be used.

Psychic Inhibition of Menstruation.

Stoltz, the old authority of Strasbourg in the middle of the last century, regarded the menstruating woman as almost a sick woman, and it has remained for some of his successors in the chair of obstetrics to demonstrate that many menstruating women present not the slightest evidence of illness aside from a loss of blood. With such a tendency to dissociation almost anything affirmed of menstruation may be disputed. Psychic suppression of the menses exists but cannot be very common. Deluis once published notes of 60 cases. Christides of Geneva has recently added a case of this sort to the recorded material (*Revue française de gynécologie*, February, 1920, xv, 2). The young woman was aged 28 and presented a history of renal crises with anuria, passage of calculi, and hematuria. After several of these crises, for which condition operation was refused, her menses ceased. Placed under observation she went through one of her attacks of renal colic, accompanied this time by symptoms of acute abdomen. She was found to have appendicitis and the offending appendix was at once removed. On the occasion the surgeon examined the urinary passages and four weeks after the appendectomy performed an operation on the kidney, the details of which are not given, but it was evidently only a capsulectomy for the relief of intrarenal tension. A new renal crisis followed. Suspecting a psychic factor the subject was psychoanalyzed, and a study of the supposed calculi by Askanazy revealed that these were only clots. It was learned that a certain degree of purulent cystitis was present and simulation was at once suspected. During the period of internment the menses were almost but not quite suppressed, although a marked menstrual molimen was present. Psychoanalysis failed to reveal anything, but the woman improved and her menses returned, with cessation of the renal crises. The case was not fully clarified, but apparently there had been a suppression of menstruation in a profoundly hysterical subject, with a molimen which was severe enough to simulate a renal crisis. The appendicitis must have aggravated the state of affairs. Either when fully conscious or during a hypnoid state the woman introduced into the bladder some foreign objects which simulated calculi or clots and set up a gaseous cystitis, thus adding notably to the picture of renal colic.

Relations of Neurasthenia to the Psychoses.

In an article on this subject in the *Journal de médecine et de chirurgie pratiques* of April 10, xci, 7, Mercier seeks to delimit the former affection, which he says is manifestly of two different types. In one there is no predisposition and the exhaustion of the nervous system from overwork is manifested by "helmet" headache, backache, insomnia, vertigo, neuromuscular asthenia, moral depression, and gastrointestinal troubles, to go no further. In the other type the motivation is endogenous, predisposition is everything. It is often seen in the adolescent who, after having always proved equal to his studies and play, becomes fatigued after insignificant exertions. The somatic manifestations are much as in the acquired form, although seldom pronounced. Instead we see doubts, scruples, phobias and obsessions, impulsions, etc. According to Magnan and others, these subjects are psychopathic degenerates. Recently Delmas has proposed to call endogenous neurasthenia "obsessional psychosis," but the author is not with him in this interpretation. The mental state is a direct consequence of exhaustion of the nervous system. With marked somatic symptoms these psychic peculiarities may be masked or blunted. In acquired neurasthenia, too, the emotional or affective state is exaggerated, the subject is depressed and pessimistic, small happenings are magnified, there is doubt in place of certainty, the external world and one's self seem strange and unreal, there is the feeling of *déjà vue*, of dissociation of personality, etc. A distinction between ordinary neurasthenia and the psychasthenia of Janet is not recognized by the author. The many phobias and obsessions are not to be regarded as something outside of neurasthenia, but as belonging to it. The doctrine of Freud which make of these fears and obsessions an anxiety neurosis of sexual origin is not shared by most neurologists. In regard to melancholia some melancholics are neurasthenics pure and simple, while between this type and melancholic psychosis every transition is seen. So long as delirium is not present, the neurasthenic component is probably dominant. The diagnosis between melancholia and neurasthenia is all but impossible in many cases. Hypochondriasis is best regarded as a mere symptom common to various mental affections.

The Facial Traumatisms of Boxing.

Dr. Boigey, a gymnasium physician in the French military service, discusses this subject in *La Presse Médicale* for April 21, 1920, xxviii, 24. The injuries are either common in type or characteristic of the sport. Under contusions are comprised simple ecchymoses and hemorrhagic infiltrations, accompanied at times by lacerations and disinsertions of the nasal cartilages. The cartilaginous part of the nasal skeleton becomes somewhat flattened from repeated blows. The chin is the only part of the face which escapes the consequences of severe blows and never shows the effects of punishment. It behaves as a shock absorber. Extravasation of blood into or around the jaw muscles rarely causes a sort of lockjaw and blood may escape into the mouth through Steno's duct. The fatty pad of Bichat behind the ascending ramus of the jaw may inflame and the condition may last for more than a week. In the well-trained man this pad is, of course, absorbed for the time being. But it is the ear which shows the most characteristic results of contusion. The helix and adjoining groove may be obliterated; or otherwise stated, the helix and antihelix may become consolidated. The concha becomes very shallow from thickening of its wall. A hematoma often forms in the substance of the external ear which is the cause or result of separation of the skin from the cartilage. The membrana tympani is sometimes ruptured and the ossicles of the middle ear are compromised. Secondary infection of the tympanum with otosclerosis and deafness may result. Functional derangements in the labyrinth

are described. Compared with the ear the eye shows no serious damage. Detachment of the retina—which accident once befell Roosevelt as a result of a blow received while boxing—is not mentioned. Dislocation at the temporomaxillary articulation is not infrequent. Fractures of the nose and lower jaw are extremely common. When the nasal bones are driven inward blood may escape from the puncta lacrymalia. Vicious union of nasal fractures leads to marked deformity with functional disability, which requires surgical relief before the boxer can resume his calling.

Recent Progress in Gynecology and Obstetrics.

In the Gynecological-Obstetrical number of *La Médecine* for April, 1920, i, 7, Devraigne attempts to show the progress and status of these specialties during the four years of warfare. Serodiagnosis of pregnancy of which so much was expected has apparently not advanced, despite the abundance of theoretic possibilities which have come to light. We have numerous methods, including variations, but in practice we are not aided. The operative and radiation treatments of cancer of the cervix are in a satisfactory condition, but the problem of educating the public and of early intervention is not being solved. The war should stimulate the science of obstetrics, for the need of a greatly increased birthrate bears on such subjects as painless labor and proper hygiene of the puerperium. If we expect the modern woman to bear double the number of children we must make labor as simple as possible. The general idea of painless labor is, of course, excellent, but the problem must be individualized not only for the patient herself but the particular stage, etc., of labor. There have been no important direct advances against sterility, but the attempts to cure fibroids and metrorrhagia by radiation may be regarded as a step in that direction. The subject of surgical intervention during gestation takes on new importance as does anything which threatens interruption of pregnancy, whether it be an operable disease or the operation itself. Hysterectomy in adnexial suppurations and other sterilizing procedures may have a significance at present not ordinarily possessed.

Autoserotherapy of Gonorrheal Epididymitis.

Marinesco of Bucharest makes a brief contribution to this subject in *La Presse Médicale* for May 19, 1920, xxviii, 32. The effect of epididymitis in checking the parent urethritis has led the author to assume the formation of an antibody. The method of autoserotherapy was initiated originally by Gilbert, while Maillet and Ramond made a special application of the principle in gonorrheal arthritis. The author has therefore applied it to the cure of epididymitis and vaginalitis of gonorrheal origin. The first patient treated was a student with a urethritis of two weeks standing. While under treatment he was compelled to make military marches, with the result that epididymitis developed with fever and appearance of fluid in the vaginalis. The latter was punctured and the punctate, which was 2 c.c. in amount and slightly cloudy, was injected into the subcutaneous region of the thigh. The following day the patient was much improved in every way and at the end of eight days the treatment of the urethritis was resumed and the patient was soon well. The second case was in a man of 32 with right epididymitis and funiculitis complicating a gonorrhea of four months standing. This complication was acute, with marked fever and pain. Five c.c. of serum was recovered from the vaginal exudate and injected under the skin of the thigh. Within 24 hours there was a remarkable change for the better. The injection was repeated twice and there resulted a complete cure without resort to any other treatment. The author has a high opinion of this plan and if he encountered a case without the complication of vaginalitis would proceed by injecting 10 c.c. of the venous blood, a method in use by him in ordinary infections without effusion.

News of the Week.

Name Canal Zone Road for Major General Gorgas.—Among other memorial tributes paid to the late General William C. Gorgas, who died in London on July 4, the following circular, according to the *Army and Navy Journal*, was issued by the Governor July 8: "The road leading from Ancon post office through the grounds of Ancon Hospital to the top of the hill at the women's bachelor quarters, and known as 'Hospital Road,' is designated 'Gorgas Road' in honor of the late Major Gen. William C. Gorgas, U. S. A., former member of the Isthmian Canal Commission, and in commemoration of the many distinguished services rendered by him."

Study Bubonic Plague.—Dr. Hugh S. Cumming, Surgeon General of the United States Public Health Service, left for Galveston August 1 to attend the national conferences of State and city health officers, held August 3 and 4, for the purpose of considering measures for the eradication of bubonic plague.

First Medical Journal in Palestine.—"*Harefooah*" (*Medicine*), published by the Jewish Medical Association of Palestine, has just made its appearance, according to a statement issued by the Zionist Organization of America. The journal will be issued quarterly. Its first number is dedicated to the memory of the Jewish physicians and nurses who "lay down their lives in the years of upheaval in the Holy Land." The objects of the medical association, as outlined in the quarterly, are to strengthen and coordinate the medical forces of the country and to collaborate with doctors outside Palestine; to give the medical work a national as well as a humane value; to prepare a native soil for Jewish scientists; and to help in the creation of the Hebrew University.

Suicides of Women and Children Increase.—It is shown by the semi-annual report of the Save-a-Life League, an organization devoted to the prevention of suicide through prompt and quiet relief of acute distress, that there were 961 suicides of women in the United States during the first six months of the present year out of a total of 2,771 suicides. This is said to be a marked increase in the number of suicides among women, and it is attributed to the entrance of women into business and politics, with consequent complexity of their

lives. During the same period 88 boys and 137 girls committed suicide in this country, an increase of fifty over last year's report for the same length of time. The average age of the boys is sixteen and of the girls fifteen years.

Opposition to Vaccination Drive.—The New York City Department of Health, in its recently inaugurated vaccination drive against smallpox has found strong opposition in the more crowded sections of the city where epidemics are most apt to occur. The department physicians and inspectors, according to Dr. Royal S. Copeland, Commissioner of Health, have found whole blocks where their efforts to vaccinate families met with obstruction. The commissioner attributes this unwillingness to be vaccinated to ignorance regarding the value of vaccination. There were nine cases of smallpox in the city on August 4.

Typhus Develops on Ship.—When the French liner *Savoie* arrived at New York from Havre August 2 she was held at Quarantine for a few hours on account of a case of typhus fever that developed among the steerage passengers. The victim, a Rumanian youth of 24 years, was sent to Swinburne Island and 517 other steerage passengers were sent to Hoffman's Island for observation for twelve days. This was justified, as two more cases developed the next day. The two patients, both boys, were sent to Swinburne Island.

Free Radium Treatment for Cancer.—The gram of radium recently received by the State of New York for the State Institution for the Study of Malignant Diseases at Buffalo will be available for use in the treatment of cancer after October 15. According to Dr. Harvey R. Gaylord, director of the institution, treatment will be free to any citizen of the United States, but preference will be given to residents of New York State.

Smallpox on Ward Line Steamship.—A case of smallpox discovered among the steerage passengers on the Ward liner *Morro Castle*, which arrived at New York from Havana August 4, caused the vaccination of all cabin and steerage passengers. The smallpox patient was sent to Swinburne Island, while the rest of the steerage passengers were sent to Hoffman's Island for observation.

Psychopathic Ward for Reformatory.—Following a recent race riot and other disturbances at the State Reformatory for Women at Bedford, N. Y., a psychopathic ward has been established with the assistance of physicians and nurses from Bellevue Hospital. Hydrotherapeutic measures, hot and cold, have been employed for calming the nerves of the disturbers, presumably with salutary results.

New Law Needed?—It is recorded in the daily press that the Chicago Corporation Counsel's office has invoked an English law five hundred years old in a legal battle to establish the city's right to isolate a woman declared by the department of health to be a typhoid carrier. This ancient act, the writ de leproso amovendo, was incorporated in the English common law, and pertained to the detention of lepers. The outcome of the court's decision will be interesting, in any event.

Dr. Charles G. Child, Jr., of New York City, has been appointed Consulting Gynecologist to St. Bartholomew's Hospital, New York, and to Nassau Hospital, Mineola.

Visiting Nurses Busy.—The Visiting Nurse Service, which operates eighteen nursing centers in Manhattan, The Bronx, and Richmond, reports that the 162 nurses and 72 students of the East Seventy-ninth Street center made 30,956 calls on 5,493 patients during the month of July.

Epidemic of Homicides.—According to the Homicide Bureau of New York City there has been an epidemic of homicides in this city, fifty-two having been committed during the first six months of this year in Manhattan alone.

Life-Saving Day.—The Coroner of the city of Chicago is planning a campaign of education for motorists and pedestrians in an effort to lessen the number of automobile accidents and deaths. On a day known as "Life-Saving Day" pamphlets will be distributed with "Don'ts" for motorists and pedestrians, and statistics showing the large number of accidents.

Another Anthrax Case at Bellevue.—The nineteenth case of anthrax at Bellevue Hospital, New York City, during the last five years is being treated with the serum, with fair chances of recovery.

Laboratory Training for Nurses.—Owing to the apparently increasing demand for graduate nurses who are also proficient in laboratory technique, a course of instruction has been arranged by the Massachusetts Homœopathic Hospital. The course consists of continuous work for one year in the laboratories of Boston University and of the adjoining hospital. It includes didactic and practical instruction in bacteriology, hematology, uranalysis, and serology together with the actual performance of large numbers of the various tests and examinations that come within the scope of a general pathological laboratory. Arrangements have been made to include instruction in and practical induction of anesthesia for a period of three months. No fee for the course will be made, each student receiving board, room, and laundry during the period of her stay. In certain instances an additional period of three months can be arranged for instruction in *x*-ray technique. All applications should be addressed to Dr. H. M. Pollock, superintendent, Massachusetts Homœopathic Hospital, Boston, Mass.

Physician Needed.—The town of Millersville, Anne Arundel County, Maryland, through one of its citizens, has appealed to the State board of health to assist it in finding a physician who will come into the community and establish an office. Barring the medical officers at Camp Meade, there is not a physician within a radius of nine miles of the town.

Medical Society Meetings.—The Southern Medical Association will meet at Louisville, Ky., November 15-18, 1920, one week later than the date originally set.

The Medical Society of the Missouri Valley will hold its thirty-third annual meeting at Omaha, Neb., September 6-7, under the presidency of Dr. Charles Ryan of Des Moines, Iowa.

Medical Society Meetings.—The fifteenth annual session of the Medical Association of the Southwest will be held at Wichita, Kan., September 27, 28, and 29. The first day will be given up to a reunion of medical officers who were in active service during the World War.

Obituary Notes.—Dr. CHARLES H. ALTHOUS, a retired surgeon, died in Bellevue, New York City, August 1, at the age of eighty-five.

Dr. JAMES J. CONCANNON of New York City, died August 1, after a lingering illness, at the age of sixty-four. He was graduated from the College of Physicians and Surgeons in 1890, and specialized in otolaryngology.

Dr. HAROLD LEE MEIERHOF died August 12 at Mount Sinai Hospital, New York City, where he was serving as interne. He was twenty-seven years of age.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, July 16, 1920.

Memorial Service to General Gorgas at St. Paul's Cathedral.—There is no need here to refer at length to the great services that the late General Gorgas rendered to public health and thus to the entire human race by the sanitary work that he conceived and in every instance successfully carried out. As the writer of his obituary which appeared in the *Lancet*, July 10, last, said, "He was the best-known and most uniformly successful medical administrator, not of his age alone, but of any age, and his work is comparable only with that recorded of Moses. No sooner were discoveries made tracing an endemic disease to a source removable by rigid hygienic measures than the services of this master-administrator were requisitioned to the farthest quarter of the globe to carry out such measures. And as if by magic, black magic as it appeared to the slovenly, careless inhabitant while magic to the admiring world outside, the areas were cleansed and freed." However, as said before, all this is known well to the American medical man and it only remains to describe the manner in which the British nation showed its whole-souled appreciation and recognition that when General Gorgas died in London the loss was an international one and especially touched the heart of a people who with the Americans speak the same language and in the main possess the same ideals. Thus on Friday, July 9, the British nation paid the highest tribute to the late Major-General William Crawford Gorgas it can pay to the honored dead. With full military honors the body was conveyed to St. Paul's Cathedral, where the first part of the funeral service was held previously to the transportation of the remains to America. The ceremony was magnificent and solemn for which no precedent exists. It is true that a service of supplication was held in the Cathedral on the burial day in September, 1901, of President McKinley, and a commemoration service was held in the same great church when John Hay, Secretary of State of the United States, died in July, 1905. But this was the first time that the mortal remains of a famous American were actually carried into St. Paul's for funereal honor. The King was represented by Lieut.-General Sir H. T. Goodwin, Director-General of the British Army Medical Service; Queen Alexandra by Colonel Sir Henry Streatfield; the Duke of Connaught, who is Colonel-in-Chief of the Royal Army Medical Corps, by Colonel Sir Edward Worthington, and His Majesty's Government by Dr. Addison, M. P., Minister of Health. Borne on a carriage fixed over one of the guns of N Battery, Royal Horse Artillery, the coffin, covered with the Stars and Stripes, and with one beautiful wreath upon its lid, that of the late General's widow, was escorted from Queen Alexandra's Military Hospital, where the death took place, by six pall-bearers, all officers of high military rank. Headed by the band of the Coldstream Guards, the procession consisted of the Staff of the Second Guards Brigade, three squadrons of the Second Life Guards, Third Battalion Coldstream Guards, and the First Battalion Irish Guards. At the steps of the Cathedral the coffin was met by the following, who acted as additional pall-bearers: Military Attaché, United States Embassy; Naval Attaché, United States Embassy; Sir George Makins, President of the Royal College of Surgeons; Sir Norman Moore, First President of the Royal College of Physicians; Sir Anthony Bowlby, Vice-President of the Royal College of Surgeons; Surgeon Rear-Admiral Sir Robert Hill, Director-General Medical Department of the Navy; Brigadier-General John Finney, U. S. Army Medical Service; Surgeon-General Sir Richard H. Charles, Dr. Charles Mayo of Rochester, Minn.; Sir Humphrey D. Rolleston, President of the Royal Society of Medicine; Prof. W. T. R. Simpson, C.B., Vice-President of the Society of Tropical Medicine and Hygiene. Receiving the coffin at the west end of the nave, the Cathedral clergy and choir, headed by Dean Inge, walked before it toward the chancel singing the opening sentences of the Burial Service. The service ended by the band of the Life Guards and the full choir of the Cathedral rendering the "Battle Hymn of the Republic" and the band playing Chopin's Marche Funèbre.

The Death Rate of Influenza in England and Wales.—The Registrar-General of England and Wales has issued recently an elaborate analysis of the mortality in those countries from the influenza epidemic of 1918-19. In this analysis it is estimated that the total number of deaths directly or indirectly attributable to the outbreak was 200,000 or thereabouts. A mortality so high from influenza is unprecedented and exceeds even that from the cholera epidemic of 1849. The report of the Registrar-General states: "The deaths allotted to influenza during 1918 numbered 112,329, 53,883 of males and 53,446 of females. The 53,883 males included 7,591 non-civilians. Deducting these we are left with 104,738 deaths of civilians, corresponding to a mortality of 3,129 per million civilian population. No such mortality as this has ever before been recorded in England and Wales since registration commenced, except in the case of the cholera epidemic of 1849, when the mortality from the cause rose to 3,033 per million population. None of the previous outbreaks of influenza can compare in mortality with that of 1918-19. During the forty-six weeks, June 23-May 10, the total deaths allocated to the disease were 151,446, including 140,989 of civilians, the corresponding civilian death-rate for these forty-six weeks being at the annual rate of 4,774 per

million population." The report goes on to say that it is well known that during influenza epidemics the mortality attributed to the disease does not represent the whole of that caused by it. The entries under other headings, especially those of respiratory disease, are always found to increase during an epidemic, and though this did not occur in 1918 to the extent as in other recent outbreaks, it is still necessary to make allowance for these increases of mortality, allocated to other causes but really attributable to influenza, in endeavoring to measure the loss caused by the epidemic. "Including in the figures the deaths to which pneumonia, bronchitis, heart disease and phthisis contributed, the totals for the third quarter of 1918 were: males, 8,088; females, 7,741; while for the fourth quarter, when the epidemic was at its height, they were: males, 51,359; females, 64,000. The total deaths in 1918 due to the outbreak are estimated at approximately 140,000. The estimate of civilian deaths for the whole epidemic, June 23, 1918, to May 10, 1919, is as follows:

	Civilian Males	Females	Total
June 23 to 30.....	250	250	500
July 1-Sept. 30.....	8,000	9,000	17,000
Oct. 1-Dec. 30.....	51,000	64,000	115,000
Jan. 1-March 31....	22,500	24,500	47,000
April 1-May 10.....	2,500	2,250	4,500
Total	84,000	100,000	184,000

"In addition to the above there were 7,591 deaths of non-civilian males in England and Wales allocated to influenza in 1918 and 2,899 in 1919 during the epidemic period, or 10,490 in all. The number has to be increased to an uncertain extent, say to 14,000, to allow for deaths really due to influenza but allocated to other causes. The non-civilian mortality of the preceding years was so small that it may be left out of account. The addition to the civilian deaths brings the total to 198,000, and in view of the uncertainties of the estimation the round figure of 200,000 deaths attributable to the epidemic, in addition to about 7,000 which the average rate of recent mortality would have accounted for, may be accepted as adequately summing up its results."

Testimonial to Sir John Macalister.—On the afternoon of July 8, at the rooms of the Royal Society of Medicine, before a large gathering of his medical friends, a check for a substantial sum was handed to Sir John Macalister, the secretary to the Royal Society of Medicine, as a token of appreciation for many years' service to the profession and the public. Sir Humphrey Rolleston, president of the society, in presenting the check said that their guest was a very human man and the natural result was that testimony to his great work had come from all parts of the world. Another speaker, Sir Arbuthnot Lane, said that Sir John was "a man who does and never talks." In returning thanks, Sir John said it was the first time in his life he had received a "tip." He had not served the Society of Medicine for money. He thanked many able members of the medical profession for their kindness and assistance, but above all he must pay a tribute to his "alter ego," Miss Willis, his secretary, who had always supported him in his plans.

Dinner to Dr. Charles Mayo in London.—On the evening of July 6 last, a dinner was given to Dr. Charles H. Mayo of Rochester, Minn. As a matter of fact the dinner was given with a double object, to pay a compliment to Dr. Charles Mayo, who is well known and highly appreciated by the profession in this country, and to endeavor to fix public notice upon the scheme to found an American hospital in London, concerning which a good deal has been written in previous letters. The hosts at the dinner were Lord Reading, the president and the governor of the proposed or, rather, projected American hospital. The two toasts given were the health of Dr. Mayo, by Lord Reading, and "Prosperity to the American Hospital in London," given by Mr. Balfour. In replying to his health, Dr. Mayo sketched what true intellectual union between England and America might bring about, and while deprecating the idea that he was a harbinger of disaster, forecasted what war in the future would mean, and recommended that medical preparations to cope with wholesale scientific destruction ought now to be made. Mr. Balfour, in wishing good luck to the American hospital in London, laid particular stress upon the need for and value of mutual understanding between America and this country on questions of medical science. He affirmed as his strong opinion that nothing could more surely assist in accelerating the already wonderful progress of medicine and surgery than a practical exchange of their experiences between professors, teachers, practitioners, and even students of the two countries, such as only could be got by personal conference and could never be supplied by any written medium. This toast was responded to by the American Ambassador and Sir Arbuthnot Lane. Sir Arbuthnot Lane gave a rapid survey of the evolution and development of the idea of founding an American hospital in London. He credited Mr. Philip Franklin with originating the scheme and told how it had taken root and flourished on both sides of the Atlantic, until it was now approaching fruition. He thought it was destined to achieve much in the future, both in the promotion of a good understanding between the two English-speaking countries and in the opportunities and facilities for research afforded. All the speakers referred in sympathetic words to the death of Surgeon-General Gorgas and deplored that so great a career should have been so sadly cut short, whose life work formed a perfect example of what internationalism in medicine could achieve.

OUR LETTER FROM GENEVA.

(From Our Regular Correspondent.)

GENEVA, July 1, 1920.

Action of Paraoxyphenylethylamine.—Azarapetain, working in the Laboratory of Experimental Therapeutics of the University of Geneva, has recently reported on the pharmacodynamic action of paraoxyphenylethylamine, a medicament which possesses great therapeutic interest. This substance is active, but of relatively little toxicity. Rabbits

tolerate from twenty to twenty-two centigrammes per kilogramme of animal, given intravenously, even when the solution injected is very concentrated, say at 10 per cent. As a rapidly fatal dose, 30 centigrammes per kilogramme in a 10 per cent. solution intravenously represents the average in the rabbit and death is extremely rapid. The animal dies like one who has been given a large dose of potassium, but while in the latter the heart stops in diastole, paraoxyphenylethylamine first produces a sort of tetanization of both ventricles before the heart ceases to beat.

In some instances, in spite of an injection of a very large dose, death may be delayed. The animal appears to recover from the injection, but dies later within six to eight hours. At autopsy the bronchi and trachea are found filled with a frothy liquid—pulmonary edema. Other than the cases where autopsy revealed pulmonary edema, no other macroscopic lesion was found in any other organ which could explain the cause of death. The extreme paleness of the brain is striking in acute poisoning.

Large doses of the drug produce convulsions the mechanism of which is far from being clear. At times the eclamptiform paroxysm depends upon an influence directly exercised by the poison on the nervous centers; at others it is the result of severe bulbar anemia due to arrest of the heart's action. In fact, the convulsive state may appear while the heart—although slackened—still beats energetically and the blood-pressure is raised; therefore, only a neurotic action can here be invoked. On the contrary, in other experiments the heart suddenly becomes weak and stops, while convulsions occur which cease when massage of the organ is practised, only to return when massage is stopped.

In these circumstances it is difficult not to admit the convulsions are the consequence of bulboprotuberential anemia; if the animal is left free an intravenous injection of a large dose of the drug will cause a violent forward jump after the lapse of a few minutes, a fall on the side in convulsions, and an almost immediate death. Large doses of the drug may also determine a temporary paresis, particularly of the hind limbs.

Paraoxyphenylethylamine has a distinct cardiovascular action in doses of five to ten centigrammes per kilogramme; it is a tonicardiac medicament, raises the blood-pressure, slows the heart, and increases the amplitude of the pulse. The changes in the pulse are principally due to a direct action of the drug on the heart; also partially to a central action by the intermediary of the vagus. The cardiovascular action becomes manifest rapidly, often at the very onset of the injection when given intravenously. The duration of the action varies with the dose; after very large doses it may last from ten to fifteen minutes.

A slight fall of the blood-pressure is usually observed a short time after the injection; with large doses the pressure first falls before rising, but in toxic doses ending in death the pressure falls at once definitively. When several successive injections are given the rise of the blood-pressure becomes progressively less with each injection if the dose is not increased, with the exception of the second injection the action of which is usually more marked than that of the first one. In equal doses, an intrajugular injection produces a more marked action than an intra-arterial injection.

The respiratory changes are variable according to the dose employed, as well as the phase of intoxication considered. A polypnea, occasionally very marked, is always observed directly after the injection of large doses. Certain cardiac disturbances—excessive slowness of the pulse, arrhythmia, bigeminism — are occasionally encountered after injection of the drug. Azarapetain has several times met with pulmonary edema in his experiments as I have already said, but he is not inclined to offer any opinion as to the part played by paraoxyphenylethylamine in the production of the phenomenon. He likewise noted some instances of glycosuria following injection of the drug.

The medicament also influences uterine contractions in the organ when isolated and placed in Ringer's solution maintained at a proper temperature and correctly oxygenated. It produces contractions and causes variations in their type and frequency, increasing and reinforcing them.

As to the cardiovascular, uteromotor action of paraoxyphenylethylamine, the results arrived at by Azarapetain are in conformity with those obtained by previous observers. He has been able to fix the lethal dose of the drug, which, perhaps, may be still larger if less concentrated solutions be used. Perhaps this explains why Burmann was able to inject several decigrams per kilogram of animal (rabbit) without producing death. Contrary to the results obtained by Barger and Dale, Azarapetain has not observed either lacrymation or salivation.

In comparing the action of paraoxyphenylethylamine with that of suprarenin some observers—Barger and Dale, Rosenheim, Dixon, and Taylor—have referred to the less brutal action of the former. The reaction produced by this medicament is always slower to appear, but it is also more lasting than that of adrenalin. In very large doses, paraoxyphenylethylamine exercises an injurious action on the heart which is not observed with adrenalin. In fact, a rapidly fatal dose of adrenalin invariably produces a very considerable increase of the blood-pressure before killing the animal, while paraoxyphenylethylamine lowers the pressure at once when the dose is excessive.

The cardioplegic influence of the drug under consideration was very manifest in one of Azarapetain's experiments, in which the heart of a rabbit had been arrested by a dose of thirty centigrammes per kilogramme of animal in a 10 per cent. solution and was revived by a very prolonged massage of the myocardium. Injections of adrenalin rapidly reinforce the cardiac action and raise the blood-pressure without slowing the pulse. An injection of ten centigrammes per kilogramme of animal of paraoxyphenylethylamine, on the contrary, far from reinforcing the heart, will weaken it immediately and arrest its action permanently in the lapse of about thirty seconds. To kill thus with a mean dose of the drug, the heart must of necessity be seriously involved.

Adrenalin has given satisfactory results, undoubtedly because a considerable part of the increase of the blood-pressure is provoked by vasoconstriction. But it must also be admitted that adrenalin, although it does not directly heighten the energy of

the myocardium, does not weaken it, while this weakness is at once manifest after the injection of paraoxyphenylethylamine. The vasoconstricting action of the latter drug is, at least in part, of peripheral origin. Instillation of a 1, 2, or 3 per cent. solution quite rapidly causes paleness of the injected conjunctiva of rabbits, rendered so by a previous instillation of some drops of 40 per cent. alcohol. This action recalls that which is obtained with a 1/5000 adrenalin solution.

Finally, experiments made on rabbits whose cord had been divided below the bulb, gave absolutely the same blood-pressure tracings as those obtained in intact animals. It is, therefore, evident that in a mean dose, the tonicardiac action of paraoxyphenylethylamine is accompanied by vasoconstriction of peripheral origin and in this respect the drug can be compared to adrenalin.

Progress of Medical Science.

Boston Medical and Surgical Journal.

July 29, 1920, clxxxiii, 5.

1. Concerning So-Called Encephalitis Lethargica; With Special Reference to its Sequelæ. J. W. Courtney.
2. Lethargic Encephalitis. George E. Neuhaus.
3. Diagnosis and Treatment of Tuberculosis of the Genito-Urinary Tract. Arthur H. Crosbie.

3. Diagnosis and Treatment of Tuberculosis of the Genito-Urinary Tract.—Arthur H. Crosbie holds that the diagnosis of tuberculosis of the kidney involves consideration of the symptoms, physical examination, examination of the urine, radiographs, pyeolgrams, and cystoscopic examination. After the diagnosis is made there is only one safe procedure and that is nephrectomy, providing the process is unilateral. If it is bilateral there is nothing left but hygienic treatment. Tuberculosis of the bladder, in the writer's experience, is always secondary to tuberculosis of the kidney. The treatment is directed to the kidney. Tuberculosis of the penis, which is rare, is apt to be confused with epithelioma, and can be differentiated surely by microscopical examination. Tuberculosis of the epididymis is always associated with tuberculosis of the seminal vesicles and prostate and in the treatment of the epididymis this should not be lost sight of. Unless there is active tuberculosis elsewhere in the body, keeping the patient pulled down, most cases do very well under hygienic treatment. The writer is very much opposed to epididymectomy for tuberculosis of the epididymis. If one is to do anything in an operative way a radical operation should be done, removing the epididymis, the entire vas and vesicles.

New York Medical Journal.

July 31, 1920, cxii, 5.

1. Anatomical and Physiological Theories of Plato. Jonathan Wright.
2. An Epidemic of Typhoid Fever of Water Borne Origin and Carrier Transmission. Leon H. Cornwall and James P. Crawford.
3. Nonleucotoxic Properties of Benzyl Benzoate. Edwin A. Heller and Edward Steinfield.
4. Administration of Digitalis. T. Stuart Hart.
5. Hypertension and Arterial Fibrosis. C. T. Hood.
6. Shifting as an Aid to Vision. W. H. Bates.
7. A Case of Unilateral Choked Disc. Frederick Krauss.
8. Lobar Pneumonia Complicated by Multiple Arthritis. David Greenberg.

3. Nonleucotoxic Properties of Benzyl Benzoate.—Edwin A. Heller and Edward Steinfield state that because of the widespread use of benzyl benzoate in nearly all conditions indicating the relaxation of smooth muscle, and because of its close chemical derivation from benzol, it has appeared to them to be of interest and even advisable to investigate any possible analogy to the toxic effects of the latter. Though the untoward manifestations of benzol are varied, they selected its destructive action on leucocytes as being capable of more accurate determination and comparison with the benzoate. They used rabbits, inasmuch as the problem could not be approached from the clinical side. Several preliminary leucocyte counts were made to recognize tendency to variation in the counts, since this variability exists in rabbits. The animals were then given subcutaneous injections of benzyl benzoate in equal parts of olive oil into the loose tissues of the flanks, the preparation used being the full strength benzyl benzoate and not the alcoholic dilution, which will not mix with oil. The doses varied from one cubic centimeter to two and five-tenths cubic centimeters to the kilo of body weight, these being given in one injection, with the exception that one rabbit received four doses of twenty-five hundredths c.c. each. Two rabbits were used as controls to demonstrate the destructive effects of benzol, so that comparisons could be made with the same lot of animals under similar conditions. From these experiments the writers conclude: (1) Benzol benzoate was found to be without toxic effects upon the leucocytes of rabbits. (2) Controls of benzol showed the well-known depression of the leucocyte count. (3) A wide margin of safety is present between the therapeutic doses and the toxic doses of benzyl benzoate, based upon observations on rabbits.

5. Hypertension and Arterial Fibrosis.—C. T. Hood, in this preliminary report, expresses the opinion that there are five types of hypertension: physiological hypertension, hypertension in the young, arterial fibrosis, chronic nephritis, and hyperthyroidism. These are briefly discussed. Increased tissue fluid pressure causes, first, increased capillary resistance; second, hypertrophy of the heart; third, fibrosis of the arteries. The practical application of these facts involves the question, What can and does increase the body fluid pressure in the capillaries? He believes, from certain experiments, that sodium chloride in the tissues brings about this condition. That salt will hold back the body fluids has been abundantly proved, and the clinical results obtained from this fact can be proved by anyone. If the body fluids contain an abnormal amount of sodium chloride for the individual, the intratissue fluid pressure is increased, capillary resistance is raised, and ultimately there is hypertrophy of the heart, with arterial fibrosis. The elimination of the chlorides is an unsolved problem. So far, he has found but one drug, potassium nitrate, which in any way increases the elimination of the chlorides, and this drug is effective in not more than seventy-five per cent. of the cases. Large doses of potassium nitrate increase the volume of urine, but not the twenty-four hour output of the chlorides, while smaller doses of the drug, as five grains to the ounce, and fifteen drops in a half glass of water, three times a day, will not increase the volume of urine, but will increase the amount of chlorides up to the normal, and maintain this until the individual is filtered of his excess chlorides. In chronic nephritis, potassium nitrate is of little avail, except in the true arteriosclerotic nephritis. In chronic nephritis, other than the arteriosclerotic type, when the urine is of a low fixed specific gravity, with the kidney function from five to fifteen per cent., the administration of eserine, one-fortieth of a grain three times a day, will increase the chloride elimination for several weeks, then the chlorides will fall to almost nothing, and the nitrogen and urea elimination will increase, often to a marked extent. It is now generally conceded that the iodides or iodine have no place in the treatment of hypertension or arterial fibrosis. The salt poor and salt free diet have been used for some years by many clinicians in the treatment of chronic nephritis, but salt free diet has never been pushed, so far as he knows, to the point of the removal of the surplus sodium chloride from the body, and keeping the tissue sodium chloride content at the physiological amount. Herein lie the possibilities. Hood expresses the view that the internal secretions do not alter his hypothesis.

Journal of the American Medical Association.

July 31, 1920, lxxv, 5.

1. Surgery of Cancer of the Large Intestine. Arthur Dean Bevan.
2. Cancer of the Rectum. G. W. Crile.
3. Femoral Hernia of the Ovary. W. W. Grant.

4. Relation of Hyperplasia of Endometrium to So-called Functional Uterine Bleeding. Emil Novak.
5. Roentgenography and Transillumination: Comparative Value in Diagnosis of Diseases of the Frontal and Maxillary sinuses: Author's Method of Transillumination. H. H. Briggs.
6. Indifference of the Laryngologist Toward Tuberculous Laryngitis and the Tuberculosis Problem. William V. Mullin.
7. Soaps in Relation to Their Use for Hand Washing. John F. Norton.
8. End-Result Study of Hallux Valgus Operations: A Report of Ninety-Six Cases at the Orthopedic Clinic of Massachusetts General Hospital Since 1905. Homer Waldo Spiers.
9. Homohemotherapy. Jules Voncken.

1. **Surgery of Cancer of the Large Intestine.** Arthur Dean Bevan. See MEDICAL RECORD, May 29, p. 937.

2. **Cancer of the Rectum.** G. W. Crile. See MEDICAL RECORD, May 29, p. 937.

3. **Femoral Hernia of the Ovary.** W. W. Grant. See MEDICAL RECORD, May 22, p. 890.

4. **Relation of Hyperplasia of Endometrium to So-called Functional Uterine Bleeding.** Emil Novak. See MEDICAL RECORD, May 22, p. 889.

6. **Indifference of the Laryngologist Toward Tuberculous Laryngitis and the Tuberculosis Problem.** William V. Mullin has found, upon investigation, that some laryngologists claim that they see very little tuberculous laryngitis in their part of the country—which means that they are not making the diagnosis. Some are afraid of becoming infected themselves while examining or treating this condition. Others prefer to send the patients to a sanitarium. In order to ascertain the situation at sanitariums throughout the country, the writer sent a questionnaire to all tuberculosis sanitariums listed in the directory published by the National Association for the Study and Prevention of Tuberculosis. His deductions from the answers are in part as follows: The institutions constituting the 21 per cent. which do not admit known cases of laryngeal tuberculosis are adding to the number of patients who are endeavoring to seek recovery from tuberculosis of the throat by going to the private office of the physician or to the free dispensaries; whereas, if they are to gain any results at all, they should be in bed carrying out the absolute rest cure. One does not leave the diagnosis and treatment of ear cases, sinus conditions, or other diseases of the larynx, to a general man, so why leave to him laryngeal tuberculosis? The greatest care should be taken to rule out and prevent every irritation from above, thereby greatly lessening cough and preventing complications. In the 74 per cent. of institutions in which patients are not examined by a competent laryngologist the chances for making a diagnosis of early infiltrations in the larynx are greatly lessened. Men who are doing tuberculosis work are looking to the laryngologists for some definite ideas on this disease, and, in the writer's opinion, are not receiving the aid they should have. A more active interest in tuberculosis should be taken by laryngologists. There should be more thorough and uniform teaching of the diagnosis of this disease, and it should be carried on in such a way that the student will have opportunity to examine large numbers of incipient cases, and to see these repeatedly, and thus familiarize himself with the laryngeal image seen in tuberculosis as compared with that found in other allied conditions.

7. **Soaps in Relation to Their Use for Hand Washing.**—John F. Norton reports the results of experiments undertaken to determine four things: First, the relative efficiency of various soaps in removing bacteria from the hands. Second, the relative germicidal power of the soap solutions obtained in washing toward bacteria removed from the hands. Third, the bacterial condition of the hands after washing, i.e., whether syerile or not. Fourth, the effect of the soap, if any, remaining on the hands, comparing the action of different soaps in this respect. Twelve soaps were used in the experiments, varying from the cheapest toilet soaps to the expensive so-called antiseptic and germicidal soaps. His conclusions from the study follow: Sterile hands are not obtained in the ordinary process of hand washing. More bacteria were found to be removed by the ordinary toilet soaps than by the special soaps. In other words, the cleansing properties of a soap are more important than its "germicidal" or "antiseptic" constituents. The soap solutions obtained in hand washing are of no practical germicidal or antiseptic value. The soap left on the hands after washing has no germicidal action. In the whole process of hand washing done in the usual manner, the special so-called "germicidal" or "antiseptic" soaps exhibit none of these properties. Therefore these terms are not proper to use in connection with soaps. Since the hands may serve as a medium for the conveyance of bacteria in infectious diseases, it is important to remove these bacteria; and this may be done by the ordinary toilet soaps as effectively, if not more so, as by the special brands of so-called "antiseptic" or "germicidal" soaps.

The Lancet.

July 10, 1920, cxcix, 2.

1. The Relation of the Preliminary Science Teaching to Pathology. An Address Introductory to the Discussion on Medical Education at the Annual Meeting of the British Medical Association. J. Lorrain Smith.
2. Medical Experiences in Macedonia and the Caucasus. Arthur G. Phear.
3. The Physical Element in the Psycho-Neuroses. Judson S. Bury.
4. The Influence of Suggestion on Body Temperature. J. A. Hadfield.
5. Suggestions for the Mass Treatment of Hookworm Infection. S. T. Darling.
6. An Inquiry Into the Mentality of Juvenile Adult Delinquents. John M. Ahern.

3. **The Physical Element in the Psycho-Neuroses.**—Judson S. Bury, confining his remarks to genuine cases of the neuroses, holds that the difficulty in discriminating between malingering and a true neurosis is very great, and one is apt to be biased by personal feeling toward the patient. True malingering—that is, conscious simulation—is rare. It is, however, often combined with true hysteria, or unconscious simulation, and it is such combinations that lend themselves most readily to dramatic cures. The writer deals with the underlying physical basis of the neuroses, because there seems to be a tendency to lay undue stress on the psychical factor. At any rate, it seems unlikely that molecular disturbances of the nervous system and altered blood states largely account for the long duration of many cases and for the great tendency for symptoms to relapse on the slightest provocation, whether that be undue exertion, loud sudden noises, or family or business anxieties. In the most common type of case better results will be attained by fresh air, sunlight, cheerful surroundings, and light work, than by continuous searching for a hidden mental conflict. Of the value of psycho-analysis in certain intractable cases where there are reasons for suspecting a repressed memory or complex, Bury does not attempt to express an opinion. Nor is he tempted to undertake the necessary investigations when he reads that a three years' study of the subject is essential, and that to unravel a complex, to trace some of its elements back, possibly to some incident in childhood, often a very muddy one, may occupy the constant attention of the psycho-analyst for at least several months, and sometimes for a year and even longer.

British Medical Journal.

July 10, 1920, ii, 3106.

1. The State and the Future of Medical Practice. Sir George Newman.
2. The Consultant. Sir Wilmot Herringham.
3. The Future of Medical Practice from the Standpoint of the General Practitioner. Alfred Linnell.
4. The Future of Medical Practice from the Point of View of Medical Research. Professor Gowland Hopkins.
5. The Hospitals. E. W. Morris.

Bulletin of the Johns Hopkins Hospital.

June, 1920, xxxi, 352.

1. Adenomata of the Carotid Gland. Mont R. Reid.
2. A Study of Haemodynamic Reactions of the Cerebrospinal Fluid and Hypophyseal Extracts. Conrad Jacobson.
3. Experimental Observations upon the Ureters, with Especial Reference to Peristalsis and Antiperistalsis. G. B. Wislocki and V. J. O'Conor.
4. The Fate of Bacteria Introduced into the Upper Air Passages. V. The Friedländer Bacilli. Arthur L. Bloomfield.

5. A Physiological Study of the Eustachian Tube and Its Related Muscles. Arnold Rice Rich.
6. Hereditary Spastic Paraplegia. V. R. Mason and W. F. Rienhoff, Jr.

1. **Adenomata of the Carotid Gland.**—Mont R. Reid finds that the total number of reported cases of tumors of the carotid body is sixty-six, to which he adds three cases from Professor Halsted's clinic. From his study of the reported cases and of those which he has personally studied he formulates the following summary: (1) The slow growing pigmented tumor of the carotid gland, heretofore described as "carotid body tumor" is a simple hyperplasia of a part or all of the normal gland; it should be designated as an adenoma or hyperplasia of the carotid body. In rare instances a malignant condition may develop in it. (2) A "potato tumor of the neck" may be a primary sarcoma or carcinoma of the carotid body. (3) The relation of the common carotid artery to enlargements of the carotid gland ought to help us in arriving at a correct diagnosis. This artery is caught and carried laterally or anteriorly so that it and its branches may often be readily felt on the surface of the tumor. (4) A bulging of the pharyngeal wall and a paralysis of a vocal cord are frequently observed in an enlargement of the carotid body. The paralysis may be detected only by direct examination of the cords, inasmuch as disturbances of speech do not usually occur. (5) Yellowish pigmentation of the body, flushing of the head and neck and a slow, somewhat apathetic state of mind may result from hyperplasia of the carotid gland. (6) The mortality of operations for hyperplasia of the carotid body has been very high. Preliminary ligation, partial or complete, of the carotid artery, and careful hemostasis at the second operation may reduce it materially. (7) In some cases in which an operation is imperative on account of the size of the growth it may be wiser to do a decompressive operation than to attempt extirpation of the tumor. Then, after the tumor dislocates laterally and becomes more superficial, its removal will be easier and safer, particularly if the artery has been tied at the time of decompression.

Western Medical Times.

July, 1920, xl, 1.

1. Anthropology of Modern Civilized Man. Arthur MacDonald.
2. Some Phases of Disease Control with Special Reference to Maladies Rare or Infrequent in Pennsylvania. Thomas Wright Jackson.
3. *X*-Ray Findings with the Delineator in Cardiospasm. Max Einhorn and Thomas Scholtz.
4. The Value of the "No Good"—The Symptoms of Varicose Veins (Continued). Douglas H. Stewart.

1. **Anthropology of Modern Civilized Man.**—Arthur MacDonald summarizes the results of his investigations involving 42,375 cases studied by the author, being investigated either by him personally, or under his direct supervision.

Finska Läkaresällskapets Handlingar.

March-April, 1920, lxii, 3-4.

Occurrence of Hairs in Supernumerary Nipples.—Kajava has made a mass investigation of supernumerary nipples in Finland and finds that hairy ones are not uncommon, being present in over 12 per cent. of those examined. As a rule the hairs sprout from the summit of the nipple in both types of the anomaly—supernumerary breast proper and supernumerary nipple, and even in the socalled areolar hyperthelia. In the latter form the nipple is quite flat. The structure of the hairs in these localities is typical although sometimes the follicles are unusually wide. In more detail the total number of subjects presenting supernumerary formations was 345 and the ratio of breasts to nipples was about 2½ to 1. The total number presenting hairs was 42, this ratio being about 3 to 1.

Treatment of Postdiphtheritic Stenosis of the Larynx and Trachea.—Bardy cites 4 cases of these sequelæ in children between the ages of 1½ and 4 years in which he employed the Thost-Uchermann method, the duration of treatment being from 5 to 15 months. The voice is rough but distinct and two of the children are now attending school. Three others are under the same treatment. The author says that the Schmiegelow method of fixation has been tested with unsatisfactory results, probably because of the poor quality of war rubber.

La Presse Médicale.

May 5, 1920, xxviii, 28.

Multiple Sclerosis of Commotional Origin.—Ducamp and Milhaud refer to our new knowledge that shell concussion can without any sensible trauma cause multiple sclerosis, and report a case in detail. The subject was not treated until a year after his accident which occurred in February, 1916, and after sojourn in different sanitary formations was mustered out as a chronic invalid. The period of incubation was about a year and the initial symptoms pains in the loins and right leg. No special area of nerve distribution was involved. The sensations at first came on only when fatigued. He continued in active service for some months before he was interned in the hospital, and his symptoms apparently called for lumbar puncture, which act was productive of benefit but no light was thrown on the diagnosis. After a series of therapeutic punctures he developed paralysis in the right arm and leg, with sphincteric troubles. There were also disturbances of vision. After some weeks the paralytic symptoms receded and for the time the condition was negative. Careful neurological examinations showed anomalies of gait and a slowing of voluntary movements. There was an intention tremor when a glass was carried to the mouth. The patellar reflexes were exaggerated. Babinski on the right side was positive, excluding hysterical paralysis. Eyes normal save for slight nystagmus. Tongue protrudes normally. In general, neuroses could readily be excluded. The diagnosis was made apparently through an observation by Bernheim published many years ago of multiple sclerosis following a bombardment, together with the resemblance of the symptoms to the early stages of this affection. It is believed that the concussion causes small hemorrhages which form foci of disease after the elapse of about a year.

Schweizerische medizinische Wochenschrift.

May 6, 1920, l, 19.

Role of the Ovary.—Labhardt attempts to differentiate between hypo-, hyper- and dysfunction of the ovary in the clinic. In hypofunction we must have absolute or relative amenorrhea although we may find that in some of these cases ovulation and formation of corpora lutea persist indefinitely. Again after an interval of silence ovulation may begin anew. The clinical picture may at times be confused by other phenomena but nevertheless hypofunction means amenorrhea. When adiposity is added it means that the metabolic function of the ovary is also depressed. Further some sterility is also due to ovarian hypofunction which involves suppression of ovulation. Either the ova do not mature or the follicles do not rupture. Still another manifestation seen in the undeveloped is genital infantilism with or without confusion of secondary sex characters. Again chlorosis should be included under the effects of ovarian hypofunction. There are also numerous double and pluriglandular syndromes in which ovarian activity is depressed. The part played by subfunction of the ovary in various constitutional states is evident but not decisive as enteroptosis and other constitutional inferiorities. In regard to dysfunction the most striking clinical expression is certain menorrhagias but not those characterized by long duration or excessive flow. Disturbed cycle is the evidence of ovarian dysfunction and this alone. In other words increased frequency or the precocious supervention of the flow shows that ovulation is precocious. Naturally in dysfunction hypofunction may coexist. Further in dysfunction we may see various anomalies of the genitals and organism at large and the author mentions vaginitis and uterine discharges, pruritus of the vulva, and, of general states, vagotonia. Of pure hyperfunction we know but little—it is responsible for precocious puberty and osteomalacia.

Book Reviews.

PHYSIOLOGICAL PRINCIPLES IN TREATMENT. By W. LANGDON BROWN, M.A., M.D., Cantab., F.R.C.P. Physician, with Charge of Out-Patients, St. Bartholomew's Hospital; Physician to the Metropolitan Hospital, etc. Fourth edition. New York: William Wood & Co., 1920.

THE many advances made in medical science during the five years that have elapsed since the appearance of the third edition of this interesting little volume have called for a thorough revision of the text and the entire rewriting of the chapters on Diabetes and Acid Intoxications. The chapters, as now arranged, embrace the principles of organotherapy; the rational treatment of gastric disorders; mechanical factors in digestion and indigestion; the work of the pancreas; uric acid and the purin bodies; oxaluria, phosphaturia, and urinary calculi; albuminuria and the treatment of nephritis; glycosuria and diabetes; acidosis and acid intoxications; intestinal intoxications; irregular action of the heart; the vasomotor system in disease; cyanosis, vitamines and calcium salts. The bibliography, arranged according to chapters and subjects, is placed at the end of the text. A comprehensive index and a list of authors complete this volume of 427 pages.

PENSIONS AND THE PRINCIPLES OF THEIR EVALUATION. By LLEWELLYN J. LLEWELLYN, M.B. (Lond.) and A. BASSETT JONES, M.B. (Lond.) Temp. Captain R.A.M.C. With a section on Pensions in Relation to the Eye by W. M. BEAUMONT, Acting Ophthalmic Surgeon to the Bath War Hospital. Price, $8.50. St. Louis: C. V. Mosby Company, 1919.

THIS volume is the American imprint of a British book issued during 1919 and contains an introduction for American readers by Dr. Sever of Boston. The number of pages is 702 and the 29 chapters cover history of the pension system. Legislation, temporary pensions, special clauses in pensions, examination for pension claims, origin of the disability, evolution and gravity of the same, adaptation to disabilities, principles of evaluation, ankyloses, fractures, scars, injuries to nerves, lesions of muscles, tendons, joints and bones, amputation, injuries to the eye and vision, injuries to the ear and deafness. The authors acknowledge their obligations to the American authorities, Burton J. Hendrick and Charles Francis Adams.

A DIABETIC MANUAL for the Mutual Use of Doctor and Patient. By ELLIOTT P. JOSLIN, M.D., Assistant Professor of Medicine, Harvard Medical School. Second Edition. Philadelphia and New York: Lea & Febiger, 1919.

IN diabetes more than in any other disease, successful treatment is dependent upon the trained and intelligent cooperation of the patient. In fact the patient practically treats himself and the physician need exercise only occasional supervision. Such a manual as this of Joslin's is therefore a necessity for the use and training of the patient. But it will prove of immense aid also to the physician. It is written with satisfying detail and in language that the layman can understand. In this second edition the advances of the last few years have been incorporated and it is up to date in every respect. The illustrations are well chosen and presented. The tables are invaluable. The reports of the analyses of the so-called diabetic preparations are of tremendous help in teaching the diabetic the need of care in choosing his food and the unwisdom of relying blindly upon advertisement. The recipes will be helpful to the patient's cook. The book is a valuable one and we predict for it a long popularity.

SYMPTOMS IN THE DIAGNOSIS OF DISEASE. By HOBART AMORY HARE, M.D., B.Sc., Professor of Therapeutics and Diagnosis in the Jefferson Medical College of Philadelphia; Physician to the Jefferson Medical College Hospital. Eighth Edition. Philadelphia and New York: Lea & Febiger, 1920.

THE opening sentence of the preface to this eighth edition of Dr. Hare's book is one about which useful sermons could be preached and it is an admirable basis upon which to build such a work as this. He says, "Laboratory investigation, by the brilliancy of its results in obscure cases, has served to divert attention from the careful study of the patient which is usually the chief method by which a correct diagnosis can be made." If this work did nothing more than to impress upon the mind of the reader the importance of this fundamental truth it would perform a greater service to medicine than many other far more pretentious volumes. The most dangerous weakness of the medical student of to-day is his supine reliance upon the laboratory for diagnoses. This is due in large part to his inability to elicit and interpret symptoms and physical signs. It is by the study of such books as this that the above tendency may be overcome and it is gratifying to see that the demand for the book has been so great as to call for an eighth edition. Many of the profession are already familiar with the plan of the work. It discusses symptoms and their significance and is written upon the plan of the upbuilding of a diagnosis by grouping the symptoms. The new edition has been thoroughly revised and is profusely illustrated with well-chosen photographs and drawings. It will be found to be very complete and will no doubt have the same popularity as the former editions.

HERMAN'S DIFFICULT LABOUR. A Guide for Students and Practitioners. Sixth Edition, Revised and Enlarged, by CARLTON OLDFIELD, M.D. Lond., F. R. C. S. Eng., Hon. Obstetric Surgeon to the General Infirmary, Leeds; Lecturer on Gynæcology, University of Leeds; Late Hon. Surgeon to the Women and Children's Hospital, Leeds; Hon. Medical Officer to the Maternity Hospital, Leeds. With 198 illustrations. New York: William Wood and Company, 1920.

TO many of the older practitioners Herman's "Difficult Labour" is well known as a trusty guide and friend. The author has a wonderful faculty of telling in clear language what is the best way of dealing with each of the possible complications of labor. One of the many charms of the book is the way in which the author avoids confusing his reader with the mention of all the different views and theories which have been held. In place of this, the common way, he selects the one or two methods which his experience has shown to be of most value. The editor has performed a real service in bringing this classic up to date, and it is to be hoped that another generation will enjoy a book which was a prime favorite with their predecessors. The fine quality of the printing and illustrations add to the attractiveness of the volume.

CUNNINGHAM'S MANUAL OF PRACTICAL ANATOMY. Revised and Edited by ARTHUR ROBINSON, Professor of Anatomy in the University of Edinburgh. Seventh Edition. Volume Second. Thorax and Abdomen. With 231 illustrations, many of which are colored. New York: William Wood and Company; Edinburgh, Glasgow, and London: Henry Frowde and Hodder and Stoughton, 1920.

THE first volume of the new edition of this standard work was noticed in the MEDICAL RECORD of July 31; the present volume contains the discussion of the thorax and abdomen. We have noticed a number of new illustrations, and the description of the dissections has been largely rewritten. This work early maintains its position in the lead of books of its kind; and, with the possible exception of the bones, it contains almost all the anatomy which the practitioner uses in his daily work.

THE PROBLEM OF THE NERVOUS CHILD. By ELIDA EVANS. Introduction by C. G. JUNG, M.D., LLD. New York: Dodd, Mead & Co., 1920.

HERE is a book the physician can advantageously place in the hands of parents. Addressed to those who have the care of nervous children it can nevertheless be used with great benefit by any parent. The usual mistakes in handling children are pointed out, those both of too great leniency and of undue severity. It is from these that there develop later the neurotic patients, those hysterics and neurasthenics who are the bane of the general practitioner. Such books as this are the prophylactic measures which, if duly used, will make the next generation far healthier mentally. Mrs. Evans has not only pointed out the pitfalls, but she has indicated the roads to follow. On the whole, the book is a notable addition to the increasing literature of mental hygiene and the physician who becomes acquainted with it will naturally seek to pass it on to the parents among his patients.

Society Reports.

ASSOCIATION OF AMERICAN PHYSICIANS.

Thirty-fifth Annual Meeting, Held in Atlantic City, May 4 and 5, 1920.

DR. HERMANN M. BIGGS, PRESIDENT, IN THE CHAIR.

First Day—Tuesday, May 4.

(*Concluded from page* 251)

Epinephrin Hypersensitiveness and Its Relation to Hyperthyroidism.—Drs. FRANCIS W. PEABODY, CYRUS C. STURGIS, EDNA H. TOMPKINS, and JOSEPH T. WEARN of Boston presented this paper, read by Dr. Peabody. They stated that epinephrin hypersensitiveness, as indicated by the "positive" reaction after injections of epinephrin according to the method of Goetsch, had become so generally regarded as of specific diagostic significance in hyperthyroidism that it had seemed to be of importance to study in more detail the conditions under which it might occur. A study of the reaction in normal individuals showed that it was not present in any of the group of 26 seasoned soldiers; it was present in 14 per cent. of 28 medical students and in 48 per cent of 103 soldiers without evidence of organic disease but with the symptom complex of "effort syndrome." Seven psychoneurotics all gave "positive" reactions. Among hospital patients it was found that 17 per cent. of 17 patients with organic heart disease and 57 per cent. of 21 patients convalescent from acute infection gave "positive" reactions. "Positive" reactions to epinephrin were found in 15 out of 21 cases of hyperthyroidism. Six unquestionable cases with metabolism within 21 and 35 per cent. above normal gave "negative" reactions. On account of the wide distribution of the reaction among persons in whom there was no evidence of hyperthyroidism it should certainly not be regarded as having any specific significance in the diagnosis of this condition.

Dr. M. H. FUSSELL of Philadelphia said that he was very pleased to hear these observations on the soldier with effort syndrome. The so-called Goetsch test had been widely accepted as a positive indication of hyperthyroidism. The unreliability of such a conclusion was now shown. Dr. Fussell said he had a patient who gave a very active reaction to the Goetsch test, but the basal metabolism was not above normal. He had nervousness and tachycardia and he asked to be operated upon on the ground of a positive Goetsch test.

Dr. ROUNTREE asked if these hyperthyroid cases were of the Graves' type, or were they toxic adenomata. Was there any difference between the toxic type and the exophthalmic type?

Dr. C. C. STURGIS of Boston, replying to Dr. Rountree, said that only two were cases of adenomata. He was glad to hear that the clinical experience of others agreed with theirs. He had begun to feel that placing reliance on the test was pretty dangerous.

The Hepatic Margin of Safety in Bile Elimination.—Drs. PEYTON ROUS and PHILIP D. MCMASTER of New York presented this topic. They had studied the question as to how much obstruction of the biliary system was required for the production of a clinical jaundice. No studies had been recorded on this point. The authors found that the bile ducts from more than 80 per cent. of the dog's liver could be obstructed without the appearance of bile constituents in blood or urine, and from more than 95 per cent. without the appearance of tissue icterus, such as regularly ensued when obstruction was total. In monkeys the margin of safety was approximately as great. There was an additional element of safety in the hypertrophy of the liver portion with duct left free, which occurred rapidly under the conditions of local obstruction. It followed from these observations that clinical jaundice could scarcely be the result of local obstruction. When it occurred in connection with a circumscribed liver lesion one must suppose that the liver as a whole had been influenced by this latter.

Dr. S. J. MELTZER of New York said that Dr. Rous had spoken of factors of safety. If 95 per cent. of the liver was obstructed, then the five per cent. left must be a margin of safety. Did Dr. Rous remove three-fourths of the liver? Tying off was not the same as removing. Often something happened in the liver to disturb the ligation and circulation was re-established.

Dr. G. H. WHIPPLE asked if Dr. Rous had observed any cutting through of the ligatures. That had often been found a troublesome point. The ligatures would sometimes cut through, and he thought this might happen in a small duct as well as in the common duct. A remarkable concentration of the bile occurred in the fasting animal.

Dr. ROUS said that the term factors of safety had become a cant phrase. In the experiments three-fourths of the liver were removed. The liver manufactured the bile pigment, and it was necessary to know what became of the bile substance. So far no satisfactory tests had been devised for bile pigments. In their work they had cut through the duct wherever possible and had obliterated the duct above. The bile became very concentrated with fasting. The jaundice in connection with fasting occurred very rapidly, but bile stasis took three or four days to be produced.

Cultures of Diphtheria Bacilli in Whole Coagulable Blood.—Drs. SOLOMON SOLIS-COHEN and GEORGE D. HEIST presented this communication. In previous papers they had treated of the bactericidal or inhibiting power of whole blood for pneumococci and other bacteria. In the present study the diphtheria bacillus was examined by the same methods. Diphtheria bacilli were cultivated in capillary tubes of defibrinated blood. They grew rapidly and vigorously. The rather scanty air supply did not hinder their growth. The guinea pig was very susceptible to infection by the diphtheria bacillus, while the rat was almost immune. Diphtheria bacilli were cultured in the whole blood of these two species. In guinea pig blood the bacilli grew almost but not quite as well as in defibrinated blood. The blood of the pig possessed a slight resistance to diphtheria bacilli. On the contrary, in rat blood diphtheria bacilli grew very poorly. In the case of these two species then, there was a correlation between the resistance of the blood to diphtheria bacilli in vitro and the actual resistance of the animal to infection. Diphtheria bacilli were grown in the whole blood of children and at the same time a Schick test was done on the child. The whole blood of children was highly bactericidal for bacilli which had been artificially cultivated for 20 years. The authors used the Park and Williams strain No. 8. A strain fresh from a case of diphtheria was found to grow much better in whole blood, but still there was a marked bactericidal action. They tested 160 children in this manner. There seemed to be little or no relationship between the resistance of the blood to diphtheria bacilli, and the resistance of the child to diphtheria as shown by the Schick test. The susceptibility of the guinea pig and of the child seemed to be of a different character. The prolonged cultivation of diphtheria bacilli lowered their ability to grow in whole human blood, but it did not appreciably lower their toxin-producing power.

Dr. E. C. ROSENOW of Rochester, Minn., asked whether the blood results agreed, and whether there was any coagulation of the blood in the tube which might have exerted influence that way.

Dr. COHEN said that the work was developed to test out as many organisms as possible, or to determine what relation there was between the blood and resistance to different organisms. Work on micrococci and pneumococci had given corresponding results. The importance of the work was to test immunity in human beings to bacterial invasion, and to see if there was any relation between this and the bactericidal effect of the blood as studied in the test tube. If this could be shown there would be a distinct advance. The criticism that the action was inhibitory and not bactericidal was possibly true, but there was found to be a distinct bactericidal value which could be expressed in terms of time; if no growth occurred within a certain time, a certain number of bacteria had been killed.

Dr. ROSENOW asked how the culture was inoculated, and how they got an even distribution.

Dr. HEIST said that it was inoculated on the surface of the solid agar. He took a loop-full with 5 c.c. of saline solution, shaking it up thoroughly, put it on the blood and spread it thoroughly with a glass rod. The blood was allowed to clot in a capillary glass tube

Clotting probably had an important bearing, as it gave the leucocytes some scaffolding, as it were, to work upon. In the diphtheria work phagocytosis was a very important factor, but there might be some other as well. Opsonins were probably present in the serum, but whole blood would be different from serum. Whole blood would be necessary, as citrated blood would interfere with the test.

The Blood Sugar Tolerance Test as an Aid in the Diagnosis of Gastrointestinal Cancer.—Drs. JULIUS FRIEDENWALD and GEORGE H. GROVE of Baltimore presented this paper. They referred especially to the work of Rohdenburg, Bernhard, and Krehbiel who had published two papers on the glucose tolerance in cancer The difficulties arising in the diagnosis of gastrointestinal cancer, especially in the early stages, led Friedenwald and Grove to make a further study of the blood sugar tolerance test as an aid in the differential diagnosis between carcinoma and other diseases of the abdominal organs. They followed the plan of administering after a night's fast 100 grams of dextrose dissolved in 300 c. c. of black coffee without additional sugar. The blood was withdrawn for examination just before the dextrose was given and again 45 minutes and two hours after its administration. The blood sugar tolerance was studied in thirty-two cases of carcinoma of the gastrointnestinal tract. Of these patients seventeen were operated on, and the diagnosis was thus confirmed, while the others were all typical of the disease. In addition blood sugar tolerance tests were made in uterine carcinoma, breast cancer, carcinoma of the prostrate, sarcoma, and many cases of nonmalignant disease of the gastrointestinal tract. The authors classified the sugar tolerance curves into the following groups: (1) The normal curve in which the blood sugar rose not usually above 0.16 per cent within forty-five minutes, falling gradually within two hours to about the level as observed in the fasting state; (2) The atypical normal curve as found in cases of achylia gastrica in which the blood sugar was practically normal in the fasting state, ascending to 0.16 to 0.19 per cent within 45 minutes after taking the dextrose, and falling within two hours to 0.13 to 0.15 per cent but not lower; (3) The intermediate curve found in cases of carcinoma not associated with the gastrointestinal tract in which the blood sugar was comparatively high, even in the fasting state 0.14 to 0.17 per cent, and in which after the ingestion of the dextrose there was a rise to from 0.20 to 0.23 per cent within 45 minutes, followed within two hours to a fall of from 0.18 to 0.21 per cent, but not descending to the level of the fasting state; (4) The cancer curve found in carcinoma of the gastrointestinal tract in which, even in the fasting state, there was a high sugar content of from 0.14 to 0.17 per cent, followed after the ingestion of the dextrose by a rise of from 0.21 to 0.24 per cent or higher, within 45 minutes, remaining at this level for at least two hours and at no time during this period falling below 0.20 per cent. From their study of the blood sugar tolerance test, in health as well as in the various affections of the gastrointestinal tract, the following conclusions were drawn: (1) There was present in carcinoma of the gastrointestinal tract usually a characteristic curve of sugar tolerance which in no way approximated the normal and differed somewhat from that observed in carcinoma of other regions of the body. The curve of this affection presented a high sugar content, even in the fasting state, followed by an initial rise up to 0.24 per cent or higher, within three-quarters of an hour after the ingestion of the dextrose, remaining at this level for at least two hours and at no time during this period falling below .20 per cent; (2) The sugar tolerance test was rather distinctive so that it might render valuable assistance in a large proportion of cases as a means of differential diagnosis between carcinoma and other diseases of the gastrointestinal tract; (3) The opportunity had not been afforded to test a sufficient number of early cases of cancer of the stomach and intestines, according to this method, so that as yet the value of this test as a means of early diagnosis had not been established, nevertheless, as positive curves occurred equally whether cachexia existed or not, or whether the extent of the involvement were slight or great, the authors were under the impression that the results might be quite definite, even in the early cases of the disease. This question, however, would require further study; (4) Finally, while Friedenwald and Grove fully realized that this test could not be relied upon alone without entering into the clinical aspects of the disease, and that there were cases of carcinoma in which negative findings might occur or non-malignant conditions in which the results might be positive, nevertheless they were of the opinion that when properly performed the blood sugar tolerance test might be of considerable diagnostic help in obscure cases of carcinoma of the gastrointestinal tract.

Studies of the Acid Base Equilibrium in Disease from the Point of View of Blood Gases.—Drs. J. H. MEANS and A. V. BOCK of Boston presented this topic. Dr. Bock stated that L. J. Henderson had shown that the acid base equilibrium of the blood was dependent chiefly upon the ratio of dissolved carbonic acid to bicarbonate. Haggard and Y. Henderson had put these relationships into graphic form in what they called the carbon-dioxide diagram of the blood. The diagram consisted essentially in a plot of the carbon dioxide dissociation curve of the blood with a mark upon the curve at the point at which the coordinate representing the arterial carbon dioxide tension intersected it. This point they called the arterial, or A point. A straight line called the OC line drawn through the zero and A points of a normal blood would represent the normal hydrogen ion concentration. The diagram thus demonstrated not only the presence of acid in the blood as shown by the level of the dissociation curve but also whether any change in hydrogen ion concentration had occurred as shown by the position of the A point. Such diagrams of the blood of five patients were shown. A diabetic with marked acidosis had a very low dissociation curve denoting a large amount of acid in his blood but a perfect compensation as shown by the position of the A point upon the CC line. A cardiorenal patient with intense retention acidosis had a still lower curve and an actual shift in the reaction of his blood, as shown by the position of the A point on the acid side of the CC line. The diagram obtained the next day with the blood of this same patient after he had been given great quantities of alkali showed a curve higher than normal and an A point on the alkaline side of the CC line. A case of lobar pneumonia showed an essentially normal diagram and a case of influenza pneumonia showed a normal dissociation curve but an A point displaced in the acid direction. A case of post-operative bronchopneumonia showed a curve higher than normal but an A point displaced in the acid direction. It was concluded that the carbon-dioxide diagram furnished a more comprehensive means of interpreting disturbances of acid base equilibrium than did a study of either plasma bicarbonate or alveolar carbon dioxide tension alone. In some cases of pnuemonia there might be carbonic acidosis due to insufficient pulmonary ventilation.

Dr. C. F. HOOVER of Cleveland asked if Dr. Bock found his results inconsistent with the anoxemia of pneumonia and of anesthesia which was due to the contribution of unexpired blood in the aortic stream. In these patients giving them pure oxygen would not move the cyanosis. There was an interstitial edema, just as in edema of the lungs with multiple thrombi. The cyanosis from alveolar edema could not be moved and the CO_2 was not modified at all; but in a man with phosgene poisoning giving oxygen would modify the cyanosis. The phosgene patient could not tell whether he was breathing oxygen or air.

Dr. BOCK said he could not explain the anoxemia. He thought what Dr. Hoover said was correct, and that CO_2 was apparently accumulating. They determined the oxygen to find out what oxygen was present. The accumulation of CO_2 would show that the ventilation was insufficient.

Dr. HOOVER said that recently Haldane had stated that anoxemia was due to the rapid breathing, but one also found anoxemia with slow breathing.

Dr. BOCK said the patients did not seem to expire the CO_2. They could not get rid of it.

Dr. HOOVER said they did in a measure compensate for the CO_2 but not for the anoxemia.

Dr. BOCK said these patients could not accomplish ventilation enough to preserve the ratio.

Effect on Blood Pressure and Blood Nitrogen of the Ingestion of Large Amounts of Fluid.—Dr. JOSEPH L. MILLER read this paper in which he said that large amounts of fluid were administered to patients of various type, to study the effect on the non-protein nitrogen. The water was introduced by the Rehfuss tube, 2½ liters every three hours, till hydremia was produced. The blood nitrogen was then determined. The urine output was measured and the patient weighed before and after each period of the water intake. All the patients tested were those with high blood pressure, and a steady rise was observed. In one man the blood pressure rose from 160 to 280, and the weight from 124 to 142 lbs. during the day. The next day the blood pressure fell, but he complained of dyspnea and distress. Water administered to the same patient at three-hour intervals during the night caused the blood pressure to rise from 170 to 260 and the weight to rise 9 lbs. The blood urea or 34 mg. urea nitrogen per 100 cc. blood, before the test, and slightly more after it. There was a 50 per cent reduction in uric acid, but the creatinin was unchanged. In the other patients (3) tested, the results were comparable. In one patient suffering from gout, who passed large amounts of water immediately after ingestion, the blood pressure was not affected. The conclusions of the author was that ingestion of large amounts of fluid had no effect on urea nitrogen, though there was reduction of the uric acid.

Intrathoracic Teratomata.—Dr. SAMUEL W. LAMBERT of New York made this presentation. Under teratomata he included dermoids. These growths ran a characteristic course. They were congenital, grew until puberty, and then became quiescent. They occasioned slight pressure symptoms. The shape was a characteristic spherical one, and they were usually located in the anterior mediastinum. In one case, the radiographs of which were shown, the patient, male, a hodcarrier, was supposed to have developmental error of the vertebræ. The true diagnosis was made by following the tumor, through a series of pictures, for a long time. It was possible that malignancy might be the end of such cases. Dr. Wood made the autopsy on this case and found a large adherent tumor with irregular tissue sections characteristic of teratomata. There was a great variety of tissue-cartilage, bone, solid epithelium, squamous, celled epithlium, and possibly beginning nasopharyngeal structures.

Dr. J. B. HERRICK said that his autopsy studies were made on the patient who was followed for over a year. Fluoroscopic examination indicated there was no aneurysm. It was thought there was a dilated right auricle. The tumor was more attached to the pericardium than to the auricle. It was semi solid, filled with cholesterin crystals. Such tumors within the pericardium were very rare.

Dr. HOBART A. HART asked if Dr. Lambert excluded gonococcus infection by the complement fixation test. The spherical cysts were usually quiescent.

Dr. C. CANBY ROBINSON of St. Louis said he noted there were eight ounces of pus. Was there anything to confirm the diagnosis of teratoma? Some aneurysms produced no physical signs. He had shown a considerable number of plates of wired aneurysm. There was a very irregular outline in some of the plates which helped in the diagnosis. This fluoroscopic irregularity differentiated tumor from aneurysm. He had collected statistics as to mediastinal growths and found that dermoid cysts were rare, according to the literature. One should pay more attention to the mediastinal contents. He had been surprised to find how many cases came to the dissecting room. Most extraordinary changes could be found with reference to the peribronchial lymph nodes. Many fevers might be due to secondary suppurative changes in tumor formation. These were overlooked very often and in any cases of unexplained fever one should think of the mediastinal lymph nods. Many workers paid no attention to these tissues.

Dr. LAMBERT, in closing, said that he had read of one case of dermoid cyst within the pericardium. Tests were not made by the complement fixation for gonococcus. He did not believe these cases were quiescent, as Dr. Hart said. In the case illustrated, no hair was discovered. The pus was examined very carefully. Fluoroscopic tests did not show any evidence of aneurysm. All the cases had a negative Wassermann. Some had been given provocative treatment with salvarsan in the endeavor to bring out this point.

Experiments on the Therapeutic Action of Radium and Roentgen Rays.—Dr. FRANCIS CARTER WOOD of New York presented this topic, illustrated by lantern slides. Experiments were made to determine the value of radium and the *x*-ray as adjuncts to surgical treatment. Quantitative methods had been applied in the past, but hardly two men were agreed as to dosage and method, thickness of screening, etc. Thus it was hard to determine how much dosage was necessary to produce a cure. Scar tissue rendered the tumor quiescent, but recurrence might take place in the lymph nodes after as long a period as ten or fifteen years. The scar tissue prevented the tumor cells from gaining nourishment. It was essential to ascertain the amount necessary to kill the cancer cell. In the transplantable tumors of animals experiments had been made to determine the lethal dose of radium under filtration, and also the lethal dose of the *x*-ray. It was attempted aso to discover the biological difference between soft and hard *x*-rays. The valuation of continuous and of intermittent dosage was tested, to determine whether the cell was killed by intermittent as well as by single doses. Also tests were made to see if there was anything in the quantity, whether a large quantity for a short time was as effective as a small quantity for a long time. Experiments were also made as to the effect of heat on the tissues, and it was found that heat could be used as effectively to kill the tumor cell, and at a point at which it would be impossible to carry the *x*-ray or radium, that is at which *x*-ray mortality would be higher than surgical mortality. If the action of heat to the tissues could be used to supplement *x*-ray and radium therapy one could see the possibility of the cure of cancer within reach.

Paroxysmal Tachycardia of Ventricular Origin and Its Association with Coronary Thrombosis.—Drs. G. CANBY ROBINSON and GEORGE R. HERRMANN of St. Louis presented this communication, which dealt with rapid heart rate associated with an abnormal point or origin of the cardiac impulse. The ectopic origin of the impulse might be in one of the auricles or ventricles, and the ventricular cases were rare and of more serious prognosis. Lewis in 1919 found that this condition occurred in dogs in which the coronary artery had been ligated. The nutrition of the ventricular wall became impaired. This was the result of interference with the coronary circulation. Electrocardiographic records were necessary for diagnosis. A ventricular rate of 150 or more was noted. In all undoubted cases in the literature the patients were middle aged men. In one, autopsy showed atheroma of the left coronary. Of four patients, three died. One man had antiluetic treatment.

The Heart in Influenza, with Electrocardiographic Studies.—Dr. WALTER W. HAMBURGER of Chicago read this paper. The question as to whether inflenza affected the heart was unsettled. McKenzie had minimized the effect, but Lewis was inclined to take the other point of view. Pathological reports from the army camps showed that, grossly, the heart muscle was not affected, but microscopical changes could be found, such as vacuolization and other degenerative findings. Among the English reports, Conklin showed that influenza picked out the conduction system and affected the auriculoventricular nodes. There were three types: (1) in the fatal group the myocardium was affected; (2) in acute, but not fatal, cases the heart muscle findings cleared up after several weeks; (3) the subacute or chronic cases did not clear up. There was no question but that influenza infection did affect the heart muscle and that it had a definite effect on the auriculoventricular system.

Nodal Rhythm, with Reverse Block and Paroxysmal Tachycardia.—Drs. M. H. FUSSELL and C. C. WOLFERTH of Philadelphia made this presentation. Dr. Fussell said that auriculoventricular rhythm had been noted by many workers and it could be experimentally produced by interference with the impulse of the auriculoventricular node. The majority of cases were due to depressive influences. In a case of functional paroxysmal tachycardia in a woman of 62, the attacks

had persisted since childhood, becoming more frequent as she grew older. For two years she had been invalided. She was able to control the attacks sometimes, but not always, by taking a deep breath and holding it.

The Causal Factors for Emphysema Attending Bronchiolar Hypertonus.—Dr. C. F. HOOVER of Cleveland read this paper. The speaker said that one saw the statement made that emphysema was due to expiratory dyspnea. The expiratory effort was not as strong as the inspiratory one. This fact had little support. Another theory was that the thorax first became enlarged and then the lung became deformed. The diaphragm was the most mobile boundary of the thoracic cavity. In bronchiolar spasm there was increase of the three dimensions of the lung. In testing by the Benedict test one assumed that the inspiratory and expiratory consumption of oxygen and the effort was 25 per cent. more. There was a difference between obstruction of the bronchus and that of the bronchiole. If there was obstruction of the bronchus there was diminution in the lung. Less air entered the obstructed lobe. The lower right costal margin tended toward the median line in inspiration. Adrenalin would cause it to move out again. Obstruction of the trachea was very rare without secondary bronchitis. In the case of a young girl of 17 years, there was the utmost effort to inspire. There was severe stenosis of the trachea, but no enlargement of the lungs. The patient literally died from strangulation. In a man who had a large aneurysm compressing the trachea there were attacks of dyspnea. As he inspired he lifted the aneurysm. The air escaped with the systole of the aneurysm. There was severe expiratory dyspnea, but no emphysema. In emphysema there must be collapse of the lung without expansion. With any expansion or increase in the size of the lung there was no emphysema. There was a great lack of knowledge of the motility of the lung.

Prognosis in Cardiovascular Disease with Special Reference to the Application of Graphic Methods.—Drs. JAMES D. HEARD and Dr. GEORGE E. HEIN of Pittsburgh presented this topic. The object of their investigation was to determine the clinical value of electrocardiograms in a routine collection in a general hospital. Studies of 780 patients were made. The limitations of the study were great on account of the impossibility of following patients up and because of the faulty histories. The source of the material was interesting; 61 per cent. came from the medical department, 60 per cent. were males, with an average age of 67 years; there was rarely definite evidence of syphilis; 14 per cent. died. Most of the patients were of the type described as cardiosclerotic cases. Possibly some were of the functional type, but not many, and low amplitude was evidenced as the patients grew worse. This showed a parallel with the clinical gravity of the cases. The prognosis had to be made with caution.

The Hereditary Factors in the Resistance of Tuberculosis.—Drs. PAUL A. LEWIS and SEWELL WRIGHT of Philadelphia presented this topic. The study was based upon the chemotherapeutics of tuberculosis. Experiments to test practical measures for increasing resistance by sera, vaccines, or chemotherapy depended upon satisfactory control of experimental material; if not obtained results could not be computed. Bovine experiments were reliable, that is human tuberculosis could be injected into cattle and the resistance measured. With guinea pigs, however, it was found that when a large number of animals were used there was an enormous amount of variation. In the Bureau of Animal Industry careful experiments had been made with breeding of guinea pigs, in regard to resistance and other characteristics. Sewell Wright started a stock in 1906, which since then had been carefully studied as to the effects of inbreeding in 23 pairs of guinea pigs, which had reached the 15th generation of inbreeding. There was a decline in vigor in all respects. Crossing the inbred animals increased the vigor. Comparison was made of different inbred families with the others. One family was more vigorous than the others and there were differences in the kinds of vigor. As regards resistance to tuberculosis, the characters were the same. Sex it was found, made no difference. Age, and weight at weaning made very slight difference in favor of the older and heavier animals. Inbreeding was found to make much more difference than weight and sex. The loss of vigor in a certain family was measured in cross breeds with half-blood, with quarter-blood, and with no blood, of a stock. Cross-breeding promoted vigor. In regard to susceptibility in families 7 per cent. was found due to age and weight; 30 per cent. due to heredity; 60 per cent. due to unknown causes. Animals injected intraperitoneally died much more rapidly than those injected subcutaneously. The size and frequency of litter, and the percentage of young born alive was taken into consideration in computing vigor of stock.

Dr. GEORGE KOBER of Washington, D. C., said that this study of Dr. Lewis recalled to his mind the remarkably large percentage of cases of tuberculosis during the war, in the Southwestern States, which was three times that of the average for the Eastern States. There could scarcely be any other interpretation than that of heredity. This could be explained by the fact that many of the families of these young men or their parents had gone out West for tuberculosis, and one was now dealing with the factor of hereditary predisposition to the disease in the offspring of persons who had migrated to those States in search of health. Certain vulnerable anatomical elements had been handed down from the parents to the children. In 1892, Dr. Kober said he had called the attention of the Health Conference to the fact that there was considerable danger in inviting too many tuberculous individuals to the health resorts. Such persons were apt to settle and perpetuate tuberculous offspring or those predisposed to tuberculosis.

Dr. AUGUSTUS WADSWORTH of Albany, N. Y., said that there was apt to be a confusion of the terms "immunity" and "resistance" in expressing susceptibility to infection. His ideas had been considerably cleared by differentiating resistance due to the strength of the person in recovering from infection, to the resistance which prevented cases of the infection. If one considered the body tissues in the light of favorable or unfavorable media, or as susceptible to the poisonous substances of the bacteria, one got a clearer conception than by the use of the term resistance. It was difficult to conceive of resistance to bacterial infection in that sense. There were two points to be considered: (1) the parasitic activities of the organism growing in the body, and (2) the toxic action of the organism. The disease reaction was the reaction to the injury by the poisons associated with the toxicity of the organism. In tuberculosis, the capacity for growing and continuing to grow was so marked and the toxic activity was so slight, that it gave one a clearer conception of tuberculosis to eliminate the term resistance. In considering susceptibility one must think of the factors that made the body a favorable or unfavorable medium for recovery.

Dr. GERALD WEBB of Colorado Springs asked if they tested animals of other species. He said that mice were susceptible to certain organisms.

Dr. S. S. COHEN of Philadelphia asked if the writers of the paper had made any accurate studies of the resistant animals. This paper suggested that the saying that a man must carefully select his ancestors, bore a good deal of truth. If the guinea pig had carefully selected his ancestors, what had he gained by it in physiological structure? This had been recognized in human beings and attempts at classification had been made. His own observations had led him to believe that lessened susceptibility and greater capacity for recovery were both connected with increased activity of the endocrinal system, especially that of the thyroid gland. Could not such studies be undertaken in these inbreeding experiments on animals?

Dr. PAUL LEWIS, in closing, in answer to Dr. Wadsworth said that he saw no need to complicate the terminology. He did not know whether there was a difference between resistance to toxicity and resistance to bacterial growth. They had perhaps partly interpreted that problem. The first inoculations were intraperitoneal and the experiments were finished in 35 days. In another set of animals the inoculations were made subcutaneously. The disease lasted much longer. The fact that the type of resistance was exactly the same made one think that probably the factors of resistance which were active were active throughout the course of the

infection, rather than in the first days of the inoculation. Later analysis might bring out some difference. As regards the multiplication of these animals this was in itself a task and many details were yet to be studied; but they felt that for the first time there had been a measurable element worked out, that was, that there were families in which a difference could be calculated and expressed in definite terms. Thus it might be able to express dosage in terms of resistance according to a mathematical scale. From the point of view of tuberculosis experimentation, this represented an advance. In regard to the application to human pathology, one would have to go very slowly in carrying over results into the field of human pathology, but it was hoped that these experiments would lead in that direction some day.

Dr. SEWELL WRIGHT said that in some similar experiments in removing part of the thyroid and adrenal gland there was no difference in infection to tuberculosis in the experimental animals. There was hyperplasia in the parts of the organs left but that was the only result observed.

A Study of the Preparation of Antigens from Cultures of the Tubercle Bacillus for the Complement-Fixation Test.—Dr. AUGUSTUS WADSWORTH of Albany, N. Y., made this presentation. He said that the complement fixation test needed satisfactory methods of preparing and standardizing the antigens so that the infection at different stages could be determined. The complement-fixation test as used in the laboratory for determining different species of bacteria was not of very much use at the bedside clinically. It was a difficult test in respect to diagnosis and interpretation. Antigens from spirochetes were not satisfactory, but there were definite results from syphilitic tissues. In regard to tubercle bacillus antigens, three strains were used: (1) bovine; (2) virulent human; (3) non-virulent human, incubated at 35.5° C. The results did not differ from those of other investigators. Studies were made on experimental infections and carried out with hemolytic organisms. It was found that aqueous extracts gave satisfactory antigens. Next it was necessary to get immune sera to those strains which could be measured against the antigens. Cows and guinea pigs were tried without success, but an immune serum was obtained from the horse. Filtrates were found to be unsatisfactory for antigens; if dialyzed they lost their anticomplementary characteristics. The broth filtrate was tested to see what the injected substance was; it was all removed by animal charcoal, but could not be recovered from the charcoal; 3/10,000 c.c. fixed 2 units of immune serum.

Dr. PAUL LEWIS of Philadelphia said that he would like to ask whether Dr. Wadsworth had found any indication as to whether the alcoholic extract comprised the whole of the antigenic character of the tubercle bacillus, or was there anything in the residue which was injected. There was a difference between antigens of bacterial suspension and the alcohol. Four hours primary incubation was necessary to develop the full antigenic value of the bacterial suspension. Was this the case with the alcoholic extract? He thought it usually developed its value in half an hour.

Dr. WADSWORTH, in closing, said that their original plan was laid out to determine that point and others, but he did not feel as yet that they understood the full significance of this work. They were just at the beginning of the investigation as regarded physical conditions and further facts might clear up that question. The filtrate after dialyzing became active without any extraction. Simple removal of the dialyzable factor removed that anticomplementary power. In the tests made by them the complement treated that way acted in a similarly specific manner to the antigen prepared from alcoholic extract after adsorption from globulin. After diluting the alcoholic extract 1:10, the action was similar to that of the filtrate.

Irritability and Stimulation.—Dr. S. J. MELTZER of New York presented this paper. He said that irritability was the characteristic element of life. In the times of Halle and Glucke, in the 17th century, great importance was attached to motion, and irritability was considered identical with motion. John Brown, Johannes Mueller, Virchow, and later Verworn developed the theory of irritability as essential to life. Medicine, however, did not understand irritability in that sense, but as something abnormal or antagonistic to life. Medicine considered stimulation as important to the conditions of life, but physiologists considered it merely as coincident. A dualistic conception of the phenomena of life had been worked out by some physiologists. At the International Congress in London in 1913, Sherrington advanced the eclectic theory, Verworn the monistic theory, and Meltzer the dualistic conception. Life was conceived as comprising three phenomena—motion, secretion, and sensation. No life could exist without some living tissue being in action, and any living function must be continually in action. The physiologist must consider why the organism was in action, and it was also necessary to remember that there were some forms of life which appeared to have no action at all. The arrest of conditions did not always mean that tissue was not animate, but that it was under the condition of inhibition. This explained the dualistic theory, which was not dogmatic. Anything which was acting under a certain state of life might be called a stimulus, but a stimulus might not be increase of activity; it might be a decrease. Either stimulation or inhibition might be produced. The latter meant life, just as much as the former. In contraction living substances were used up, and the body would go to pieces if it were not for the fact that during inhibition living substances were again accumulated. Inhibition was the condition which made activity successful. During extension inhibition took place in the flexors. Sherrington spoke of this as "reciprocal innervation." The wave of inhibition must run ahead of the wave of contractions, just as in the railroad the signal went ahead to indicate that the road was free.

The Production of Generalized Syphilis in the Rabbit by Local Inoculation.—Drs. WADE H. BROWN and LOUISE PEARCE of New York made this presentation. These studies were made upon rabbits. Lesions upon the skin in the experimental animals were quite rare. In 126 cases the animals showed lesions at the site of inoculation. There was a very marked reaction in the testicles and scrotum, which it was thought might inhibit the production of lesions elsewhere. Tests were made to determine whether all the animals had a generalized reaction following local inoculation. Lymph nodes from infected rabbits were implanted into the testicles of normal animals and infection was produced with these excised lymph nodes. The organism was recovered from the heart's blood in from 7 to 100 days after implantation. This proved that dissemination of the organism occurred. An attempt was made to determine the protective effect of local lesions against generalized lesions. An amputation of the testicle was made after 48 hours, but general infection supervened. It was found that under certain conditions where inoculations were made with strains of *Treponema pallidum* and where the lesions were controlled, the animals might develop generalized syphilis.

Dr. HOMER F. SWIFT of New York said that this was a very interesting and important contribution. This experimental work had a bearing on the treatment of human syphilis. It had been noted in the army work that when the drug was used to cure the lesion but not to kill the spirochetes, the reactions were more severe than if the syphilis had been allowed to run its course. This was the first time such a conclusion had been demonstrated in a convincing manner. A note of warning should be sounded: this demonstration of the generalization of the spirochete so early might have something to do with letting down the use of prophylactic measures after exposure. Local prophylaxis was effective for a certain number of hours. This type of inoculation was different from that which occurred in human syphilis. This work might explain the mode of transmission of the virus into the deeper organs.

Dr. GEORGE BLUMER of New Haven said that there had been periods when attempts had been made to prevent syphilis by excision of the primary sore. In Dr. Brown's work the excision of the chancre led to unusually rapid dissemination of the disease.

Dr. BROWN, in closing, said that the status of the disease in the human being as regards magnitude of the primary lesion and the generalized reaction was different, but generalization could occur in the human

being as early as in the rabbit. If the cases were not treated following excision they got a more pronounced reaction. That, however, did not contraindicate excision of the chancre. In rabbits the local lesion had a necrotic center in which the spirochetes might survive. In cases well treated there was a chancre redux, but in human cases he did not think that excision of the chancre would prevent generalization. The organism in experimental work could be recovered from the lymph nodes and from the general circulation long before they could excise the chancre. In regard to treatment of early cases, although generalization might have taken place, lesions had not developed. The symptoms had to be treated on account of the pathological nature of the object one was trying to overcome.

Eventration of the Diaphragm, with Report of a Case.—Drs. ELMER H. FUNK and WILLIS F. MANGES of Philadelphia made this presentation. They reported 50 cases in the literature. The diagnosis could now be made by the *x*-ray. There was a typical elevation of the diaphragm. It was often associated with other anomalies and was probably congenital. In one case seen, a white female, aged 39, there was pain in the upper abdomen and back and shortness of breath. It was thought that there was a hydro-pneumothorax, but a needle inserted in the chest found nothing. The *x*-ray showed a high position of the diaphragm. The heart was displaced. The lungs were free from disease. There was widening of the subcostal angle on inspiration. The abnormality was not reflected in the external symmetry of the chest.

Dr. J. RAMSAY HUNT of New York said that one should take into consideration that these structural changes were associated with striated muscle fibre. The diaphragm was innervated by the sympathetic system. If the vagus nerve was cut paralysis was produced but there was preservation of tonus; if the splanchic were cut tonus was lost but movement was preserved.

Dr. C. F. HOOVER of Cleveland said that the observation of increased movement of the costal margin on the affected side would be of service in the differentiation between hernia and eventration. In hernia there was a large portion of the stomach in the thorax and the movement of the costal margin was not modified. One could stuff any quantity of viscera in the diaphragm but the movements of the costal margin were not changed. There might be dullness in the left thorax due to the retraction of the lung. In the other case there would not be elevation pitch of the percussion sounds.

Dr. S. J. MELTZER of New York asked if the Libman phenomena were observed. That would give information as to where the diaphragm was.

Dr FUNK, in closing, said that pathological studies were made on 20 reported cases but in none of these had any work been done on the innervation. He could pay a tribute to the value of the work of Dr. Hoover on the diaphragm. He was impressed with the necessity of investigating the movements of the costal margin. The Libman phenomena were absent in these patients.

The Dietetic Treatment of Gastric Ulcer Based on Experimental Studies.—Dr. MARTIN E. REHFUSS of Philadelphia read this paper. He said that this work on the gastric digestion was done at the Jefferson Medical College. He could not say what was the etiology of the ulcer, but acidity of the gastric contents had to do with the chronicity of the ulcer. It might not cause it, but it would prolong it. These studies were undertaken over a long period of time and with different food stuffs. The results seriously undermined the modern conception of treatment of ulcer. Three types of normal stomach were observed in the 100 students examined: (1) hypersecretive, high acid, 100 per cent. or over; (2) mesosecretive type; (3) a low secretive type. Chemical secretion was found to continue all the time, and psychic secretion at varying times. There was an average total acid of 30 and free acid of 18-20. This was between digestive phases and showed increase of trypsin. His studies had led Dr. Rehfuss to incline to the bacterial causation of gastric ulcer. He found very little difference between the unobstructed stomach and the normal stomach. Some cases showed reduction in acid. In ulcer cases there was disturbance of the interdigestive phase. The reactions to food showed that the present conceptions as to diet were erroneous. With eggs there was a total acidity of 80 and with beef 120. It was essential to thoroughly understand normal variations before attempting to interpret pathological studies. There was really no such thing as a pathognomonic gastric curve, with the exception perhaps of the regurgitation of blood and bile. High acid curves and low acid curves had a similar appearance, the difference being due to varying conditions. Milk, meat, fish and egg were found to be acid producers, while vegetables produced little acid. What were the conclusions that could be drawn from these studies? It would seem that prolongation of supervision was desirable. As to nutrition, 1,500 calories could be given by Murphy drip. Sippey's methods could be used to control free acid. Bread, cereals and vegetables could be given. If it was found that the eating of neat was the occasion of a high degree of acidity, then people should be kept off meat, not six weeks, but six months.

Dr. G. H. WHIPPLE of San Francisco said that by concentrating the *x*-ray over the abdomen of the dog, one could produce ulcers that would not heal and would perforate. This could not be a question of acid but a question of the type of injury to the mucous membrane. Whether that was a factor in human ulcers he did not know.

Dr. B. W. SIPPEY of Chicago said that he was interested in Dr. Rehfuss' report. He had had considerable experience in controlling acid. Bismuth was formerly used but now he found that calcium carbonate acted to prolong the control of free acid. Some of the factors in causation of ulcers were unknown. Hydrochloric acid seemed to have a devitalizing action of the protoplasm and did damage to the cells. To control peptic activity, one must control free acid.

Dr. M. E. REHFUSS of Philadelphia, in closing, said that in experimental animals work had been done by producing ulceration with various forms of toxins, but if one constantly neutralized the stomach of the animal during injection of the toxin, one could inhibit the formation of ulcer. The acid had a secondary character, but the toxin the primary role. The question was one of local toxicity. A careful study must be made to control foods that produced high acid. Milk curds were difficult of digestion and did not completely reduce free acid without neutralization. Oils and fats caused a low secretion of the stomach. There was, however, no single food stuff, the speaker said, that was not followed by a higher rate of secretion than that of the normal stomach.

Blood Regeneration After Simple Anema as Influenced by Various Dietary Factors.—Dr. G. H. WHIPPLE of San Francisco presented this communication. It was found that the pigment volume was blood volume times the percentage of hemoglobin. In an animal bled till the pigment was reduced to a level of 40 per cent below normal, followed by the institution of a meat diet, the pigment level normalized within 4 weeks. With milk diet the 40 per cent level persisted. A fasting animal with access to water could reproduce the hemoglobin. showing that the body could reorganize its elements into hemoglobin. Spinach was found to return the level of hemoglobin to normal and keep it there. Milk gave the minimum regeneration. Cooked liver and cooked beef heart produced the best regeneration. Blaud's pills had no effect.

Dr. HARLOW BROOKS of New York said that meat being a natural diet for a dog might be supposed to have more influence in those animals in improving the hemoglobin.

Dr. S. J. MELTZER of New York said that when he entered into experimentation he did so from the human side. He did not know any drug that acted so well in human chlorosis as Blaud's pills, nor one that had more specific action, unless it were 606.

Dr. G. H. WHIPPLE said that the experiments were done upon dogs and he left the interpretation of results to the internists. Dogs were omniverous animals, and were used to thrive on a mixed diet. He could not venture to interpret these results as regards human chlorosis. The animals were under controlled conditions that could not be applied to patients and it was up to the clinicians to prove that the drugs they gave had effect.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

Florida State Board of Medical Examiners.

Jacksonville, June 14, 1920.

ANATOMY.

1. Name branches of subclavian artery.
2. What arteries, muscles, and nerves would be severed in a cross section at the middle of the humerus?
3. Describe the portal system.
4. Describe the thyroid gland.
5. Describe origin and distribution of optic nerve.
6. Give origin and distribution of median nerve.
7. What muscles form the tendo Achillis, and where is the tendon inserted?
8. Name the bones of the head.
9. Describe one of the vertebrae.
10. Give the surgical anatomy of femoral hernia.

PHYSIOLOGY.

1. Name, locate, and give functions of ductless glands.
2. Blood. Give specific gravity, reaction, and quantity of blood in the body. How is it renewed after hemorrhage?
3. Locate and describe Peyer's glands.
4. Give the digestive secretions, their active principles, and how they act on food.
5. What is the physiologic function of the liver?
6. Describe osmosis, and give an example.
7. What should be the proportion of nitrogenous and non-nitrogenous elements in the food?
8. Give the functions of the kidney. Is it constant and equal in both kidneys? What happens where one is removed?
9. Define: Afferent, efferent, trophic, inhibitory, motor, and vasomotor nerve fibres.
10. Define a reflex act, and what are the essentials necessary to produce same?

CHEMISTRY.

1. Define chemistry. How is it divided?
2. How many elements are there, and by what simple means are they represented?
3. Give chemical formula of (*a*) water, (*b*) nitric acid, (*c*) sulphuric acid, (*d*) hydrochloric acid.
4. Describe the chemical process (*a*) when iron rusts, (*b*) when wood burns, (*c*) when silver is tarnished by coal gas.
5. Mention six elementary substances commonly used in medicine in their pure state.
6. What is (*a*) a normal salt, (*b*) an acid salt, (*c*) a double salt, and give an example of each.
7. What are chlorides? Bromides? Give an example of each.
8. What are the essential elements of all acids?
9. Explain the terms (*a*) solutions, (*b*) precipitates, (*c*) incompatibles.
10. What is a chemical reagent?

MATERIA MEDICA AND THERAPEUTICS.

(Answer *ten* questions only.)

1. What are the advantages of ether as an anesthetic? Contraindications for its use?
2. What is "cumulative effect" of drugs? Name one drug which has this tendency, and the symptoms.
3. Give therapeutic use of caffeine.
4. Give therapeutic indication for bromides, and effects from long continued use.
5. Name ten drugs most frequently prescribed by you, giving maximum and minimum dose, and length of time between each dose. Write ℞ containing two or more drugs.
6. Name the nine most used preparations of mercury and give principal therapeutic uses.
7. What are the contraindications for use of quinine?
8. Outline your treatment and diet of typhoid fever.
9. Give treatment of angina pectoris.
10. Give treatment of hemoptysis.
11. Hypodermoclysis. Describe method of administration. Give disease and conditions in which you consider it a therapeutic agent.
12. Outline treatment for care of articular rheumatism (acute is meant here).
13. Name five drugs most frequently used by you hypodermically, dose and indications for use.
14. Give dose and indications for use of thyroid extract.
15. Give dose, best way of administration, and medical uses of adrenalin.

ANSWERS.

ANATOMY.

1. *The branches of the subclavian artery*, are: Vertebral, thyroid, axis, internal mammary, and superior intercostal.

2. In a cross section at middle of humerus, will be severed: *Arteries:* Brachial, superior profunda, inferior profunda; *Muscles:* Biceps, brachialis anticus, coracobrachialis, triceps; *Nerves:* Median, ulnar, musculospiral, internal cutaneous, musculocutaneous.

3. *The portal system.*—The veins of the portal system collect the blood from the digestive tract. They form a trunk, the *vena portæ*, which enters the liver and breaks up into small branches in its substance. The following veins form the portal system:

Inferior mesenteric: drains rectum, sigmoid, flexure, and descending colon. It lies to the left of its artery, and passing behind transverse part of the duodenum and the pancreas, and over left kidney, opens into the splenic vein. (The hemorrhoidal branches inosculate with the hemorrhoidal branches of the internal iliac.)

Superior mesenteric: drains small intestines, cecum, ascending and descending colon. It passes upwards in front and to right of superior mesenteric artery, in front of transverse part of duodenum, and behind neck of pancreas joins the splenic vein at the upper border of the pancreas to form the portal vein.

Splenic: commences in five or six branches in hilum of spleen; these unite to form a trunk which passes below splenic artery behind upper border of pancreas from left to right, and in front of aorta; joins superior mesenteric at a right angle.

The gastric or coronary: a large vein accompanying coronary artery from right to left along lesser curvature of stomach to cardia, where it reaches esophageal tributaries, and, passing to right behind lesser sac, opens into the vena portæ.—(*Aids to Anatomy.*)

The *portal vein* is formed by the union of the splenic and superior mesenteric veins in front of the right crus of diaphragm and inferior vena cava, and behind the neck of the pancreas. Passes up behind first part of duodenum and then between the layers of the small omentum, behind and between the common bile-duct and hepatic artery, the duct being placed on the right and artery on the left, to transverse fissure of liver, where it divides into right and left branches to corresponding lobes, and also gives an offset to the Spigelian lobe. Connected with the branch to the left lobe are in front the *obliterated umbilical vein* and behind the *ductus venosus*, the remains of a fetal connection with the inferior vena cava.—(*Aids to Anatomy.*)

4. The *thyroid gland* is situated on the sides and in front of the upper part of the trachea, and extends upward on each side of the larynx. The *thyroid gland* consists of two lateral lobes and an isthmus: it is situated at the front and sides of the neck. The lobes extend from about the middle of the thyroid cartilage to the fifth or sixth tracheal ring; the isthmus generally covers the second and third tracheal rings. The lobes measure about 2x1¼x¾ inches; the gland usually weighs about one ounce. *Blood supply:* Superior and inferior thyroid arteries, with thyreoidea ima; and superior middle, and inferior thyroid veins. *Nerve supply:* Branches from the inferior laryngeal nerve, and from the middle and inferior cervical ganglia of the sympathetic.

5. Optic Nerve.—*Origin:* From optic tract, which arises by two roots, the outer coming from the external geniculate body, optic thalamus, and superior quadrigeminal body; and the inner from the internal geniculate body. *Distribution:* It is expanded to form the retina, on the surface of which the images of external objects are received.

6. Median Nerve—*Origin:* It arises by two roots,

one from the outer cord and the other from the inner cord of the brachial plexus. *Distribution:* To all the superficial muscles of the front of the forearm except the flexor carpi ulnaris; to all the deep muscles of the front of the forearm except the inner half of the flexor profundus digitorum; to the skin over the radial side of the palm of the hand, over the front of the thumb, index, middle and half of ring fingers, and over parts of the dorsal aspect of the same fingers; also to the first two lumbrical muscles, and to the outer group of short muscles of the thumb.

7. The *Tendo Achillis* is formed by the gastrocnemius and soleus muscles. The tendon is inserted into the posterior part of the os calcis.

8. The *bones of the head*, are: Occipital, frontal, two parietals, two temporals, sphenoid, ethmoid, two lacrymals, two malars, two nasals, two palates, two superior maxillary, two inferior turbinates, vomer, and inferior maxillary.

9. *The fourth cervical vertebra* has a small, transversely elongated body, with no facets for ribs; the laminæ are long and slender; the spinous process is short, nearly horizontal, and bifid; the transverse processes are short, and contain a foramen for the veretebral artery; the superior articular process is directed upward and slightly backward; the inferior articular process is directed downward and slightly forward; the spinal foramen is large and triangular.

10. *Femoral hernia* leaves the abdomen through the femoral ring and descends into the femoral canal; this canal is funnel-shaped, is about half an inch in length, and ends at the saphenous opening. Femoral hernia is always *acquired*, and has a sac. Its course is first vertical, then forward, then upward over Poupart's ligament. Its coverings, from without inward, are: Skin, superficial fascia, cribiform fascia, crural sheath, septum crurale, subserous tissue, and peritoneum. The neck of the hernia is situated at the femoral ring; to its outer side lies the femoral vein, and to its inner side is Gimbernat's ligament; in front of it is Poupart's ligament, and behind it are the pubis, the Pectineus, and the pubic portion of the fascia lata. In the immediate neighborhood of the femoral ring are: Anteriorly, the communicating branch between the deep epigastric and the obturator arteries; externally, the femoral vein and deep epigastric vessels; superiorly, the spermatic cord (or round ligament) and the deep epigastric vessels.

PHYSIOLOGY.

1. *Ductless Glands.*—(1) The *spleen;* situated in the back part of the left hypochondriac and epigastric regions, being covered by the ninth, tenth, and eleventh ribs on the left side. (2) The *thyroid;* situated on the sides and in front of the upper part of the trachea, and extending upward on each side of the larynx. (3) The *suprarenals;* situated in the back part of the abdominal cavity, behind the peritoneum, one on the upper extremity of each kidney, and slightly also on the inner and anterior surfaces. (4) The *carotid gland:* situated generally in the carotid bifurcation. (5) The *thymus;* situated in neck, and superior mediastinum, up to lower border of thyroid. (6) The *coccygeal gland*, at the tip of the coccyx. (7) The *parathyroids;* situated near the thyroid, on the posterior surface, near the junction of the pharynx and esophagus; but they are variable in position. (8) The *pituitary body* is situated on the floor of the skull, on the sella turcica of the sphenoid bone.

The function of the spleen: The following theories have been held: (1) It is a source of production of the white blood corpuscles; (2) it is a source of production of the red blood corpuscles during fetal life; (3) it is a place where the red blood corpuscles are destroyed; (4) uric acid is produced in the spleen; (5) an enzyme is produced in the spleen and is carried by the blood to the pancreas, where it converts the trypsinogen into trypsin.

The function of the thyroid is not definitely settled: (1) it has some trophic function, regulating oxidation in the body, and it is supposed to have also a special influence on the vasomotor nerves, the skin, the bones, and on the sexual functions; (2) it is supposed to antagonize toxic substances and (3) it produces an internal secretion.

The function of the thymus is not settled; it is said: (1) to be a blood-forming organ; (2) to have influence on growth and nutrition; (3) in hibernating animals it is supposed to store up materials which can be utilized during the period of inactivity.

The function of the suprarenals is not definitely settled; they produce an internal secretion which is probably necessary to life; it is supposed that they are able to destroy or remove some toxic substance produced elsewhere in the body. They aid in maintaining blood-pressure, and in keeping up nutrition and body strength.

Function of the pituitary gland: "The *anterior* lobe is concerned with the process of growth, hypertrophy leading to overgrowth of the skeleton, and partial removal to failure of development of the body as a whole and of the sexual glands. Extracts of the *posterior* lobe, when injected into an animal, have a direct action on plain muscle all over the body; they cause constriction of the arterioles and a rise of blood pressure, contraction of the muscular coats of the digestive tract and of the bronchioles, and contraction of the uterus. The extracts also produce an increased flow of urine, which was at first attributed to the presence of a substance having a specific effect upon the renal cells; it is probable, however, that the diuretic effect is merely an indirect result of the more rapid flow of blood through the kidney which follows the injection of the extract. Extracts of the posterior lobe increase the secretion of milk, and after the injection a larger amount of milk is formed by the animal in the course of twenty-four hours."—(Bainbridge and Menzies' *Essentials of Physiology.*)

2. BLOOD.—*Specific gravity* is about 1055. *Reaction* is alkaline. *Quantity in body*, is about one-twentieth of the body weight.

Regeneration of blood after a hemorrhage: "If the bleeding does not go on to death the blood is restored by absorption from the tissues or from the food taken in; the first to be absorbed being the serum sanguinis, with the dissolved salts, and then the albumen. A longer time is required to form new red blood-corpuscles. Regenerated blood is at first abnormally watery and poor in cells. As a result of the greater flow of lymph into the blood the number of white blood-corpuscles is greatly increased, and then their number falls off; the red blood-corpuscles again attain their usual number, and the composition of the blood gradually returns to the normal. We do not as yet know certainly how the restoration of the red blood-corpuscles takes place. The most generally accepted view is that colorless corpuscles are being constantly formed in the lymph glands, in the spleen, in the bone marrow, and in the liver, and a certain number of these colorless corpuscles change into the red disks."—(Tillmann's *Surgery.*)

3. *Peyer's patches* are collections of lymphoid nodules found in the mucous membrane of the lower part of the small intestine (the ileum).

4.

DIGESTIVE SECRETIONS.	ACTIVE PRINCIPLES.	FUNCTIONS.
Salivary....	Ptyalin.	Changes starches into dextrin and sugar.
Gastric.....	Pepsin.	Changes proteids into proteoses and peptones in an acid medium.
	A curdling ferment.	Curdles the casein of milk.
Pancreatic..	Trypsin.	Changes proteids into proteoses and peptones and afterwards decomposes them into polypeptides and amino-acids; in an alkaline medium.
	Amylopsin.	Converts starches into maltose.
	Steapsin.	Emulsifies and saponifies fats.
	A curdling ferment.	Curdles the casein of milk.
Intestinal...	Invertin.	Converts maltose into glucose.

5. *Functions of the liver* are: The formation of bile,

urea, uric acid, creatinine, and antithrombin; the production of heat; the conversion of hemoglobin into bile pigment, and the glycogenic function (formation and storage of glycogen).

6. *Osmosis:* "If two different liquids are separated from each other by a porous partition, a current sets in from each liquid to the other. The strength of these currents depends on the facility with which the liquids are imbibed by the partition and the tendency the two fluids have to mix with each other; the fluid which soaks most rapidly into the partition—*i.e.*, that which wets it most readily—passes through it most rapidly. If a bladder be filled with syrup and immersed in water, the water will pass into the bladder more rapidly than the syrup passes out, and may so far raise the pressure in the interior of the bladder as to burst it. The water is said to pass into the bladder by endosmosis, and the syrup to pass out by exosmosis. Dialysis differs from osmosis in this: In dialysis a crystalloid in solution passes into a fluid, which contains a smaller quantity of the crystalloid; osmosis occurs at the same time, but the phenomena are quite distinct. The law of osmosis deals only with the currents of liquid. The blood-vessels of the alimentary canal absorb fluids by osmosis. The plasma has only a very slight tendency to pass out of the vessels, while the liquids contained in the alimentary canal pass into the blood with great readiness. The *laws of osmosis* are: (1) The liquids must be of different densities. (2) They must be capable of mixing with each other. (3) The membrane must be permeable to at least one of the liquids. (4) The current produced is greater the greater the tendency of the liquid to permeate the membrane—the greater current is spoken of as endosmosis, the lesser as exosmosis. All these conditions exist between the blood and the fluids with which the blood-vessels are surrounded, and the fluids outside the vessels pass into them more readily than the blood plasma escapes. Endosmosis usually occurs from a lower to a higher pressure."—(*Aids to Physiology.*)

Examples of osmosis in the human economy: "In the body we have aqueous solutions of various substances separated from one another by membranes. Thus we have the endothelial walls of the capillaries separating the blood from the lymph; we have the epithelial walls of the kidney tubules separating the blood and lymph from the urine; we have similar epithelium in all secreting glands; and we have the wall of the alimentary canal separating the digested food from the blood vessels and lacteals."—(Halliburton's *Physiology.*)

7. The necessary proportion of the various foods is given as protein about 17 per cent., fat about 8 or 9 per cent., and carbohydrate about 74 per cent.

8. The *functions of the kidneys* are: (1) To secrete (or excrete) urine; (2) to regulate the reaction of the urine; (3) the formation of hippuric acid; (4) regulation of the composition of the blood plasma by excretion of abnormal or toxic substances; and (5) the production of an internal secretion.

The secretion of the urine is not necessarily constant and equal in each kidney.

If one kidney is removed the other hypertrophies and performs the functions of both.

9. An *afferent* nerve fiber is one that conducts nerve impulses from the periphery towards the brain or cord.

An *efferent* nerve fiber is one that conducts nerve impulses away from the brain or cord, and towards the periphery.

A *trophic* nerve fiber is one that nourishes a tissue or organ or part of the body.

An *inhibitory* nerve fiber is one which conveys a nerve impulse which results in the lessened activity of a part.

A *motor* nerve fiber is one which causes contraction of a muscle.

A *vasomotor* nerve fiber is one which conveys nerve impulses to the muscular coat of a blood vessel.

10. *Reflex actions* are involuntary or unconscious movements, due to suitable stimuli. They depend upon the integrity of the *reflex arc*, which is a complex made up of: (1) A surface capable of receiving an impression; (2) an afferent nerve; (3) a nerve cell capable of receiving and also of sending out impulses; (4) an efferent nerve, and (5) a surface capable of responding in some way to the impulse conveyed by the efferent nerve.

Example: The patellar reflex consists of a contraction of the extensor muscles of the leg and a movement of the foot forward when the ligamentum patellæ is struck; the quadriceps extensor must first be slightly stretched by putting one knee over the other. Its integrity depends upon a healthy condition of the entire reflex arc, consisting of tendon, afferent or sensory nerve, posterior roots, and anterior horn of the spinal cord, the efferent or motor nerve, and the muscle itself.

CHEMISTRY.

1. *Chemistry* is that branch of science which treats of the composition of substances, their changes in composition, and the laws governing such changes. It is generally divided into *Inorganic* Chemistry and *Organic* Chemistry.

2. There are about eighty-three elements. They are represented by *Symbols;* each symbol denoting one atom of an element.

3. *Water*, H_2O; *Nitric acid*, HNO_3; *Sulphuric acid*, H_2SO_4; *Hydrochloric acid*, HCl.

4. *When iron rusts*, oxygen aided by water attacks the iron and forms the oxide and hydroxide of iron in varying proportions.

When wood burns, the cellulose takes up oxygen from the air, and splits up into carbon dioxide and water.

When silver is tarnished by coal gas, the hydrogen sulphide which exists as an impurity in coal gas, attacks the silver, and produces silver sulphide.

5. *Six elementary substances commonly used in medicine in their pure state:* Oxygen, sulphur, iodine, carbon, mercury, and phosphorus.

6. *A normal salt* results when all of the replaceable hydrogen of the acid has been displaced by the basylous element; thus K_2SO_4.

An acid salt results when only part of the replaceable hydrogen of the acid has been displaced by the basylous element; thus $KHSO_4$.

Double salts are such as are formed by the substitution of two different elements for the replaceable hydrogen of the acid; thus $NaKSO_4$.

7. *Chlorides* are salts of hydrochloric acid; thus KCl, NaCl.

Bromides are salts of hydrobromic acid; thus KBr, NaBr.

8. *Hydrogen* is the essential element of all acids. Oxygen is also present in all acids except the hydracids.

9. A *Solution* is a homogeneous mixture of a substance with a liquid. If solutions of two salts are mixed, and by double decomposition an insoluble salt can be formed, such double decomposition will take place and the insoluble salt will be formed; this insoluble compound separates, from the solution as a *precipitate*. Substances are said to be chemically *incompatible* if on being mixed together they undergo chemical decomposition, or form an explosive compound.

10. A *chemical reagent* is any substance used to bring about a chemical reaction.

MATERIA MEDICA AND THERAPEUTICS.

1. *Ether* "is the best and least dangerous general anesthetic in the hands of one with little experience, likewise in the hands of the specialist in anesthesia when, as is the case in most of the major operations of surgery, the patient is to be completely relaxed, hence, under these circumstances, should always be employed unless there are distinct contraindications. The most important *contraindication* to ether is *inflammation of some portion of the respiratory apparatus*, owing to its irritating action upon mucous membranes. Of secondary importance, and by no means absolute, are marked *arteriosclerosis*, because of the danger of vascular rupture from the struggling incident to the etherization; *disease of the kidneys* (many authors believe chloroform to be more irritating to the kidneys than ether; in these cases nitrous oxide and oxygen or local anesthesia should be employed whenever possible); *operations about the nose or mouth*, in which the anesthetic can be applied intermittently only, and in which chloroform, being more powerful, will better maintain

anesthesia (this contraindication ceases to exist if one of the insufflation methods is employed); operations in which the *actual cautery* may be needed in the region of the mouth, owing to the inflammability of ether, although it may be used in these cases, if the precaution is first taken to remove the anesthetic and fan away the fumes; and operations performed in the presence of an *exposed artificial light*, although, since ether vapor is heavier than air and descends, the danger in these cases is obviated by placing the light several feet above the level of the patient's head. Ether should not be administered in the presence of fire in an open grate or stove."—(Stewart's *Surgery*).

2. *Cumulative Action.*—"This is the property which some drugs have, after they have been given for a certain length of time, of producing a severe and more or less sudden effect. It is probably due in most instances to an accumulation of the drug in the tissues, excretion, for one reason or another, being less rapid than absorption. In some cases, however, it may depend upon irregular absorption, a large quantity of the drug suddenly entering the circulation from the alimentary canal, where, owing to some accidental condition, there has been an undue accumulation."

"The uninterrupted use of digitalis in full doses is some times followed by the sudden appearance of toxic symptoms; this untoward effect seems to be due to the *cumulative action* of the drug, and is especially liable to occur when there is no diuretic effect, and after the removal of serous effusions by paracentesis. In the first instance elimination is interfered with, and in the second, absorption is effected with undue rapidity. The earliest manifestations of this accident are usually irregularity of pulse, precordial distress, and the appearance of the heart-beats in couples, the first of which only can be detected at the wrist. When a prolonged use of the remedy is required, it should be suspended at intervals for a definite period, so as to allow of complete elimination."—(Stevens' *Modern Materia Medica.*)

3. *Therapeutic uses of caffeine.* "It is employed as a prompt cardiac stimulant, but its chief utility in heart affections is in cases attended with dropsy, where by its diuretic action it often proves highly efficacious. Within certain limitations it is a diuretic of value, though not as reliable as theobromine, and small doses are more efficient as regards the kidneys than large ones. It is contraindicated in acute renal inflammation. As a sitmulant to the central nervous system, and especially to the respiratory centre, it is of great service in cases of poisoning by opium or alcohol. It is also used in hypochondriasis, neurasthenia, nervous headaches, neuralgia, typhoid and other fevers, diarrheal affections, especially when dependent on agencies affecting the nervous system, asthmatic paroxysms, and pneumonia or pulmonary congestion with weak heart."—(Wilcox's *Materia Medica.*)

4. *Bromides. Therapeutic indications.* "The bromides constitute our most valuable remedy for epilepsy, but as they must be continued for a long period, every effort should be made to minimize their injurious effects upon the system. They are much used also, either alone or in combination with other drugs, in the treatment of insomnia, nervousness, hysteria, neuralgia, migraine, delirium tremens, seasickness, seminal emissions, nymphomania, and various forms of convulsions. Except in cases of epilepsy they should not, as a rule, be given continuously very long, on account of the danger of the patient's contracting the bromide habit."—(Wilcox's *Materia Medica.*)

Their *long-continued use* results in a condition known as *bromism.* This condition is characterized by headache, coldness of the extremities, feebleness of heart-action, somnolence, anorexia, apathy, pallor of the skin, an acne eruption, and lowered sensibility of the fauces. There may be loss of sexual power, with atrophy of the testes and mammary glands.

5. *Ten frequently used drugs.—Potassium iodide*, 5 to 30 grains; *Calomel*, 1/10 to 5 grains: *Tincture of aconite*, 1 to 5 minims; *Apomorphine hydrochloride*, 1/12 to 1-6 grain: *Morphine sulphate*, ⅛ to ½ grain: *Quinine sulphate*, 1 to 15 grains; *Tincture of digitalis*, 5 to 15 minims; *Sodium salicylate*, 3 to 15 grains; *Amyl nitrite*, 2 to 4 minims, by inhalation; *Oleum ricini*, 4 to 8 drams. The *interval* between doses depends on the purpose for which the drug is given. Ordinarily, from 4 to 8 hours should elapse; but when the desired effect has been obtained no more of the drug should be given.

6.

Nine Preparations of Mercury	Chiefly Indicated in
Ammoniated mercury	Ozœna, psoriasis, tinea, and other skin affections.
Bichloride of mercury.....	Syphilis, anemia, summer diarrhea.
Calomel	Syphilis, biliousness, dropsy, dysentery.
Red oxide of mercury.....	Syphilitic sores, chronic skin diseases.
Yellow oxide of mercury....	Indigestion, syphilitic sores, chronic skin diseases.
Red iodide of mercury.....	Syphilis, acute tonsillitis.
Yellow iodide of mercury...	Chronic Bright's disease, syphilis.
Solution of mercuric nitrate.	Epithelíomata, warts, lupus.
Ointment of mercuric nitrate.	Chronic skin diseases.

7. *Contraindications to the use of quinine:*—Meningitis, acute middle-ear disease, acute inflammation of the genito-urinary tract, and when the patient shows an idiosyncrasy toward the drug.

8. *Treatment of typhoid fever with its principal complications:*—The patient must be in bed, and no medicine given unless indicated. "Give no solid food, or that which would not readily pass through a fine sieve. Milk, if it agrees, albumin-water made from white of egg, beef tea, and chicken broth are the principal foods. Of late some authorities have advocated a light solid diet throughout, but nothing must be given that would increase the risk of perforation. The stools should be daily inspected. If undigested curd is found, milk is being given too often, or the gastric function is impaired. It may then be given with lime water or barley water. Beef tea should be sparingly used, lest it excite diarrhea. Alcohol is required mainly in the later stages, when the typhoid state has set in, and the heart is weak. Many cases do well without it altogether. Other stimulants are strychnine, ammonia, ether, etc.

"If the *diarrhea* becomes excessive give bismuth and opium, or lead acetate and morphia, or an enema of starch and opium. When the motions are very offensive intestinal antiseptics (calomel in small doses, salol, etc.), may be given. They are also useful in meteorism. If *constipation* be troublesome, give enemata. No purgatives should be given after the first week. *Hemorrhage*—opium, lead acetate, or calcium lactate gr. xv every four hours, hypodermic injection of morphine or ergotin, ice-bag to the cecum. *Perforation*—The main chance of recovery lies in early laparotomy and suture of the affected bowel. Every hour lost after the diagnosis is made, and the initial shock has passed off, increases the danger to life. Cases operated on within twenty-four hours may recover; later, recovery is very rare. In anticipation of operation, morphine may be given to relieve pain and diminish peristalsis. *Bed sores*—water-bed, cleanliness, stimulant and antiseptic lotions, dry dressings if the slough is large. *High fever*—quinine and cold baths. The antipyrin group is dangerous to the heart. The stools and urine must be carefully disinfected. During *convalescence* the diet must be increased with the utmost caution, and the possibility of relapse must always be remembered."—(Wheeler and Jack's *Handbook of Medicine.*)

9. *Treatment of angina pectoris:*—"The general treatment is that of chronic myocardial disease. In syphilitic cases specific medication is, of course, indicated. Abstinence from alcohol and tobacco should be strictly observed. The most valuable special remedies, in the order of their efficacy, are the nitrites, iodides, theobromine, and arsenic.

"*The Attack*—No drug is so generally useful as amyl nitrite (3 to 5 minims on a handkerchief). Marked flatulency should be met by the prompt administration of Hoffmann's anodyne or spirit of mint. If the attacks are severe and prolonged morphine (1/3 to ¼ grain) and atropine (1/120 grain) should be given hypodermically. If these remedies fail, recourse should be had to chloroform inhalations. The application

of heat to the precordium is useful. Cardiac depression following the seizures should be combated by strychnine, ammonia, camphor, or ether."—(Stevens' *Practice of Medicine.*)

10. *Treatment of hemoptysis:*—"Unless a large artery is opened, bleeding usually ceases spontaneously, and the patient should be reassured. Absolute rest and quiet, light food given cold, ice to suck and injections of morphine and atropine suffice in the majority of cases. Inhalation of nitrite of amyl is a valuable measure. Ergot raises the intrapulmonary blood-pressure and may do harm. In protracted cases, saline purgatives and aromatic sulphuric acid are indicated. Adrenalin is useless."—(Wheeler and Jack's *Handbook of Medicine.*)

11. "Hypodermoclysis is a method of supplying fluid to the body to replace that lost through excessive purging, as in cholera, or in cases of hemorrhage. Further, it may be used to wash from the body various impurities circulating in the blood and lymph, and to flush the kidneys. In other instances it may be used to supply the body with liquid when the stomach will not permit liquid to be swallowed, as in vomiting, or gastric ulcer, or after abdominal operations. It consists in the introduction into the subcutaneous tissue of normal saline solution, which is rapidly absorbed by the vessels.

"When hypodermoclysis is employed after hemorrhage the results are often extraordinary. It is of great value in the collapse of cholera. The cyanosis decreases rapidly, the pulse improves, and respiration is no longer difficult. Some physicians have used hypodermoclysis with very good results in the treatment of uremia, and it is believed that not only are the poisons washed out of the system by this method, but, in addition, that the dilution of the poisons prevents them from acting so severely. In septicemia, diabetic coma, and similar states this method of treatment should be employed and the results carefully recorded. When general dropsy is present it is manifestly useless. Hypodermoclysis has also been used with great advantage in the treatment of severe burns to overcome shock and toxemia. In cases of surgical shock warm saline fluid used by hypodermoclysis is often of great service."—(Hare's *Therapeutics.*)

"Hypodermoclysis "may be given in the thigh, the buttocks, back, chest, or, in women, in the submammary region. The quantity of fluid introduced at one time varies from ½ pint to 1 quart. It requires an apparatus consisting of a hard-rubber funnel, 4½ feet of rubber tubing, and a hollow needle, all of which should be sterilized before being used. The solutions should be filtered and sterilized, and should be administered at a temperature of 100° F., under aseptic precautions. Normal salt solution may be used, and is made by adding sodium chloride, one dram, to water, one pint."—(*Pocket Cyclopedia.*)

12. *Treatment of acute articular rheumatism:*—"In all cases the patient should be placed at absolute rest in bed. He should wear woolen garments, and blankets (no sheets) should constitute the bed clothing, care being taken to protect the inflamed joint from excessive weight of the coverings. The diet should consist of easily-digested substances, preferably milk. The free use of water, particularly the alkaline mineral waters, should be encouraged. In strong and vigorous patients the administration of salicylic acid or the salicylates in large and frequently repeated doses is of great benefit. Sodium salicylate, ammonium salicylate, strontium salicylate, salicin, aspirin, salol, salophen, or oil of wintergreen may be used and pushed to the point of tolerance. In all cases, special internal treatment should be preceded by a course of calomel followed by a saline laxative. . . . Usually this treatment affords rather prompt relief but if after three or four days' trial there is no benefit derived from it, alkaline treatment should be substituted. This consists in the administration of an ounce and a half of one of the alkaline carbonates, either alone or combined with a vegetable acid, every twenty-four hours until the urine becomes neutral or alkaline when the quantity should be reduced to an amount just sufficient to maintain alkalinity."—(Hughes' *Practice of Medicine.*)

13. *Five drugs used hypodermically:*—Apomorphine hydrochloride, 1/10 grain, as an emetic; Morphine sulphate, ½ grain, to relieve pain; Strychnine sulphate, 1/32 grain, as a cardiac and respiratory stimulant; Hyoscine hydrobromide, 1/128 grain, as a hypnotic; Cocaine hydrochloride, 2 per cent. solution, as an anesthetic (local).

14. *Thyroid extract* is given in doses of 4 grains, in cases of myxedema, cretinism, hyperplastic follicular goitre, and arteriosclerosis.

15. *Adrenalin* is generally given in dose of 5 to 10 drops of a solution 1: 1,000. It is a cardiac stimulant, it slows the pulse rate, is a vasoconstrictor, raises the blood pressure, and diminishes peristalsis. Its main use is to constrict the peripheral blood vessels, and so arrest hemorrhage.

(*To be continued.*)

Therapeutic Hints.

Recurring Cholecystitis.—Einhorn holds that the treatment of recurring cholecystitis, with or without stones during the latent stage, has two objects: (1) to reduce stagnation of bile, and (2) to combat infection. The former is accomplished by drinking large quantities of water. Cures at Carlsbad, Kissingen, Vichy, Saratoga, or French Lick Springs combine the advantages of water, mild aperients, and restful surroundings, which are of benefit for establishing a healthy liver function. Frequent and small meals of wholesome food (mixed diet, with plenty of green vegetables and fruits) are likewise of much assistance in increasing the flow of bile. The infection is best combatted by urotropine, salicylic acid, salol, aspirin, and again by flushing the gastrointestinal tract with great quantities of water. Einhorn has found that glycerin given in teaspoonful doses, three times daily, exerts an antiputrefactive action on the bile. Patients who have been given this medicine furnish a bile that can be kept from one to two days without decomposition, while otherwise, the duodenal secretion after being exposed for a few hours in the air begins to smell badly and in about six hours develops a putrid odor. He prescribes, in this connection, the following:

Sodii bicarbon	℥ i i
Glycer. pur	℥ i i
Aq. dest	℥ v

M. Sig.: ℥ss. three times a day, one half hour before meals.

Antiseptic and astringent solutions can likewise be instilled directly into the duodenum, in order to exert a beneficial influence in this locally, which also has an effect on the biliary passages. Ichthyol (one half to one per cent.) or argyrol in the same strength (blood temperature) can be thrown into the beginning of the duodenum in amounts of from ten to twenty c.c. daily or every other day while the patient is in a fasting condition. When biliary calculi are known to exist and give rise to difficulties through their migrations, olive oil administered in four to five ounce doses once or twice daily, has been believed to have a good influence on the passage of the stones. This can refer only to small calculi; but even then, the effect of the oil is problematical. Its action, however, is never harmful, and for that reason it can always be employed in appropriate cases.—*New York Medical Journal.*

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Original Articles.

NOTES ON MOTILITY.

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THERE are a few additional points of interest that have occurred to me since writing my paper on "Motility in the Animal Organism" (MEDICAL RECORD, Jan. 10, 1920), or which I did not have space to include in that paper, or which are more or less obvious inferences from the hypothesis there advanced to account for the phenomena of spontaneous or automatic movement in animals.

I might note here that this hypothesis may probably explain the phenomena of motility in *plants* as well as in animals, and thus reduce all motile phenomena, which constitute the most characteristic obvious attribute of life, to a common basis as being a direct result of combustion with liberation of CO_2 gas. In plants, the protoplasm is confined in cells whose walls are more or less rigid and impermeable and the CO_2 produced in catabolism may have to travel some distance to seek an outlet and may generate considerable pressure before finding one. And instead of changing the shape of the cell or a modified portion of it, it produces currents in the protoplasmic contents of the rigid cellulose walls, similar fundamentally to the ameboid movements of animal cells, but resulting not in locomotion of the organism but in circulation within it. Thus it sets up the well-known streaming movements in the protoplasm of plant cells and probably plays the principal part in causing the sap to rise in trees—a phenomenon which has long puzzled botanists. In the spring, when the ground is saturated with moisture, water is drawn into the roots by osmosis; then, as the ground gets warmed up, combustion of carbohydrate substances starts up in the roots and other parts of the tree and CO_2 gas is liberated. Now this gas cannot escape until it has passed to the top of the tree, where it is disposed of by the leaves, being either built up again with water to form starch or expired into the surrounding atmosphere. But the system of tubes and cellular spaces through which this gas must pass to reach the leaves is not empty but filled more or less with sap; and the gas in rising through the sap carries the sap with it or forces it ahead of it much like the gas in a syphon of soda-water; only, of course, the flow is not so violent in the tree as in the syphon, because the pressure is slow and steady, and especially because the sap must flow through a system of very fine tubes and spaces. Thus the effect is that of a pump, the osmotic action being comparable to that of a multitude of check-valves and the motive power being the pressure generated by the liberation of gas in the liquid to be pumped.

But of course our principal interest here is in the animal organism, and there are a number of theoretical considerations which follow from this hypothesis and which may throw light upon problems of practical importance to the physician. In the first place there are certain inferences to be drawn as to the *structure and functions of the cell*—fundamentally important problems upon which the old theory of motility (that protoplasm is essentially "contractile") throws no light, but which, on the contrary, it makes more mysterious and insoluble. This conception of "contractility" arose, no doubt, from an incomplete understanding of muscular action, which was the first form of animal movement to be studied, and was later applied by analogy to the other forms of motion—ameboid, flagellate, ciliate, etc.—where it is even more baseless, for in these other types of motion no contraction is even apparent. Nobody has been able to suggest a reasonable interpretation of the structure of protoplasm on the basis of the conception that it is essentially "contractile," nor has this term any real meaning as an essential property of protoplasm, nor can contraction of protoplasm be conceived of as a direct result of the combustion that is supposed to produce it. One theory advanced was that protoplasm consisted of, or contained, a contractile network, based on the supposition that the microscopic structure of protoplasm is *reticular*. But the characteristically motile portion of the cell—the outer layer or ectoplasm—is not reticular but alveolar in structure, resembling a mass of fine bubbles, each bubble being ½ to 1 μ in diameter. Thus the theory of contractility is based upon a false analogy drawn from an incomplete understanding of muscular action and has no real foundation in fact or in reason. Whereas the hypothesis that motility results from an expansion of the viscid protoplasm substance by CO_2 gas resulting from the combustion of catabolism is inherently reasonable, agrees with the known facts and seems to furnish a satisfactory interpretation of them.

Let us now cosider the typical animal cell in the light of this hypothesis. It consists of the nucleus, the endoplasm and the ectoplasm. The ectoplasm or outer layer of protoplasm is tough and viscid, transparent, and alveolar in structure. It is probably the principal, perhaps the only, seat of combustion in the cell; for here the combustible protoplasm, built up in the endoplasm under the influence of the nucleus, comes in contact with the oxygen of the outer world. This combustion uses up carbohydrate substances principally and produces among other things urea, water, and CO_2 gas. The urea is dissolved in

the water and both pass to the outer world, sometimes being collected first from all parts of the ectoplasm into a single drop and excreted by the contractile vacuole. The CO_2 gas, however, formed throughout the viscid substance of the ectoplasm and especially abundant at the surface, collects in minute bubbles and both causes the tough viscid ectoplasm to swell or expand and also gives it its alveolar or honeycombed structure and its transparency, just as baking-powder under the influence of heat forms minute bubbles of gas in viscid dough and causes it to swell up and take on a honeycombed structure. The alveoli around the outside of the ectoplasm are often arranged in lines radiating from the center of the cell, representing probably the paths of escape of the gas bubbles which gradually leak out everywhere through the substance of the ectoplasm, which is not viscid enough to retain them indefinitely, although it may retain the watery products of catabolism until, under the laws that govern liquids that do not mix, they collect into a drop large enough to overcome the viscidity and surface tension of the surrounding ectoplasm. Thus we can account for the *motility*, the *transparency*, and the *alveolar structure* of the ectoplasm as resulting from its toughness and viscidity and the combustion which is assumed to take place within it.

But there is another factor involved here whose importance must be fundamental in cell metabolism —the factor of *heat*. Of course, heat must be liberated by the combustion in the ectoplasm; and while no doubt much of it is lost to the external world, a large part of it must pass inward to the endoplasm and the nucleus. If we compare the cell to a candle flame, the bright outer portion of the flame corresponds to the ectoplasm of the cell. Here the combustible material is in a form to be consumed readily, and here it comes in contact with the oxygen necessary to consume it. Most of the heat liberated passes to the surrounding air, but much of it passes to the interior of the flame, where it volatilizes the oil or paraffin that is drawn from the wick and thus prepares it for rapid combustion. Similarly, the heat from the burning ectoplasm that passes inwardly to the endoplasm and the nucleus must raise these internal parts to a relatively high temperature and no doubt furnishes the nucleus with a source of energy which alone enables it to digest food substances and build the products up again in *anabolism*. And this intracellular heat is no doubt finally disposed of in anabolism by being stored up in endothermic compounds of protoplasm built up under the influence of the nucleus in the endoplasm of the cell. And when they pass in their turn to replace ectoplasmic substance and to be consumed in catabolism, this endothermic heat is liberated once more in the ectoplasm and part of it passes again to the interior of the cell to repeat the process. Thus in part the cell is a mechanism for using the same energy, in the form of heat, over and over again; and this perhaps explains one of the fundamental mysteries of life, the fact that the cell seems to have some mysterious source of energy which led the older biologists to consider that there might be a special vital force. But of course the loss of heat to the exterior must be replaced by food, which no doubt furnishes considerable of its heat to the interior of the cell when it is partly split up in the process of digestion and the balance when it is consumed in catabolism. Of course, the animal cell cannot utilize the energy of the sun as the plant cell can in building up carbohydrates, etc., but yet heat from the exterior of the cell may supplement this intracellular heat as a factor in anabolism. This intracellular heat may perhaps be an important factor in disease, and I shall refer to it subsequently. It is no doubt a fundamental factor in health, and explains in part at least the physiological axiom that no organ can long maintain its vitality without exercise. Without exercise, or catabolism, the nucleus and endoplasm of the cell are not raised to a temperature sufficiently high to make possible the building up of new protoplasm in anabolism. Hence the cell or organ not only cannot grow but gradually wastes away from what little catabolism may persist. Now, in conditions of lowered vitality due to disease or senescence, the cells cannot produce sufficient intracellular heat through their own catabolism to enable the nuclei to function properly and build up new protoplasm. This might be a result of diseases of metabolism or a cause of such diseases, perhaps the products of incomplete anabolism being toxic to the organism. Now, in these diseases, the application of external heat to the organism—by hot baths, sun baths, a warm climate, etc.—may supplement the heat of catabolism and enable the nuclei to function normally and build up normal anabolic products. Thus in senility the high frequency electrical current, whose only known effect is a raising of the internal temperature of the organs, seems to improve vitality and rejuvenate the organism.

On the other hand, *overactivity* of a cell or of an organ may raise the internal temperature of the cell or cells to an excessive degree and damage the nucleus temporarily or permanently. This might be expected to occur especially in fevers, and the granular and fatty degenerations more or less characteristic of all the organs in fever may be a result of it. Toxins also may play a part in these cellular degenerations, both in fever and in other cases; but high temperature alone, as shown by experiments on animals, will produce these degenerations. Perhaps it is in this way that the heart muscle becomes diseased through overwork, resulting in permanent weakening and fatty degeneration; I shall show later why the heart muscle is especially susceptible to injury from excessive intracellular heat. Possibly *obesity* is a permanent fatty degeneration of more or less all the cells of the body resulting from injury to the nuclei so that they can no longer build up fatty substances into protoplasm; this injury might result from toxins or from excessive intracellular heat, and seems to occur temporarily at least after certain infectious diseases, especially typhoid fever.

To continue with the consideration of the structure and functions of the cell, the *endoplasm*, or inner layer of protoplasm, is more fluid than the ectoplasm and is less transparent, due to the fact that its structure is more or less *granular* instead of being filled with gas bubbles. Here the food substances, captured and ingested from without by the ectoplasm, are broken up into simpler substances—the proteins perhaps into peptones or amino-acids—and resynthesized into the complex protoplasm characteristic of the particular cell; and the granules are

supposed to represent stages in this process or reserve substances stored up, or perhaps by-products to be excreted. Thus the endoplasm is the kitchen of the cell, the ectoplasm bringing in the food and furnishing the heat to prepare it, and the nucleus being the cook working perhaps with enzymes as utensils. Now there is more or less generally present in the endoplasm a most mysterious body—the centrosome—about whose nature we know very little. Usually inactive and inconspicuous, near the nucleus, it plays a conspicuous part in cell division, and also seems to be concerned in the flagellate movements of the spermatozoön and with ameboid movement in white blood cells. I have nothing much to suggest with regard to it, unless it be that it represents a focus of intense combustion. Its relation to ameboid movement and the fact that the cell wall near it often bulges outward in cell division would indicate pressure exerted by its proximity such as might be given off by CO_2 gas resulting from rapid combustion. The centrosome might act in some such way on the flagellum of the spermatozoön. A rather fanciful explanation of its nature, but perhaps no less reasonable than some that have been suggested, would be the following: one suggestion as to why the cell divides is that when it has grown to a certain size it can no longer be nourished, etc., properly, since its bulk increases as the cube of its radius, while its surface increases only as the square of its radius. Now, the larger the cell grows, the more intense must be the heat that accumulates in the interior from the combustion in the ectoplasm; and yet there must be a definite limit to the temperature at which the nucleus can function or even survive. Now, the centrosome might be a sort of safety-valve set to go off at a certain temperature—a sort of slow-burning fuse or bomb made up of combustible material of high potential energy; and when the intracellular temperature reaches a point at which the integrity of the nucleus is endangered, the centrosome may, by bursting into two parts and one part passing to either pole of the cell, each one starting to burn and liberate gases, gradually blow the halves of the cell apart by the pressure of the liberated gases, half the chromosomes being blown one way and half the other way. Personally, I am not much impressed by this explanation, and yet it might have a germ of truth in it. One of the most frequent and characteristic manifestations of cell irritation or derangement is a rapid multiplication of cells or perhaps only the formation of mitotic figures in them. Now, if irritation can produce overactivity of a cell and this overactivity can cause excessive intracellular heat; and if the centrosome is a cell-dividing mechanism set in action by dangerously high intracellular temperatures, we might expect the centrosome to respond to a temperature generated by overactivity of the cell as well as by overgrowth of the cell, and thus we might explain why cells divide not only as a result of growth, but also as a result of irritation.

The nucleus of the cell is infinitely more complicated than the ectoplasm or the endoplasm, and quite beyond our comprehension in the present state of our knowledge. Its essential part—the linin reticulum, with the nuclear chromatin embedded in it or grouped irregularly at its nodal points—is *reticular* in structure, which allows the greatest possible amount of its surface to be exposed to the surrounding clear, fluid caryolymph which probably serves as a medium of communication between the chromatin and the endoplasm, through the nuclear membrane. The nucleus is the great mystery of the cell, and while it represents, no doubt, a problem in chemistry and physics, it is a quite insoluble one in the light of our present knowledge. The essential constituents of the chromatin seem to be nucleoproteins—the most complex chemical substances known—and we cannot conceive of their chemical complexity, to say nothing of their stereochemical structure; and much less can we explain their functions in terms of their structure. But the nucleus seems to be the essential active constituent of the cell, the endoplasm and the ectoplasm representing a sort of working capital stored up by the activity of the nucleus. The nucleus can, by means of enzymes, whose nature and mode of action are unknown, impart to protoplasmic and other suitable foreign substances its own characteristics and build them up by intussusception into its own substance; or it can impart to such foreign substances such a chemical composition and structure as will enable them, grouped about the outside of the cell in the form of ectoplasm, to move the cell away from a harmful influence or toward a beneficial one; and an instance of the latter is when the cell is moved toward food substances and surrounds them, as in the amœba; then these new food substances are taken into the endoplasm and trained to take the place of the ectoplasm which has been consumed in their capture. The process seems simple enough, but the mechanism by which it is accomplished is inconceivably complex. And then the nucleus has the property of dividing in such a way as to form two similar nuclei. Even if we could analyze completely the activities of the cell, as we may some day be able to do, we shall probably never be able to fathom the infinite ocean of matter and energy from which Life, in common with inanimate nature, takes its rise; or to foretell the complexity of structure and function of which it may be capable in the future. It is like a comet that flashes across our field of vision; we may study its form and structure as it passes, but whence it comes and whither it goes we know not.

Thus I have considered some of the principal characteristics of the typical cell in the light of my hypothesis of motility, but these characteristics are, of course, modified in different types of cell. We are interested here chiefly in the muscle cell, and I shall briefly refer to a few of the modifications. The ectoplasm is especially, if not exclusively, concerned in motility, and some of the protozoa that have lost their ectoplasm have lost their power of movement along with it—*eg.* the gregarines and the macrogametes. Flagella and cilia arise from the ectoplasm, also the trichocysts found in certain Infusoria. Muscle fibrils also appear in the ectoplasm, beneath the cuticle, in ciliates, etc. In the pseudopod, the toughness and viscidity and the combustibility of the ectoplasm are present together, while in the flagellum, cilium, and muscle fibril these characteristics of the ectoplasm seem to have parted company, the toughness and viscidity being concentrated in the fibrous outer envelope or mem-

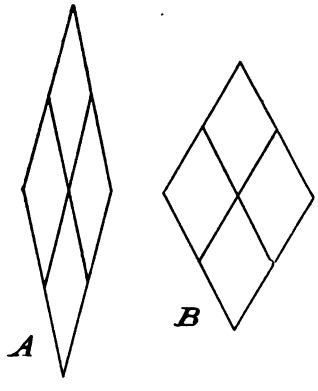
brane of the flagellum, cilium, and fibril; the combustibility being concentrated in the enclosed protoplasm. In the smooth muscle cell, the fibrils occupy the outer portion of the cell and no doubt represent the ectoplasm, while the nucleus in the center is surrounded by the sarcoplasm, which probably represents the endoplasm. Similarly with the cells of cardiac muscle. But in the voluntary or striped muscle fiber, the nuclei have left the center of the cell and come to the outside, where they lie just under the sarcolemma sheath. Now, this change in the position of the nucleus is probably of great significance. Smooth muscle fibers contract slowly and probably do not generate an extreme degree of heat in the interior of the cell; but voluntary muscles, with their extremely rapid and prolonged tetanic contractions, must generate a relatively enormous amount of heat; especially as the muscles are not spread out in thin sheets, but gathered into dense masses. Probably the nuclei of the striped muscle fiber have moved to the outside of the cell to escape the excessive heat in the interior of the fiber. If during severe muscular exertion the temperature of the surface of the body can be kept below 100° Fahr. only by the aid of every cooling device at the command of the organism, consider what the temperature must be in the heart of the furnace where all this heat is generated—the interior of the voluntary muscle fiber; it must be dangerously near the limit for heat rigor and far more than the delicately organized nucleus could stand. But at the surface of the fiber the nuclei are cooled by the blood and lymph. Thus voluntary muscles do not as a rule suffer from overstrain. But the heart muscle, while its structure in this respect is primitive like that of smooth muscle, is yet called on to perform much heavier and more constant work than any smooth muscle. The heart probably is an organ imperfectly adopted to serve its function, so far as the arrangement of the nuclei of its muscle fibers is concerned, although a marvelously efficient mechanism from a mechanical standpoint. Overactivity, especially of the ventricular muscle, which is so much denser a mass than the auricular muscle, probably overheats the nuclei and permanently impairs the nutrition of the cells, giving rise to the characteristic granular and fatty degenerations and in extreme cases to disappearance of the cells and their replacement by fibrous tissue. The voluntary muscles, on the other hand, furnish a striking illustration of the axiom that an organ cannot retain its vitality without exercise, as shown in the degenerative changes that follow lesions of the nerves that supply them. They also furnish strong corroboration of this entire proposition of *intracellular heat*, for it has been shown experimentally that during severe muscular exertion the muscles alone may generate more heat than the entire amount given out by the body. What becomes of the balance? It must be absorbed by the interior of the cells and stored up in endothermic protoplasmic compounds in the process of anabolism.

This whole question of nutrition in the higher forms, such as man, is very complicated. The amœba takes and digests and assimilates food when it finds it; but in the human organism the cells of the body are bathed continuously in liquid food, and how are they controlled in the use of this food? Do they keep continuously gorged to the limit, or do they feed at intervals; and if the latter, what controls the intervals? No doubt this intracellular heat produced by catabolism during exercise is one of the principal factors, but there may be other factors. Perhaps the trophic nerves stimulate the nuclei of the cells to produce enzymes which bring about anabolism in the presence of this heat and the ever-present food substances. Perhaps *inhibitory* nerves are really trophic in their action and by thus stimulating anabolism use up this intracellular heat faster perhaps than it is formed by catabolism, and thus by reducing the cell temperature, slow down or inhibit activity. If this were the case we might understand why the highest brain centers are the most delicate and vulnerable; there are no higher centers to inhibit them—*i.e.* to promote their nutrition by trophic innervation. In the nerve cells the ectoplasm is probably represented by the cell processes—the axis-cylinders and dendrites—and the ectoplasmic combustion, instead of producing motion, serves as a means of communication by transmitting impulses in the form perhaps of explosive waves passing along these processes. Only an insignificant quantity of fuel is consumed in these explosions, but it is of such high potential energy that it must be difficult for the cell to replace, especially in the axis-cylinder processes which may reach a length of two or three feet. What may be the nature of the nerve impulse—whether impulses differ qualitatively or quantitatively or in the intervals between them (like the impulses on a telegraph wire)—it would be difficult to say; also, whether their inhibitory, trophic, motor, or secretory influences on the organs of the body are due to impulses of different nature or to these impulses affecting different parts of the cells. Similarly, in the central nervous system: the reaction of a cell in the gray matter to an impulse reaching it along an axis-cylinder process might vary with the quality or strength of the impulse or with the dendritic process through which the impulse is communicated to the cell. And the nature of the mechanism by which the memory of previous impulses is stored up, constituting instinct or experience; and by which new variations and combinations can be originated in reaction—this mechanism is quite beyond our comprehension. But it may be that during the process of thought and contemplation, which may extend over a period of years without resulting in definite conclusions, new connections may be made between neighboring cells by means of a new formation of the finer processes of the axis-cylinders and dendrites; and when the new connections are complete, the conclusion suddenly dawns upon us and seems obvious as, indeed, it is when we can take a short cut to reach it. Memory may have its basis in paths of conduction blazed in the ectoplasm of the nerve cell by previous impulses, or it may have its seat in the nucleus; the reactions of the cell to various stimuli depending upon the chemical complexity and structure of its ectoplasm whose substance is ever changing, being consumed in activity and replaced by the action of the nucleus, which stamps upon it its own characters received by heredity and modified by experience.

The action on muscle of various drugs is of interest in connection with this hypothesis of motil-

ity, but the explanation is not always obvious. But *curara* probably acts on the "myoneural junction" "which serves to transfer the nerve impulse from the end-plate to the actual contractile substance of the muscle" (Cushny), and this myoneural junction is probably the sarcoplasm. Veratrine has the remarkable power of increasing and prolonging the contractions of voluntary muscles, and may act by impeding the escape of CO_2 gas through the fibrillar membranes.

Then there is the mechanical problem involved in my hypothesis; and I have the word of an eminent authority on mechanics for it that this problem is of great difficulty as well as of great interest. I shall merely try to state it. The human organism regarded as an internal-combustion engine, seems to be more efficient than any steam or gas engine, as much as 35 per cent of the energy consumed as fuel being transformed into effective work; and this, I believe, results from the mechanical efficiency of the muscular mechanism. In the cylinder of a steam or gas engine only a small part of the surface exposed to the pressure generated (viz., the piston) is free to respond to this pressure and transform it into working power; most of the pressure is wasted upon the immovable cylinder walls and the cylinder



A, Extended; *B*, Contracted.

head. But in the muscle fiber or the primitive fibrils within it, all the expansive force of the CO_2 gas liberated within it during a contraction is utilized because the containing walls are free to expand in every direction transversely to the long axis of the fiber and no energy is wasted at the ends of the fiber, trying to stretch it longitudinally, because the ends taper down to a point. Now we might expect that when a number of these expanding fibers are placed side by side in a muscle, they would, by expanding against one another, more or less interfere and produce a less powerful traction at the ends of the muscle. This may happen in the ventricular muscle of the heart, but is probably of no importance because, as I have suggested in my former paper, the shortening of the fibers in contraction of the ventricular muscle is probably of less importance than their transverse expansion. But in bands of smooth muscle and in the voluntary muscles, this interference is guarded against by (1) the shape of the fibers, tapering at the ends, and (2) the alternate arrangement of the fibers overlapping one another; and the effect of this arrangement is illustrated by the following diagrams, representing longitudinal sections of a muscle:

Thus a longitudinal section of the muscle would resemble a lattice-work that is closed and extended when at rest and opened and shortened in action; and it does not seem that the transversely expanding muscle fibers would interfere with one another, if indeed they do not even assist one another. The lines marking off the individual fibers in the diagram would correspond to the inextensible white fibers passing more or less continuously from one end of the muscle to the other through the walls of the sarcolemma sheaths, and transmitting the power generated by the contraction to the tendons at either end, which are indeed made up of these fibers. And from the diagram it is obvious how these inextensible fibers must be shortened by the transverse expansion.

Thus it would seem that all the energy of expansion is utilized in the muscle, but it is not all transformed into *motion* at the ends of the muscle, although it is probably all applied there in the form of *power* to do work; or may perhaps be even multiplied by a principle analogous to leverage, according to which motion is sacrificed to power. Thus it would compensate for the poor leverage resulting from the manner in which the tendons are attached to the bones—so near the fulcrum—where power is sacrificed to motion. It seems to be a most extraordinary and wonderfully efficient mechanism, and so far as I am aware is unique in mechanics. So far as I know, the only approach to it is the case of a rope shortening when wet. This is supposed to exert a relatively enormous pull, although through only a short distance, and resembles the muscle action in that the shortening results from a transverse expansion of fibers longitudinally inextensible; only in the rope the transverse expansion results from water drawn into the interstices of the strands by physical or chemical attraction, whereas in the muscle it is due to the expansion of gas liberated within the hollow strands. If we could measure the amount of CO_2 gas liberated in a muscle during contraction and ascertain the temperature at which it expands, we could calculate the expansive force generated by it. Then if we could solve the mechanical problem involved here and find out what proportion of the expansive force acting upon such a mechanism is transformed into work at the ends, and compare the result with the work actually done by the muscle in contracting, we might be able to test this theory experimentally. The work done by a contracting muscle may possibly vary according to whether both ends are free to move, or one end is fixed, as in most skeletal muscles, and the other end alone free to draw up in contraction.

The mechanism of the ventricular muscle of the heart is even more remarkable than that of other muscles. Imagine a pump in which, instead of the piston alone compressing the water, the entire wall of the chamber shrinks and at the same time swells into the cavity, obliterating it; both shrinkage and swelling being due to a single mechanical device operated by a single expansive force. It is interesting also to consider the wing muscles of insects. The wasp is said to ply its wings at the rate of 110 beats per second, and the common house fly at 330 beats per second (the high-pitched notes being produced by secondary vibrations of the margins at a much higher rate). Now, it is remarkable that

muscles can contract so rapidly; it must be just a series of instantaneous explosions, and the gases liberated must escape from the fibrils and fibers almost instantaneously. And it is significant that these gases do not have to be absorbed and carried away by circulating blood but are pumped out to the external air through a system of intake—and—exhaust tubes which ramify directly to the muscles. The interchange of gases must be on a relatively enormous scale and probably no system of circulating blood could cope with it. This whole mechanism seems to suggest the probability that the CO_2 produced here is something more than a mere incidental waste product of muscular action.

It seems not impossible, however, that there may be other factors in the expansion of the muscle fiber (and perhaps also in other motile mechanisms) in addition to the CO_2 gas liberated as a result of carbohydrate combustion; and I have had this possibility in mind all along, although I have spoken of the CO_2 alone as an expansive agent partly for the sake of simplicity and partly because it is the only one of which we have any definite knowledge. This perhaps is a good opportunity to consider more closely the nature of the changes that occur in the muscle fiber during a contraction. In an explosion there are two factors which operate to produce the expansive energy which results; one of these factors is the sudden transformation of molecules from a solid or liquid to a gaseous state with resulting expansion; the other factor is the heat which is liberated by the chemical changes accompanying this transformation, and this heat may be the result of oxidation or it may be *endothermic—i.e.* stored up in the molecules of the explosive substance and liberated by the breaking up of these molecules; and in either case this heat increases the expansion of the gaseous molecules formed by the explosion or already present. Now, these two factors may operate together or more or less separately according to the nature of the explosive substance. Thus there are a number of substances—the acetylides and some nitrogen compounds, as nitrogen chloride—which decompose with extreme violence, and yet but little heat is produced. On the other hand, in the internal combustion engine, with certain kinds of fuel, there are actually fewer gaseous molecules present after the explosion than before it, but such a great amount of heat is liberated by the oxidation that these molecules of gas exert a tremendous expansive force; and in internal combustion engines in general, the heat generated by the combustion of the fuel in the cylinder is practically the only factor of importance in producing the energy of expansion, the formation of new gaseous molecules even when it does occur being a negligible factor in comparison. These cases represent the two extremes, the one where the expansive force is due almost entirely to the liberation of new gaseous molecules, the other where it is due to the heat liberated expanding an unchanged or even a diminished volume of gases. In most explosions, however, both these factors operate together although one may be more important than the other. Now in the living organism, if the power of movement is the result of carbohydrate combustion of a more or less explosive nature, which liberates CO_2 gas among other products, it is obvious that heat can play but a secondary and strictly limited part as a factor in the resulting expansion, because the temperature cannot consistently with life be raised above the coagulation point of proteins or of heat rigor in muscle, which is about 50° C. (122° F.). Hence the pressure of expansion must be due principally to the formation of new gaseous molecules such as CO_2, although the moderate amount of heat liberated no doubt materially increases their expansive energy and diminishes their solubility in the liquid medium in which they are liberated. Thus the automobile cylinder, where the heat is the only important factor, constitutes but an imperfect analogy to the muscle fiber. Now, apart from theoretical considerations, we know practically that when carbohydrates are decomposed the CO_2 gas liberated exerts considerable expansive force; this is a matter of every day experience in the fermentation of sugars, the CO_2 generated at a moderate temperature exerting a tremendous pressure even though only about half the carbon available in the sugar is oxidized to CO_2, the remainder being contained in the alcohols and other products of fermentation. Therefore it is not unreasonable to suppose that when in the muscle fiber all the carbon in the carbohydrate molecules is suddenly combined with oxygen and liberated as CO_2, a very considerable expansive force must result. But, as I stated above, it is not impossible that there may be other factors, in addition to the CO_2, which act in producing the expansion of the muscle fiber. It was by no means a simple problem for the early engineers to find out exactly what occurred in the cylinder of the internal combustion engine, where conditions are comparatively simple. But when we try to work out the thermodynamics of the muscle fiber, we are handicapped from the start by the fact that we have scarcely any conception whatever of the chemical aspects of the problem. We can hardly conceive even of the structure of the proteid molecule; and when we try to picture one or more carbohydrate molecules combined in some way with the proteid molecule, and then suddenly exploding during a muscular contraction, and then try to figure out just what happens chemically and physically, it is obvious that we can do little more than speculate. We know that a lot of carbohydrate and of oxygen is used up in muscular work, and a lot of CO_2 produced. Lactic acid is produced, presumably from imperfect combustion of the carbohydrate; and urea and other nitrogenous compounds are formed, presumably from proteid decomposition, which is generally supposed to result from the explosion of the carbohydrate group while it is incorporated in the proteid molecule. But the fact is that we know very little about what actually takes place. An important point to bear in mind is that we are dealing, not with a reaction or series of reactions between more or less fixed and inert chemical substances in a test-tube or in the cylinder of an internal combustion engine, but with a living cell; only living muscle fibers contract. And if we do not understand the precise chemical structure of the component parts of the dead cell, how can we hope to conceive of all the actions and reactions and interactions of these parts in the living cell? For all we know, it may be that an extremely complicated series of chemical changes occurs in the proteid molecules of motile protoplasm; in their liv-

ing liable state they may be highly explosive, like the diazo compounds exploding not as a result of oxidation but by virtue of the peculiar state of union of their nitrogen; their explosions perhaps being set off by the carbohydrate combustion or coincident with it. And the resulting products, including gases like nitrogen and hydrogen, or their compounds, may exert a momentary expansive pressure of great force; and then, being not in a test-tube or automobile cylinder but in a living cell, these products may under the influence of enzymes, etc., and of the intracellular heat to which I have referred to above, be resynthesized in large part into proteid substances, only a small part being lost in the form of urea and other nitrogenous compounds. There seems no reason why the nitrogen and hydrogen that go to form urea might not exist momentarily in a gaseous form before combining. Just as a hydraulic ram utilizes the energy of falling water to raise part of the water again, just so the living cell may use part of the energy of decomposing proteid and carbohydrate substances to synthesize some of the products into new proteid substances. Some of the energy is of course lost and must be replaced by food, but much of it may be used over and over again. This might be another reason why the human organism is so efficient as an internal combustion engine. Whether or not some such factors are concerned in muscular action we do not know; for whether it seems probable or not, we can hardly say it is impossible. While we know pretty well what goes into the cell and what comes out of it, the changes that take place within the cell during life are unknown to us. Therefore, even if the expansive force of the CO_2 liberated in muscular action should prove to be insufficient of itself to account for the work done by the contracting muscles, it would not necessarily disprove this hypothesis of motility. And it was because I believed that in the present incomplete state of our knowledge it is not now possible to prove or disprove the validity of this hypothesis that I ventured to suggest it to the medical profession and to physiologists and biologists without attempting to supply new experimental data in support of it, believing that its inherent reasonableness and its agreement with the principal known facts and the readiness with which it lends itself to the interpretation of these facts entitle it to the serious consideration of scientists as a working hypothesis to be held until disproved or replaced wholly or in part by a better one.

Finally, there are certain general considerations on the nature of stimuli. In my former paper, I suggested that in the amœba and in flagellates stimuli may act directly on the motile organs causing the cell to approach or retreat from the source of stimulation without any central control of orientation from within the cell; without anything that can be considered analogous to a conscious purpose on the part of the organism. Now I believe the same thing may apply to the ciliates, although here the mechanism is more complicated on account of the great number of cilia. The movements are well studied in *Paramecium*, where Jennings has found that the long axis of the cell does not point directly toward the source of stimulation as the organism is advancing, but is inclined at an angle; and the entire organism traces a spiral whose axis is described by the posterior end of the cell. This is what might be expected if the stimulus acts directly on the individual cilia, for if it strikes the organism from one side the cilia on that side would be thrown into action more strongly than those on the opposite side of the cell and would thus keep the organism inclined at an angle; while the stimulus upon the cilia on the upper and lower surfaces of the cell would propel the organism in the desired direction. But for some reason the stimulus does not act with equal force on the cilia on the upper and lower surfaces and thus the cell rotates about its long axis as it advances, and this results in successive sides of the cilia being exposed to the stimulus, which is no doubt an advantage. The mechanism is rather complicated but it seems possible to explain the reactions of these organisms on the same principle as in the amœba. The essential point is that in the unicellular forms the stimuli probably act directly on the motile ectoplasm by either increasing its combustion (positive stimuli) or diminishing it (negative stimuli). And the degree to which different parts of the motile organs are affected determines the direction in which the organism moves. Just why any particular stimulus should increase or decrease combustion in the ectoplasm is a mystery wrapped up in its chemical composition and structure, which is modified by the chemical or physical action of the stimulus. So long as life remains in the organism, a certain amount of combustion no doubt constantly takes place. Any influence that increases the rapidity of this combustion up to a certain limit can act as a positive stimulus and even from a distance by chemical or physical action can by increasing combustion on the side of the organism nearest to it draw the entire organism toward it; and conversely with negative stimuli. But the reaction of the organism is always the resultant of the stimulating forces that may at any given moment act upon it from various directions; and a force that may act as a positive stimulus when opposed by a set of forces that exert a less beneficial influence upon katabolism, may act as a negative stimulus when in the presence of other forces that exert a more beneficial influence. Thus *positive* and *negative* are relative terms as applied to stimuli, and there is no stimulus absolutely negative except death and perhaps none whatever that is absolutely positive. Furthermore, a negative stimulus can probably never produce a positive reaction but merely increase by contrast the effect of a more positive stimulus already present. When danger looms up from one quarter, the prospect of safety in the opposite direction becomes a strong and compelling stimulus; whereas if a still greater danger threatens in this direction, the former danger may seem safe by comparison and what was formerly a negative may become a positive stimulus by contrast. When danger is equally great from all sides, and no path of escape presents itself as a positive stimulus, the organism, whether the amœba or man, stands rooted to the spot in a condition almost of suspended animation ready for the only absolutely negative stimulus, death. The same principles hold throughout the animal kingdom, from the amœba to man. A negative stimulus, pain, grief, seem to

depress catabolism, to cause shrinkage of the organism with lowering of temperature, due no doubt to diminished combustion and reduced formation of expansive CO_2 gas; while a positive stimulus, pleasure, joy, seem to stimulate catabolism and to cause expansion of the organism and an elevation of temperature. Thus we see perhaps why pain and grief are necessary lest the fires of life be burnt out too rapidly. Perhaps in nervous disorders such unpleasant drugs as valerian and asafetida may act by checking too rapid combustion of the tissues. The relative effects of positive and negative stimuli on man are well illustrated by the old fable of the Traveler, the Storm, and the Sun. The whole life of man is a quest for the absolutely positive stimulus which he has never yet found and probably never will. No condition or circumstance can exert so favorable an influence upon life that some other condition or circumstance, real or imagined, cannot exert an influence still more to be desired. Thus man is never satisfied but strives ever upward as a result of the ever-increasing complexity of living matter, whose origin and whose destiny are both lost in the realms of the Infinite.

NORTH STREET AND WARD'S LANE.

DEFENSE MECHANISMS.

BY H. LAVESON, M.D.,

NEW YORK.

IN an article on "Lapsus of Memory" (MEDICAL RECORD, January 17, 1920) we considered an example of name forgetting and learned that this forgetting was really a phenomenon of repression and signified a protective effort against the reproduction in consciousness of the painful group of ideas with which the name happened to be associated. We may now consider another example of name forgetting and we shall immediately be introduced to a new form of defense mechanism.

Some time ago I was for a few days the guest of a certain married couple with whom I am intimately acquainted. One evening while my hostess, her husband, and I sat reading, she suddenly looked up from her book and asked: "Who was it that wrote 'Paradise Lost'? Was it Dante?" Her husband replied that she had confused the authors of "Paradise Lost" and of the "Inferno," and nothing more was said at the time. A little later, while her husband left the room, and, just as I was about to speak of her forgetting, she herself brought up the subject of psychoanalysis by asking me to explain a very annoying feeling which she had for some time experienced. This feeling consisted in a sense of aversion or repugnance toward all young men with light hair and blue eyes. She had been caused much discomfort by this singular antipathy, as a number of her husband's friends belonged to this type, and their frequent visits to her house always made her uneasy and unhappy. She realized perfectly that there was nothing in the character or behavior of these men to justify her peculiar feeling, but all her efforts to reason it away had been of no avail. There, obviously enough, was an affective reaction the source of which must have been in the Unconscious. No introspective effort on her part had furnished conscious data sufficient to explain it.

Pursuing the technique of free association, with which we familiarized ourselves in the article on "Psychoanalysis" (MEDICAL RECORD, June 5, 1920), "I asked her to fix her mind on the particular type of man she had described, and to relate all her incoming thoughts, expecting that in this manner she would produce descendants of the unconscious trends causing her strange aversion and sufficient to give some insight as to its nature. In response, she reported that she found herself thinking of a certain blond man with whom we are both slightly acquainted, next of another of much the same appearance whom also she knew only slightly. Then, after a short pause, she suddenly laughed, blushed, and said, with some confusion: "I just now thought of some one else." Having had from the start some rather definite suspicions as to the general significance of her antipathy to blond men, I asked at this point: "And towards this man you felt no aversion?" She at once admitted that I had guessed correctly, and then went on to relate what follows, which, as may be seen, affords an explanation both of her dislike of light-haired men and also of her failure to remember who wrote "Paradise Lost."

The man she had thought of was her first cousin. He is a very handsome specimen of the blond, blue-eyed type that later inspired feelings of repulsion. When she was about sixteen years of age she had seen a good deal of this man and had found herself falling seriously in love with him. But because of their close relationship and the fact that he was nearly ten years her senior, she had decided that it was very wrong in her to entertain any amorous regard for him. She had, therefore, resisted his attractions and endeavored to banish from her mind all sentimental thoughts concerning him. These efforts at repression were apparently successful for, as far as she was aware, he had ceased to be of any particular significance in her emotional life. But this complex, though it had become in great part unconscious, was by no means entirely deprived of expression. For instance, when, just before her marriage, she destroyed her collection of photographs of former admirers, she "forgot" to destroy the only picture she had of her cousin.

This forgetting we can hardly regard in any other way than as purposeful. Unconsciously she desired to keep the photograph. This little item, small as it is, has no mean significance. From it we are easily led to suppose that, in the Unconscious at least, more of her holophilic interest remained attached to the memory of her cousin than she was consciously aware of or ready to admit. In other words, her efforts to forget him, instead of annihilating this interest, had merely accomplished its repression. But no soon have we made this statement than we notice that her aversion toward all light-haired men is a trend diametrically opposite to that which we have just assumed to exist in the Unconscious. Are we therefore to suppose that because of this aversion we must have been wrong in assuming that toward that particular light-haired young man, her cousin, she had feelings just the opposed of aversion? Hardly. We can better explain the conditions by assuming that this aversion toward all light-haired young men was rather an over-development of those trends or counter-activations which produced the original

repression, and that the reason for this overdevelopment was that the repression was threatening to fail and required an increase of activity on the part of the repressing forces in order to prevent this. In other words, this overactivity on the part of these trends from the foreconscious served as a correction or antidote for what existed in her Unconscious. Thus consciously she wished to forget her cousin and was unwilling to care for him; unconsciously she still retained some love interest in him and wished to remember him. Her forgetting to destroy his photograph is an expression of the love trend. Her failure to recall who wrote "Paradise Lost" was an effect of the repressing trend. For it so happens that her cousin's name was Milton.

We have thus been introduced to a new form of manifestation of unconscious process, in addition to the dream and the forgetting of names—the two with which we are most familiar—that is to say, an exaggeration or overdevelopment of conscious and foreconscious trends serving as a defense against unconscious wishes of an opposite character, which threaten to break into consciousness. The somewhat analogous phenomenon which occurs in the psychic sphere, as has just been exemplified, goes by the same name, compensation. This may recall to us the phenomenon known in pathology as compensatory hypertrophy. A defect or deficiency in some organ is made up for by an overdevelopment and increase of functional activity on the part of the same organ or of its mate. Thus the effect of a leaky heart valve is discounted by an increase in size and strength of the heart muscle or an increase in the frequency of the heart's action; disease or removal of one kidney results in an increase in size and functional capacity on the part of the other kidney, etc.

One of the most commonly observed over-compensations is represented by the exaggerated anxiety so often displayed by neurotics over the health of some person close to them. Thus, for example, a neurotic girl is continually in a state of alarm concerning her mother. If her mother complains of being over-tired the girl thinks this presages an apoplexy. If the telephone rings while her mother is out, she thinks this is a message from the police saying her mother has dropped dead on the street. If she hears a noise during the night, she interprets it as her mother choking in a death agony.

In these and all other examples of over-compensation it is to be seen that the compensating motives belong essentially to the cultural, ethical, and acquired group of reactions and so to the foreconscious. The repressed trends which are compensated for are in the main more primitive, and are derived from instinct and the unconscious.

A mechanism of defense which is most commonly observed in the compulsion neurosis is that by generalization. Feelings which in the patient's consciousness are attached to a class or group really refer in the unconscious to a special one of its members. This is exemplified by the case of the young woman who had an antipathy to all blond, blue-eyed men, which was really founded on repressed wishes concerning one particular man of that type. In the psychological sphere in adult life, particularly in abnormal cases, occur phenomena which fail to distinguish between the ego and the non-ego. Thus on the one hand mental occurrences belonging to the ego are perceived by consciousness as of external origin, while, on the other, essentially external happenings are assimilated by the personality and made a part of the self. The former mechanism is known as projection, the latter is introjection.

The mechanism of projection is ordinarily one of defense. That which is perceived as of exopsychic origin represents trends or ideas which are painful to the conscious personality of the individual and out of harmony with the ruling impulses of the foreconscious. A completely successful repression such as he might desire would drive them entirely from the sphere of conscious perception; projection represents an effort at repression which is only partially successful. Failing to accomplish obliteration of the disagreeable presentations, the repression does succeed in more or less completely preventing the recognition of ownership. The presentations are then seen as of external origin, not as manifestations of tendencies of the individual himself.

An illustration of a very common form of projection occurred in the case of a girl of eighteen who came to me suffering with attacks of intense pain in one side of her face. Her family physician and one or two other doctors who had seen her were not quite certain whether these pains were of organic origin (tic douloureux) or psychic, that is to say, hysterical; and she was sent to me to have this question settled and, should the condition prove to be one of hysteria, for analytic treatment. When, after the first examination, I intimated to the girl and to her mother that the malady was not organic, the young woman became very angry, and both to me and later to her family expressed in no uncertain terms her very great contempt for me in not being able to recognize an out-and-out organic disease when I saw one. Nevertheless, she came to me for treatment and I was finally able to establish that her extreme emotional reaction against my view as to the nature of her pain was essentially a defense against the projected knowledge that I was right.

For it appeared that these attacks of pain came on when the young woman was indulging in erotic day-dreams, and then only; that she never had them apart from these dreams; that they lasted only as long as she kept on dreaming, and that she could at any time stop them by stopping the day-dream. Thus she had every reason to know that they were of psychic rather than of somatic origin. She was a Catholic and she knew that if she were to confess to the priest that she was having such phantasies he would tell her they were wrong and that she must stop them, a thing she was unwilling to do. As a way of evading this, her mind formed a compromise in the shape of the pains, which served the purpose of a punishment and a penance for the phantasies she regarded as sinful, and thus, in her opinion, to a certain degree absolved her from the obligation of confessing them and from the sin of not doing so.

What she attacked as a manifestation of my stupidity was really a projection of her own unwilling knowledge that her pains were not organic.

The most elaborate examples of projection are furnished by paranoia or major psychoses of the

paranoid type. I will give some brief examples of cases approaching the paranoid type.

A young woman student had at various times a number of delusional attacks which invariably began with her becoming attracted by some one of her professors. She would for a time talk a great deal about him, or how able and attractive he was, but without intimating that she was falling in love with him. Then she would begin to think that he was falling in love with her. This would seem to please and amuse her at first, but soon she would get the notion that he was hypnotizing her, and her pleasure would be succeeded by anger. She would complain that through hypnotic influence he was putting into her mind all sorts of erotic phantasies about him, that against her will he compelled her to masturbate with him in mind, that by telepathic suggestion he gave her impulses to come to his apartment, to have sexual relations with him, etc., all of which would get her into a state of great rage and excitement and she would have to abandon her studies. Thereupon the attack would gradually subside, only to be repeated in connection with some other teacher when she resumed her work.

It is apparent that this patient's delusional ideas were nothing but a projection of her own erotic interests in her teachers. What she felt as an hypnotic or telepathic influence brought to bear upon her from without was simply an externalization of her own desires. Her anger against the teachers represented her pathological resistances against these desires. Presumably had she been able to regard her sexuality in a normal way, as something perfectly legitimate and wholesome, what appeared as delusional attacks would otherwise have been ordinary love affairs.

The mechanism known as introjection is a process almost the reverse of that of projection. Where in the latter case the individual narrows his ego to a degree that processes actually belonging to it are perceived as of external origin, in the former he broadens the self to include within it what really belongs to other persons or objects. Thus, for example, that which happens to some other person causes him to feel or behave as if it had happened to him instead. This involves something more than ordinary sympathy. There is a definite, though usually unconscious sense of oneness or continuity with the other person. For this reason the phenomenon is commonly known under the term Identification.

The phenomena of introjection or identification are very common and essentially normal. It is only when carried to extremes that Identification becomes abnormal. It is, for example, a normal part of love. He who loves identifies himself with the love-object, and that person's pains or pleasures, successes or failures, honor or disgrace become in a measure his own. It expresses a sort of recognition of this love identification when we say of a married couple that the two have been made one.

We identify ourselves not only with loved persons, our friends and the members of our families, but also with things essentially impersonal or inanimate, our possessions, our country, its emblems, customs, institutions, etc. Thus we have a sense of identity with our house, our dog, or our automobile, and see in them virtues peculiar and different from those of the houses, dogs, or automobiles belonging to other people and which, in all tangible respects, are equal or superior to our own. The resident of New York or Chicago experiences a glow of personal pride on listening to some comment on the greatness of his city, or the dweller in the country may feel a flash of resentment on hearing a slur at country customs or country manners, even though he is thoroughly sophisticated and unprovincial.

We have also a great tendency to identify ourselves with people of importance who excite our admiration but whom we do not, in any ordinary sense, love. Such identifications usually correspond to a wish fulfillment. The inmate of an insane asylum who proudly informs us that he is Alexander the Great and conquered the world, or that he is Jesus Christ and saved it, is merely displaying an exaggerated form of the same kind of identification which enables us to find pleasure in such a statement as that our handwriting closely resembles ex-President Roosevelt's. Identifications of this sort which often lead to imitation have much to do with the rapid spread of fads or fashions when once adopted by the great or near-great.

An example of identification is as follows: I was treating a young man for homosexuality and during the course of one of the early visits he recalled that shortly after puberty there was a time when his feelings toward girls had been quite normal, but that his mother had so vigorously opposed all his interests in the opposite sex that after a year or more of struggle with her he finally gave in, and thereafter had only homosexual attachments. After having lived over again during this visit the bitter conflict he had had with his mother, which until he spoke of it on this occasion had for the most part faded from his mind, he remarked that he felt this discussion meant a great step toward recovery. He added that before he began the treatment he had had a feeling that we would suddenly come upon some discovery, whereupon he would all at once be well, and he now felt that the recollection of this warfare with his mother was that which he had been expecting. Upon my asking him what gave rise to this expectation, he replied that probably it was some case that he had read about but could not at the time recall.

Substitution.—Thus through compensation, which means quite as much libido directly against another object when it is obstructed by one object, we necessarily make use of substitutes. In other words, a strong desire is for some definite thing, unless it is for promiscuous muscular activity, and then kicking or running or swimming will satisfy. But it is a familiar human experience that when we want any specific thing it is possible to transfer that desire to some other thing. In this case we do not so much compensate as substitute. Generally a compensatory mechanism is a reaction in consciousness to an unconscious stimulus, while a substitution is the replacement of one thought or act in consciousness by another thought or act in consciousness. Furthermore, the term compensation is more extensive, that is, a long and complicated course of action may be called a compensation mechanism, while a single idea or mannerism of action—in other words, a small unit of activity is likely to be called a substitute formation.

Both compensations and substitutions are mediated through mere displacements of ideas. One idea displaces another in the mind and one idea is substituted for another idea as the goal-idea of a desire. This is not the same as saying that one idea follows another in the mind, each idea giving way before, and in that sense being displaced by, its successor. That would be a purely descriptive statement of what actually takes place in the mind because our stream of consciousness is never other than one idea following another. But a displacement or a substitution is an idea which takes the place of another idea in the mind at all times when that second idea, which we might call the original idea, would naturally (that is, if there were no repressions) appear in the mind. The original idea is a banished idea, not allowed to enter consciousness, and, as if it had a desire of its own to enter consciousness which it could satisfy vicariously, it sends its representative or proxy to act for it. Thus in displacement is implied an inability of the idea which is displaced to enter consciousness, together with its being unknown for what it really is and frequently there is implied a power of the displaced, covered, shrouded, masked idea to work, in the unconscious physical ill on the individual for whom it is a masked idea, due no doubt to the individual's consequent inability to adjust it to the remainder of his personality, which as he cannot see it, he is unable to do.

While one idea may be substituted for another as the goal-idea of a desire, the desire remains the same, not in content but in strength. Heine said that the French put as much energy into their pursuit of liberty as ardour into the affection for their chosen brides, while the Germans look upon liberty as they do upon their aged grandmothers. A man may devote his entire energy, which means his entire libido, to an abstract cause, or he may consume it in the love of a fair mistress. He may also, if the fair lady has rejected him and he finds no physical outlet for his excited emotions, spend them upon himself.

Displacement.—In identification and compensation we have seen a conscious thought displacing, or substituted for, an unconscious desire. Displacement is the generic term describing these substitutions of conscious thought and action for the natural instinctive unconscious thoughts which, though continuously pushing forward toward consciousness, are transformed in such a way that they are acceptable to the social conventions of conscious life. The thought and action of which we are conscious in ourselves and in others is invariably a displacement, a disguise under which the unconscious wish passes the censor and enters consciousness, a disguise without which it would be opposed. Only those thoughts and actions which are vigorously opposed as immoral when they enter consciousness, as they do occasionally as crime, heresy, etc., are the natural and undisguised unconscious wishes.

The classroom actions of the pupil are disguised or substituted actions in almost every case. And we are constantly requiring the pupil to make substitutions in his own action for the actions which his unconscious wishes would cause him to perform. In a sense, that is what school and education are for. But we reason that a superimposed substitution will have the same good result as a naturally developed one. Here is an instance:

It is quite true that a middle-aged man may sit gladly for hours (but not every man, at that) with a pen in his hand writing in a book and an almost infinitesimal proportion of men will write books which will have an influence on the acts of their fellow men. But to think that the influential words are caused by the sitting still is an evident fallacy, and yet that is exactly what we are doing in schools everywhere. The position in which we put the pupil is analogous to that of the middle-aged writer, before a desk and holding a pen, and the reasoning is exactly that of the savage who makes an image of his conception of a god and puts food before it. The savage thinks, "This image will eat this food and be pleased with me and grant me a favor exactly as I was pleased and did a favor for some one who set food before me."

We seem to have reasoned the same way. Just as good may come from a mature man sitting at a desk, so will good come from the immature man sitting at a desk. And this is a mental displacement (identification) just as erroneous, but just as dynamic psychologically because it has produced the present classroom requirements, as is the identification which the pupil makes of the teacher with the stern father or mother, or which the teacher makes of the pupil in identifying him with a previously experienced disorderly one. Similarly when a nervous woman comes to a physcian for treatment and one of the symptoms is an exaggerated solicitude for her moth or her children, we have another displacement. Like all unconscious displacements, it is the substitution of one idea for another. In the case of the nervous woman she replaced desire which was in her unconscious with its opposite anxiety in her conscious life, and by the strength of her solicitude she expressed the real depth of her unconscious desire that her mother should die. By the sternness with which we repress the movements of the child do we similarly express the depth of our unconscious desire to let him give full play to his instincts and develop them in a rational manner The exaggerated concern of a daughter for her mother's health or of a mother for that of her children has frequently been found to be a conscious overcompensation for the opposite wish in the unconscious. I think our present insistence upon uniformity and silence and motionlessness on the part of the school child is similarly an overcompensation for our real unconscious feeling that they need to move more than they do. And, of course, the thing works out in the opposite direction. The child overcompensates for his unconscious desire to neglect lessons by an occasional over-vigorous spurt of accomplishment.

It may be said that a noticeably strong conscious tendency in any direction is likely to indicate the presence of an opposite tendency in the unconscious, much as a convexity on one side of a thin metal plate corresponds to concavity on the other side. And in each case it is really the same force which produces the unevenness. Any unevenness in character, or idiosyncrasy or eccentricity is thus seen to here be the work of unconscious forces, the conscious form in which they are displayed almost invariably being a displacement of some sort.

Here we have reasoning by analogy carried out in a psychological and not a logical manner, and commit all the blunders which can be committed in so doing. Displacement is technically defined as the using of the wrong ideas with the wrong emotions, or vice versa, the psychical putting of things in the wrong place. When the displacement reaches an extreme, as it does in cases which psychiatry calls anxiety hysteria, the emotions which properly belong to certain ideas are taken away from those ideas entirely. The ideas are themselves repressed into the unconscious, but the emotions, which cannot be repressed, are attached to other ideas which in normal persons are not associated with such strong emotions.

If, for instance, a person is excessively afraid of snakes or of thunderstorms or of tunnels or of dogs or what not, and has a fear of them which other persons ridicule and which neither they nor the timorous person can account for, then they exemplify this displacement between idea and emotion. Similarly, any complete inability on the part of any pupil to master a given task may be caused by a similar displacement. The emotions which are engendered by the task are quite disproportionate to it. Therefore, they belong not to it but to some other idea which, if the teacher knows enough, may be discovered and the excessive emotion may be disengaged from the task in question.

I do not mean to say that there should be no emotion, no excitement, no liveliness in the schoolroom. All of these are necessary, on the part both of the pupil and of the teacher. In the pupils the emotions are properly expressed in activity which necessarily results in noise in the undraped room. I refer only to the type of emotion which is appropriate and which is seen in all school rooms where real honest effort is being made. There is no objection to frequent bursts of laughter, if they are the result of the pupils' perception of relations of the subject matter, and not mere deriding the unsuccessful efforts of some supposedly stupid pupil. Of course, it is unfortunate that we have not yet arrived at the state of civilization where the physical activities can be more gradually tapered off and the sublimation of physical into mental energy is not authoritatively demanded at once.

I know a high school, for instance, where the first experience of the incoming student is being required to sit two hours and a half in the assembly hall, where absolute silence and motionlessness is sternly demanded, and the unfortunate child who forgets and talks to his neighbor is required to take a seat on the platform and be eyed by a thousand children as an example. I know of no house of public entertainment where people gladly pay money for a seat, in which the performance of two and a half hours is not broken three or four times and the audience is given an opportunity to relax. But in our present school system, so powerfully are we dominated by the silence of the printed page that we act as if we supposed that directed thinking could be immediately produced by suppression of the physical expression of the undirected variety, all the motions of most children belong in this class.

In adult human life many of the most intensely interested persons are intense in certain directions by virtue of a displacement of over-compensation. Antivivisectionists frequently by their activity show an over-compensation for unconscious desire to inflict cruelty, the significant fact being that whether they were consciously or unconsciously cruel, they would be equally concerned psychically with the idea of cruelty, an idea which, to the ordinary person, has been outgrown with the other infantile attributes. Militant feminists, when women, are frequently giving expression by their excessive militancy to an unconscious wish not to rule and be the equals of men but to be ruled and dominated by a man. Lynching is another expression in consciousness of an unconscious desire for cruelty. Few members of a lynching party, if interrupted, would admit that they took pleasure in the sufferings of the lynched person. They rationalize their actions as being of social value, saying that they wish to deter others, to hasten the slow steps of justice, etc.

Thus we see one of the apparent inconsistencies of humans clearly accounted for. The person with an intense, because not seasonably outgrown desire, which is yet unconscious, to inflict cruelty on man or animals gets a reputation for an equally intense aversion to cruelty, to which, up to the present time, society has given its approval. It is quite evident here that consciousness and the unconscious are working together, but in an inconsistent manner. The unconscious desires cruelty, but is satisfied with the contemplation of cruelty and the effects of cruelty in and on other persons. It is quite evident, also, where the displacement comes in, and that it is the displacement which enables the conscious and the unconscious mental activities to get on the same track. Cruelty is what the mind is craving. In the case of the openly cruel man who becomes a criminal there occurs, too, and without displacement, a uniting of consciousness and the unconscious in one direction, thus avoiding a conflict, but it is a direction inimical to society nad society checks it in what manner it can at present by jailing or killing the cruel one. In the case of the person who is unconsciously craving to inflict cruelty, there is a displacement. The mind feasts on cruelty, but, in order to gain the approval of consciousness, and of society, so that it can go ahead full speed, it displaces the infliction of cruelty from self to some other person. In the case of some surgeons the displacement is of another character, for instead of the unconscious satisfaction being derived from the cruelty itself, the satisfaction is displaced (though not misplaced) to a satisfaction derived from the good results of the actions which cause pain.

Sublimation.—When the surgeon displaces the gratification derived from inflicting pain onto that derived from the results of the inflicting of the pain, which are of advantage to society, he is sublimating a trend of the unconscious. This trend, if left unsublimated and allowed to come directly into consciousness as it does in the murderer, let us say, is opposed to society and renders him an outcast. The thoughts which precede the crime also segregate him from true relations with society even before the crime is committed.

Thus sublimation is seen to lift an individual up out of the narrow limitations of his otherwise isolated self, and unite him with his fellows on a plane

higher than that on which he would be living in solitariness.

Diffuse Displacement.—A form of displacement called diffuse displacement does indeed occur very commonly in normal life and quite as commonly in the schoolroom. It is the tendency to find fault with everything. The cause of it is a defect in the adult-finder. This depends upon the principle that it is impossible to see in the external world what does not already exist in the mind. This principle applies with peculiar aptness to one's inability to criticise anything in another person, without having in his own conscious or unconscious mental life the same defect as that criticised. This principle, too, if fully realized by all people, would finally cut out all censorious criticism from the social relations of all people. If we fully believed and clearly saw that we could never find a fault in another which we did not have in ourselves, we would then keenly appreciate the fact that every time we found fault with anyone we were advertising the existence of that in ourselves too. While there are doubtless many apparent exceptions to this principle, I think it is undoubtedly true in the broad aspects of human character. The displacement is the acceptance of the one wish for the other and the ignorance that in the second wish form the original wish is to a certain extent satisfied.

Realization.—A man who smoked more tobacco that he thought he ought to began to cut down on his cigars on account of expense. He preferred cigars to tobacco in any other form, but smoked a pipe for economy, getting, however, a certain amount of real pleasure from it. Though still longing for cigars, which he used to buy by the box, and of the ten-cent qualty, he persistently, after his resolution, refrained from buying a box of them, knowing that he would smoke six a day, a waste of money which he could ill afford. He would buy two ten-cent cigars on his way home and smoke one after dinner, keeping the next for next day's dinner. Then he would see this cigar after breakfast the next morning, and would smoke it. Thereafter he would buy only one ten-cent cigar. Later he felt so virtuous about this economy that he thought if he denied himself two cigars a day he might as well have a moderately good one, and would buy a fifteen-cent cigar. Occasionally thereafter he would omit a day for some reason, either that he did not happen to pass the usual cigar store or that he was in a hurry and did not want to take time.

Once he was met at the train by his daughter, who walked home with him. They had an errand on the opposite side of the street from the cigar store. As they started to cross, she said to him: "Aren't you going to get your cigar?" He took this as an excuse, as he did everything that came along, and bought one at another store they passed, but compromised with himself and bought a ten-cent cigar instead of a fifteen-cent one. The next day when he was trying to pass the cigar store the thought came to him: "You had only a poor cigar last night. You might get a fifteen-cent one now to make up for it."

He had occasional headaches, which his conscience suggested to him came from too much smoking. But he also had a slight indigestion now and then, and his desire for cigars suggested that the headaches might just as well come from the indigestion and have nothing to do with tobacco, and so then he would buy and smoke a cigar. It then came into his mind that if there was any doubt about it he could prove it by quitting smoking for a time and see if he had any headaches. The idea that the tobacco might also cause the indigestion never occurred to him.

Finally he became disgusted with the reasons which he was habitually giving to himself for smoking, and saw that any reason whatever was reason enough to induce him to smoke, and that as a matter of fact one reason was just as good as another.

The rationalizations of the cigar smoker above mentioned were conscious ones. He knew that in a sense he was fooling himself all the time. But the majority of rationalizations are, in the case of most people, entirely unconscious. People do not know that the reasons they give for a statement or an opinion or an action are dictated to them by their own unconscious, and that their apparent cogency is attributable solely to their congruence with the desires of the people giving them as reasons. If we realize the fact that most reasons are mere rationalizations, we shall soon clearly see that in nine cases out of ten the reasons assigned by persons for doing anything are not the real causes why they do those things, but are indirect expressions of the unconscious wish. It is quite enlightening to realize that if you are unacquainted with your own unconscious, not a single reason you can possibly assign for anything you think, say, or do is the real cause of your thinking, saying, or doing it. The real cause is the unconscious wish of which you cannot possibly, without a thorough study of your own unconscious, be aware in the least degree. Only after a thorough analysis by an expert analyst can you trace any of your actions to their true cause. From this human tendency to rationalize every one of their acts emerges the fact that all people do what they want to and subsequently seek to align their actions with the principles of social living by assigning reasons for doing what they want to do. And from this it appears that whatever people are doing is what they want to do. This is the fact which is hardest to believe of all the facts recently discovered about the human soul.

511 East Eleventh Street.

INDUSTRIAL INJURIES AND FIRST AID.

A PLEA FOR THE IMMEDIATE TREATMENT OF THE INJURED.

By A. C. BURNHAM, M.D.,

NEW YORK.

It has been estimated that there is a shortage of more than 6,000,000 wage earners in the United States at the present time. This combined with the fact that since 1914 a large portion of the population have been either actually engaged in war or actively employed in the production of war supplies, has given rise to a state of under-production which is now in the acute stage. It is to be hoped that the peak of under-production and consequent high prices has been reached, but it is certain that the reconstruction process will be a slow one and normal production cannot be reached for several years.

What part is the physician to play in the process of readjustment? Medical men are not producers in the ordinary sense. They are chiefly consumers of what other people produce. However, they may help to increase production indirectly through their relation to the health of the rest of the community and therefore it lies in their power to play an important part in the economic readjustment, if they make proper use of the opportunities which are presented to them.

The necessity of effective medical care in the efficient functioning of the industrial machine is shown by a recent statistical report of the Pennsylvania Department of Labor and Industry for the year 1918. During that year in the State of Pennsylvania alone there was a total of 184,844 accidents, of which 3,403 were fatal. These figures representing the accidents for a single State indicate that for the United States the annual industrial casualties would far exceed the battle casualties of the recent war. The total accidents in Pennsylvania, including only those which represented a disability of two days or more, amounted to a labor loss of 2,767,471 days, and an annual wage loss of $10,286,872.

The number of accidents and the comparative figures for the industries chiefly concerned is shown by the following table:

ACCIDENTS IN THE STATE OF PENNSYLVANIA DURING 1918.

	Total	Metals and Metal Products	Mines and Quarries	Building and Contracting
All accidents	184,844	57,134	51,863	9,190
Fatal	3,403	557	1,266	221
Serious	53,783	15,091	15,327	3,069
Minor	127,658	41,468	35,290	5,900
Due to lack of safeguards	10,512	6,108	246	580
Days lost	2,767,471	759,517	811,657	147,357
Wages lost	$10,286,872	$3,164,629	$3,040,304	$601,136

It will be noted that the metals and metal products trade accounted for nearly a third of the total accidents and that "mines and quarries" were responsible for more than a third of all accidental deaths. Building and contracting which stood third on the list with 9,190 accidents showed a total wage loss of over six hundred thousand dollars. The smallest loss was shown by tobacco trades where there were 136 accidents with only one death. The public service, which is not a trade in the ordinary sense, showed a total of 32,625 accidents with 745 deaths.

From the viewpoint of the physician the nature of the injury is of considerable interest. According to the classification of the Pennsylvania Department of Labor and Industry the nature of the injury in all cases was as follows:

NATURE OF INJURY

PENNSYLVANIA STATISTICS 1918.

	All Accidents	Fatal Cases
Crushes and bruises	71,831	1,414
Cuts and lacerations	51,021	467
Fractures, sprains and dislocations	36,713	795
Burns and scalds	12,394	361
Blood poisoning	4,045	26
Punctures	4,997	22
Hernia	1,576	22
Unclassified	2,267	296

It is hardly necessary to say that by the proper use of safeguards a considerable portion of these accidents might be prevented. The official figures state that 10,512 accidents were "due to lack of safeguards" but it is probable that the actual number is even greater than this figure. There is a strong movement at the present time for the conservation of the human machine and there is, as a consequence, a steady increase in the use of safeguards on power machines, the use of which is causing a steady decrease in the number of preventable accidents. However this is not a problem for the physician but is a question to be settled by the safety engineer.

While the industrial surgeon may indicate the fact that certain machines are responsible for an abnormal percentage of accidents and should consider it as part of his duty to indicate the occurrence of such figures to the safety engineer, he is concerned chiefly with the care of the injury after it is received. It is therefore the immediate care of industrial accidents from the surgical standpoint which it is desired to emphasize in this paper.

It is widely established at the present time that the earlier an injury receives intelligent treatment the better are the chances of recovery and the shorter is the period of disability. This can be regarded as axiomatic and not open to discussion.

From the viewpoint of the physician the entire question resolves itself into a discussion of the value of the services of the volunteer assistant and the query whether or not the training of first aid assistants in factories, mines, schools, and other similar places is justified from a medical and economic standpoint.

Among physicians there are two views which are held generally: the first considers all attempts at volunteer first aid as meddlesome, apt to do as much harm as good, and holds to the belief that nothing at all should be done until the patient is seen by a physician; the second opinion is that simple first aid measures should be taught to volunteers and that immediate treatment should be given in every case.

The arguments in favor of what might be termed the "do-nothing" policy may be briefly indicated as follows: (*a*) In some cases the wrong treatment is given and harm is done. (*b*) The patient is given a false sense of security and consequently some cases requiring further treatment do not report to the surgeon. (*c*) It tends to increase home treatment. (*d*) There is little necessity of early treatment in most cases and time devoted to instruction in first aid is wasted.

The arguments in favor of first aid by volunteer assistants may be summed up as follows: (*a*) Occasionally (even if very rarely) a life is saved by early intelligent treatment. (*b*) The number of cases of infection is greatly diminished in factories where first aid is intelligently carried out. (*c*) If volunteer assistants are carefully trained errors in treatment are very rare. (*d*) Emphasis on first aid tends to emphasize dangers and thereby definitely decreases the total injuries in a given plant. (*e*) Time devoted to instruction is paid back in terms of diminished disability and labor turnover.

The American Red Cross, in its campaign for the extension of first aid as a peace time activity, is emphasizing the fact that instruction to be effective must be thorough, extending over a period of at least fifteen hours. Students are taught simple methods for the immediate treatment of

emergencies but they are taught that in every case the treatment is essentially an emergency treatment and is not intended to supplant the services of a physician.

In many industrial plants it is a fixed rule that every injury no matter how trivial must receive first aid treatment at once following which the patient reports to the company surgeon. It is reported that where this is carefully carried out there is a marked reduction of secondary infection and consequently a diminished disability rate due to accidents. The large number of injuries to the fingers indicates in part the proportion which would naturally be suitable for early first aid treatment.

PART INJURED
PENNSYLVANIA STATISTICS
ALL ACCIDENTS 1918.

Fingers	37,265
Trunk	31,176
Hands	20,515
Head and face	16,474
Eyes	11,727
Arms	10,379
Legs	19,288
Feet	27,595
Toes	10,425

In teaching first aid it is as important to emphasize what not to do as it is to give methods of treatment. First aid kits should be as simple as possible so that errors in the use of drugs or dressings may be reduced to a minimum.

The use of iodine as an application directly to a wound of the soft part is fairly well established as the best method of first aid treatment. It has the endorsement of a large number of surgeons of wide experience in industrial surgery. It is possible that there are other methods which are as good or better, but they are little known and they are absolutely unknown to most volunteer students of first aid. Iodine is widely used, its use is fairly well understood even by those of sligt general education, and its irritating qualities on the eye or other delicate tisues are generally appreciated. Its use is so simple that the method of application is easily remembered. From the scientific and practical aspect the use of iodine has been fully justified by the results obtained. It will certainly kill many of the surface bacteria and in some cases all of them.

From an extended experience in the treatment of emergency cases the writer has concluded that, from a practical standpoint, the iodine dressing is much superior to any of the other forms of first aid applications for abrasions and wounds.

In applying iodine the wound should be fairly dry and the iodine painted into every part of the wound and on the surrounding skin for an inch or more. A three per cent. tincture is used. This can be prepared fairly accurately by adding roughly an equal part of alcohol to the official tincture of iodine. In teaching first aid to volunteer assistants it is well to warn them that the alcohol evaporates so that the tincture tends to become stronger. This has been avoided in a certain type of first aid boxes by the use of individual iodine ampules, one of which must be broken for each treatment. Unfortunately they are rather expensive and tend to discourage the use of iodine for small abrasions and cuts, the treatment of which should always include the use of iodine even if the wounds are so insignificant that no dressing is required. In most cases it is better to have a small bottle of iodine in addition to the ampules. In inspecting first aid supplies the physician in charge should test the strength of old bottles of iodine by noting the color when a single coat is applied to the skin. If the color approaches a very dark brown the iodine is probably too strong. This is, of course, only a rough test but serves as a fairly satisfactory indication of the strength of the tincture.

Iodine should not be used in combination with other drugs as there are many combinations of iodine with other substances which are extremely irritating. The best known of these substances is mercury. If the skin is painted with tincture of iodine and then covered with a wet bichloride of mercury dressing a severe burn will result. The same is true of mercury ointment and other forms of mercurial applications.

In children, and occasionally in adults, even half strength tincture of iodine may cause blistering, but this is rare and does not counteract the distinct advantages of its use. In case severe burning is complained of after the use of iodine the excess should be removed with a swab dipped in alcohol.

In the case of burns the first aid treatment is less clearly indicated. Some surgeons still use carron oil which has the advantage of affording distinct relief from pain. Probably as good results are obtained from the use of boric acid ointment or even sterile petrolatum but the relief from pain is distinctly less. Some surgeons prefer picric acid either in weak solutions or in the form of picric acid gauze.

When the surgeon can be reached within a few minutes it is perhaps better to have no dressing at all applied to the burned area by the volunteer first aid assistant, or at most only a dry dressing of sterile gauze. The application of ambrine or other similar substance is too complicated for first aid use.

The use of the tourniquet by first aid workers must be carefully supervised. Too often the tourniquet is incorrectly applied so that only the venous flow is blocked while the arterial flow is unhindered. The result is that the tourniquet increases the bleeding rather than diminishes it. In teaching first aid emphasis should be placed upon the dangers of the tourniquet if wrongly applied and the fact that it should be used only by those who fully understand the method of application. The use of the tourniquet with a pressure pad over the artery has been practically abandoned because it was found that it was seldom, if ever, correctly applied by the first aid assistant.

First aid for fractures should be limited largely to measures for the prevention of further injury. Elaborate splints and plaster work have no place in first aid training. Simple splinting such as was taught to the Sanitary Troops is of considerable use, for in many cases the patient must be transported a considerable distance before a physician can be seen. Emphasis should be placed upon the dangers of constriction of the part and especial efforts made to present in a logical manner the mechanics of the treatment of a few or more common fractures.

As a rule factory employees are interested in

emergency treatment, and it is believed that it is within the power of physicians to stimulate this interest to a considerable extent. Cooperation of employer, employee, and physician should make for decreased disability which in turn would mean a diminished labor turnover and decreased wage loss.

Industrial managers must be taught, and the teaching must be done largely by physicians, that the health of the employee is one of the indispensable factors in the life of the community and that every effort must be made for its preservation. The development of safety and that of first aid go hand in hand and are both of extreme importance during the present period of labor shortage and underproduction.

IMMUNITY TO TUBERCULOSIS AMONG WORKERS IN SULPHUR DIOXIDE.

By F. TWEDDELL, M.D.,

GREAT NECK, N. Y.

HAVING used sulphur dioxide with good results in the treatment of pulmonary and laryngeal tuberculosis for the past four years,* I thought it might be of interest to know if men who were exposed to this gas in industries where it is used were benefited or harmed thereby. I was particularly anxious to obtain these data, because so many physicians consider sulphur dioxide injurious to the tissues of the lungs.

I therefore obtained a list of nine chemical companies using sulphur dioxide, chiefly in the dyestuff industry. Later I obtained the names of eighteen of the largest storage battery companies which use sulphuric acid in their charging plants. The action of sulphuric acid fumes is essentially the same as sulphur dioxide, for when sulphur dioxide comes in contact with water or the moist mucous membranes of the larynx or the lungs, it forms sulphurous acid (H_2SO_3) which is very unstable and has a great affinity for oxygen, ultimately forming sulphuric acid (H_2SO_4).

Through the U. S. Geological Survey Department I received a list of twenty-two of the largest manufacturers of sulphur dioxide and sulphuric acid. Circulars were sent to all of these forty-nine companies asking for the number of men employed, who were habitually exposed to sulphur dioxide or the fumes of sulphuric acid, and for the number of cases of tuberculosis noted.

Five companies did not reply. Six companies could give no data. Of the thirty-eight companies which answered the circular, thirty-one never had a case of tuberculosis among their men. Nine companies omitted to mention the number of men employed, but gave data in regard to tuberculosis.

The remaining twenty-nine companies employed 11,085 men, of whom 7707 men were habitually exposed to sulphur dioxide or sulphuric acid, and 3378 men were not constantly exposed. Fourteen companies reported being in existence for an average period of over twelve years each. Only twenty-two cases of tuberculosis were noted, that is to say during the entire period of existence of all these thirty-eight concerns.

* See former paper: Experiments with a new and most efficient remedy for pulmonary and laryngeal tuberculosis, MEDICAL RECORD, Dec. 21, 1918.

An analysis of these twenty-two cases shows:

Seven were suffering from tuberculosis at the time that they were engaged; of these, two died and two got perfectly well.

Two were suspected of tuberculosis when first engaged.

Five cases followed the epidemic of influenza.

One case followed injury and amputation of leg (now improving).

One case contracted tuberculosis ("a colored man of rather careless habits and inclined to dissipate"). He died.

Six cases reported, but it is not stated when contracted. One company picked out three of these men during the course of two years among a total of 3378 men, who were not habitually exposed to sulphur dioxide.

Omitting the seven cases who were tuberculous before employment, the two suspected cases, and the five cases following epidemic influenza, we have only eight remaining cases to account for.

Eight cases among 11,085 men during an average period of over twelve years is a negligible quantity, about one case in 16,627 men per annum.

The comments and observations of some of the managers of plants are instructive:

One manager[1] reports: "The writer had several years experience in England in similar work, and it was the common opinion amongst the men that those working with sulphur dioxide were not only more free from tuberculosis troubles, but also from ordinary coughs and colds. Of course this was only the men's idea and was not scientifically checked up as far as we know."

Another manager[2] says: "The writer has been connected with the heavy chemical industry for the last twenty years, most of the time associated with industries manufacturing sulphur dioxide. The general health of the men operating around sulphur dioxide was always very good, and we had men who had worked in sulphur dioxide as much as forty years. We never considered sulphur dioxide a bad gas to be associated with. During the entire period I do not recall having seen or heard of any of our men being affected with tuberculosis. Two men were connected with the plant for over fifteen years; both were fat and robust.

"There is rather an interesting condition that we observed during the winter (1919-20), when men from all other departments were home sick with influenza, there was not a man in this department who was so affected. Frequently fumes of sulphur dioxide are very strong in this department, but thus far none of our men have ever suffered any inconvenience (ill effects) from same.

"It may be of interest to you, that in a certain sulphuric acid plant, in which the chamber process was used, birds and pigeons nested in the tops of some of these plants in which there was considerable sulphur dioxide, but it seemed to cause them no inconvenience."

Another manager[3] states: "Workers in this division (storage battery acid department) did not suffer from influenza nor any pulmonary disorders."

Another manager[4] writes: "We find that after a man works in our acid department for any length of time, he begins to take on weight, one man in particular gained fifteen pounds in two years."

Another[5] states: "Whether it is a superstition or an actuality, the fact remains that our employes have the idea that the acid fumes do them no harm, but on the contrary have a tendency to act as a preventative of lung troubles. We do not know whether there is any basis for this conclusion or not, but we do know that to our knowledge there has never been anyone in our employ to whom exposure to acid fumes has resulted deleteriously."

Another manager[6] states: "We understand from outside sources that sulphuric acid fumes will cure tuberculosis."

Another manager[7] states: "Our superintendent reports that as far as his observation has gone, lung trouble of any sort is almost unknown among smelter and acid men."

Another manager[8] states: "In fact, I have always understood that men employed in the fertilizer industry are particularly free from this disease (tuberculosis)."

Another manager[9] states: "To date we have no record of ever having had a case of tuberculosis. Our investigation, however, reveals the fact that our oldest sulphuric acid employee, in all his experience with sulphuric acid operations, had seen but one man suffering with tuberculosis, and this man while working around the acid appeared to show improvement. In general, our experience would seem to indicate that sulphuric acid fumes are in no way detrimental to the health of persons suffering from tuberculosis."

Another manager[10] states: "A friend of mine was sent to a sanatorium for the treatment of tuberculosis, and upon his return was told by his doctor not to seek employment in an acid plant or fertilizer factory. He did not obey the doctor's orders, and took up the fertilizer and acid work. To-day he is one of the most healthy looking specimens of humanity I have ever seen."

Another manager[11] states: "The writer's experience in the chemical industry during the last sixteen years has led him to a very definite conclusion that sulphur dioxide does give workmen who are exposed to it continuously practically complete immunity to tuberculosis. The concentration to which men are exposed is usually somewhere between two and eight parts per million; and gas at this concentration has no destructive action on tissue, but seems rather to have a distinct bactericidal action, such action being the underlying cause for the immunity of the men to tuberculosis.

"In this general connection it is usually assumed in the chemical industry that chlorine is a beneficent agent, inasmuch as men exposed to its fumes do not contract any of the forms of influenza, and in fact the general run of zymotic diseases. The writer had some experience in a chlorine factory, which led him to the conclusion that while chlorine did give immunity in certain cases, it did not provide immunity against tuberculosis, as several workers in the chlorine department were affected with tuberculosis.

"Since I wrote you I have made inquiries of other acid manufacturers, and while no accurate records have been kept, it seems to be an accepted fact that none of the acid makers in this vicinity has any recollection of any of the men engaged in sulphuric acid manufacture contracting tuberculosis."

Another manager[12] states: "My personal experience leads me to the belief that sulphur dioxide, if not a curative, certainly acts as a preventative in tuberculosis. I recall especially the case of an elderly man, whom I employed as a burner man in 1887-88. This party was by trade a miller and had been running a country mill practically all his life. He gave up this work on the advice of his physician, and when I employed him, his lungs were undoubtedly affected. I employed him as a burner man, when he was exposed daily to a certain amount of sulphur fumes, and in the course of a few years he became entirely well. Later on I lost track of him, but I happened to know that he lived until a few years ago, and his death was not caused by tuberculosis. On the other hand, in an experience extending over about 34 years, I cannot recall a single case where a man employed around sulphuric acid works either contracted tuberculosis or died from that cause. I do not think that sulphuric acid has any effect one way or the other, but am decidedly of the opinion that sulphur dioxide certainly seems to act as a preventative."

A medical director states that he was formerly in a locality for two or three years, where a large quantity of sulphuric acid was made, and never heard of a case of tuberculosis there. One foreman who was employed for twelve years in this plant "has been almost entirely free from ordinary colds, and as soon as the workers become accustomed to the fumes they seem unusually free from colds or bronchial conditions."

Of the 22 cases of tuberculosis reported, three especially interested me. All three were chronic cases: A medical director reports that a tuberculous worker had shown no change in his condition for several years. Another physician reports that a tuberculous worker in the plant had been under observation for ten years (apparently unimproved). The third case was reported by the manager of a plant. A tuberculous worker was employed for four years in the plant, and died of tuberculosis three years after leaving the company.

There was apparently no improvement in the above cases. It is my opinion that these men were suffering from fibroid phthisis. I wish especially to emphasize this, for in my experience I have noted that patients with this form of phthisis show no improvement under treatment with sulphur dioxide. And from these observations I claim that the tubercle bacillus of fibroid phthisis is of a different type, analogous to the different types of pneumococci.

Summary.—1. The percentage of cases of tuberculosis among workers around sulphur dioxide and sulphuric acid is negligible.

2. Sulphur dioxide and the fumes of sulphuric acid appear to act as preventatives of tuberculosis, and possibly as a cure in incipient cases, with the exception perhaps of fibroid phthisis.

3. I am continuing investigations along these lines and would welcome additional data from any source. The data already collected cannot be ignored.

LIST OF COMPANIES WHOSE REPORTS ARE QUOTED.

1. Amalgamated Dyestuff & Chemical Co., Newark, N. J.

2. Rohm & Haas Co., Bristol, Pa.
3. Vesta Accumulator Co., Chicago, Ill.
4. Cincinnati Storage Battery Co., Cincinnati, O.
5. Victor Storage Battery Co., Rock Island, Ill.
6. The Wolke Lead Batteries Co., Louisville, Ky.
7. The Mountain Copper Co., San Francisco, Cal.
8. The American Agricultural Chemical Co., New York.
9. Butterworth-Judson Corp., New York.
10. Garfield Chemical & Mfg. Corp., Garfield, Utah.
11. Davison Chemical Co., Baltimore, Md.
12. Virginia-Carolina Chemical Co., Richmond, Va.

DIAGNOSIS OF CANCER OF THE RECTUM.

By CHARLES J. DRUECK, M.D.,

CHICAGO, ILL.

PROFESSOR OF RECTAL DISEASES POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL, RECTAL SURGEON TO PEOPLES HOSPITAL.

CANCER of the rectum may be confused with a number of other conditions, benign, inflammatory, and traumatic, occurring either within the rectum or in the pelvic structures.

Epithelioma at the anus may be mistaken for fissure, condyloma, tuberculous deposits, actinomycosis, or an ulcerated hemorrhoid.

A malignant tumor is to be suspected within the bowel in any adult when a bloody diarrhea exists that cannot be accounted for by parasites or bacteria. Digital examination is sufficient only if the tumor is low down (within 4 inches from the anus). Ten inches may be inspected through the proctoscope and even a greater length may be examined with a bimanual examination. Benign tumors as a class are soft, have pedicles, project into the lumen of the bowel, are movable, and do not invade surrounding tissues; while the malignant growths are more or less solid or hard, and spread out between the mucous and muscular coats of the rectum in such a way that they invade several square inches of the bowel and yet project very little if at all into the rectum. All growths with a broad infiltrating base are to be considered malignant. Where secondary growths in other organs produce symptoms before intestinal obstruction occurs the local symptoms may be obscured and the diagnosis clouded.

Scirrhus cancer if seen early presents through the proctoscope a stiffening induration on one side which closely resembles fibrous stricture, but the history of the trouble will differentiate the two. Carcinoma begins insiduously, whereas inflammatory stricture follows trauma, ulceration, or suppuration. Later, when obstruction begins, there occur colicky pains in the stomach or small intestine and occasionally sharp cutting pain in the region of the growth. Intense peristalsis above the mass produces intussusception. The location of the trouble is of much significance because fibrous stricture occurs usually in the rectum and rarely in the sigmoid, whereas, scirrhus cancer is uncommon in the rectum but is generally found in the sigmoid.

Medullary cancer presents a very different pathological and clinical picture. Constipation may not be noted, but in its stead a teasing tenesmus with a passage of flatus, mucus, and perhaps blood. Although the sufferer may defecate twenty times during the morning there is always a feeling of something left in the rectum. This diarrhea is most urgent in the morning and is spoken of as a morning diarrhea. The first passage in the morning is mostly mucus, pus, and blood, a little later there is a good fecal evacuation, but during the rest of the day the evacuations are gas and mucus accompanied with much teasing tenesmus. Hemorrhage is variable. Through the proctoscope is seen a red berry-like mass projecting from the side of the gut, with a pale areola of mucous membrane about it.

Encephaloid cancers break down and ulcerate early. At first the normal mucous membrane is movable over the growth, but it soon ulcerates; this degeneraton may occur at one or several places simultaneously and the mucous membrane is honeycombed with ulcerating spots through some of which the cancerous growth may protrude. Ulceration begins at the central or denser parts of the cancer and is not limited to the superimposed mucous membrane but invades the deeper structures and in some cases extends into surrounding tissues. While the periphery is advancing into new tissues the center is undergoing degeneration. Around the edges the new growth, together with the inflammatory reaction, raises the border and gives the ulcer a crater-like appearance. The muscular tissue seems to have greater resisting power and prevents somewhat the extension of the ulcerative process. The extension, however, progresses irregularly and creates a ragged edge. If the tumor is high in the sigmoid or in the colon the diarrhea may be so annoying as to make the proctoscopic examination unsatisfactory without first thoroughly irrigating the bowel.

The encephaloid cancer may be mistaken for the benign adenoma and papilloma which occur quite frequently and are important because they are sometimes very difficult to diagnose, and so frequently carcinomatous changes occur in the benign tumor if it is left or a cancer recurs when the apparently benign tumor has been removed. Benign growths are usually attached by pedicles, but if they have broad bases they are never indurated. Inasmuch as these tumors are so liable to contain malignant cells or to develop malignancy later, I never place much credence in laboratory findings of bits removed from the tumors, because part of the tumor may be benign and another part may be malignant. Benign fibrous stricture due to nonspecific ulceration, and when following long after some previous rectal trouble is most difficult to differentiate. It is smooth and regular in contrast with the irregular, nodular, and rough appearance of cancer. Of course, the history of the case is entirely different, as the traumatic stricture produces no symptoms other than obstruction.

The congenital stricture is frequently unobserved until the affected child eats solid food and the stools are formed, but it is almost always recognized before puberty. The symptoms are those of obstruction in an otherwise healthy child, and of long standing, whereas carcinoma does not occur until adult life.

Syphilitic lesions in the rectum may be mistaken for cancer, particularly the encephaloid cancer. Chancres are very rare above the anorectal line. Mucous patches occur about the same time as the macular eruption on the skin. Both these lesions have a tendency in ulcerating to follow the blood vessels and lymphatics, so that the ulcer spreads

upward rather than laterally. There is considerable discharge having the peculiar chancre smell. It is very different from that of carcinoma.

Gumma begins in the connective tissues and if seen early the mucous membrane is free above the tumor, which is round and elastic, and may be as large as an orange. Later it undergoes fatty degeneration and ulceration and the cicatrix may cause stricture.

In the proliferating proctitis, fragile villous teats hang from the mucous membrane. There is an abundant discharge of mucopus. The granulating mass is soft and its base is limited to the mucous membrane, but does not infiltrate below. The growth spreads all over the rectum and is not limited to one part.

Syphilitic stricture in the lower rectum can hardly be mistaken for cancer because the history is much more chronic, the infiltration is more diffuse and lacks the hard, nodular, feel of carcinoma, the ulcers are more shallow and have smooth edges, and finally the history of syphilis can usually be elicited. In any suspected syphilitic lesion the spirochete should be sought.

Acute and chronic colitis accompanied with hemorrhage and loss of weight and the usual spasm of the bowel may simulate cancer, but the bosselated inflamed mucous membrane covered with blood, mucus, and pus as seen through the sigmoidscope will clear up the diagnosis.

Tuberculosis is more difficult to differentiate, especially if involving the anus, but there is usually evidence of tuberculosis in other parts of the body. It rarely causes obstruction, as the infiltrating deposit ulcerates early and the ulcers are shallow with undermined edges. The tumor is small and is due to inflammatory exudates and the involving of the glands. Microscopically, tuberculous inflammation and bacilli may be found.

Actinomycosis of the bowel must be thought of, although 60 per cent. of the cases of actinomycosis are confined to the neighborhood of the appendix and cecum and may closely simulate appendicitis (Lynch: Disease of the Rectum and Colon).

Among the less common conditions, which, however, must occasionally be differentiated are traumatic stricture, which is felt as a dense, sharp, constricting ring and presents no symptoms other than those due to obstruction; chronic appendicitis, especially if the mass is located on the right side, which an opening for operation will decide; fecal impaction which lacks the infiltration and really has only the one symptom of obstruction, and finally extrarectal growth and inflammation which occlude the lumen of the bowel by pressure or involve the coats of the tube by extension. Cancerous growth of the sigmoid may be palpated through the abdomen often before it produces obstruction. Carcinoma may be mistaken by its symptoms for chronic dysentery, because of pain, tenesmus, and bloody and mucous stools, but careful digital and sigmoidoscopic examination with the assistance of the fluoroscope's screen or *x*-ray picture will clear up the condition.

Hypernephroma or prolapsed kidney may simulate a tumor of the bowel, but will be differentiated by finding blood in the urine and later by ureteral catheterization. The tumor in hypernephroma is behind the bowel thus affording a tympanic instead of a dull percussion note. The symptoms come on slowly with lumbar pain radiating to the abdomen and down the thigh.

Diverticulitis occurs in the sigmoid and may be mistaken for cancer. It usually produces a large tumor which can be palpated through the abdominal wall. Cancer, until late, does not present adhesions. Diverticulitis produces a tumor that clinically very much resembles cancer, but it occurs early. When the abdomen is opened, if a large tumor mass is found adherent, as is commonly the case in diverticulitis, it is quite probable the condition is not cancer, because cancer of the large bowel does not become adherent until late in the disease. The adhesions are due to infection. They cause obstruction and they do not require removal. Just passing around them with a lateral anastomosis does as well as the more severe operation of radical removals.

In any of these cases where the diagnosis is doubtful and an exploratory laparotomy is made, the incision should be made as for colostomy, so that if removal of the tumor is unwarranted, an artificial anus may be made at once.

Don'ts.—Don't attach undue importance to a patient's history of "piles," "indigestion," or "constipation," but insist upon a rectal examination in every instance.

Don't assume that the passage of bloody or slimy stools is due to dysentery. There may be cancer.

Don't assume that bleeding from the rectum points to piles. It may be due to cancer.

30 North Michigan Avenue.

QUININE IN THE TREATMENT OF HEMOPTYSIS.*

By JOSEPH E. STROBEL, M.D.,

HARTFORD, CONN.

Hemoptysis or bloodspitting is frequently the first symptom to call the attention of a person to the fact that he is in urgent need of medical care. In varying instances it has been passed by lightly and looked upon as a throat or stomach hemorrhage, when to the average physician it is almost pathognomic of pulmonary tuberculosis. These hemorrhages have a large degree of variance in amount, ranging from a streak to 1,000 cc. or more. The duration also varies greatly from a few minutes to days.

As to the cause of this fear-begetting symptom, many theories have been put forth. Some of them are over-exertion, ulceration of the wall of a blood vessel, loss of tissue which formerly supported the blood vessel wall, high blood pressure, mixed infection, and changes in the barometric pressure.

In looking over the literature at my command on the subject, I find quite a difference of opinion regarding the treatment of this complication. Some say there is little we can do, others that it matters not very much what we do, as a patient seldom dies from the immediate effect of hemorrhage, but on the other hand usually recovers. Among the great number of drugs recommended in the treatment of

*Read before the Hartford County Medical Society.

this symptom are morphine, ergot, alum, adrenalin, magnesium sulphate, blood serum, digitalis, salt, gelatin, and the nitrates.

Going back to the causes of this symptom, we can say that the first, over-exertion, can be practically ruled out, as all of the hemorrhages that have come under my observation have occurred in patients who have been resting or who have been in bed. Again a patient often comes with a story that some time ago he coughed up some blood and either continued at his work or returned to it in a day or two without any recurrence. High blood pressure can also be discounted very highly, as it was found at the Meriden Sanatorium that the blood pressure was low in some 15,000 or 20,000 readings and that immediately after the hemorrhage, even if it were a large one, the pressure would rise in some instances as much as fifty mm. Hg. In view of this we might say that a high blood pressure is the result and not the cause of hemorrhage from the lung.

Before the following experiment was carried out, we frequently had the disagreeable experience of group hemorrhage, or in other words, an epidemic of blood spitters. There would be as many as four or five patients all bleeding at the same time, and not infrequently a like number of patients in another building would be suffering in the same manner. In a great number of instances the result of this would be a spread of the disease into new tissue or a lighting up of a heretofore quiescent area or a remote pneumonia.

Assuming that the theory of mixed infection was correct I undertook to prove it and if possible to devise some method of procedure whereby this complication could not only be promptly cleared up but prevented. Fifty-four healthy full-grown rabbits were used. Into each one was injected subcutaneously ½ cc. of fresh bloody sputum from as many different patients and during different seasons of the year. The result was that fifty-one developed a lobar pneumonia and a pneumococcic septicemia, two developed a localized tuberculous abscess, and one an abdominal abscess from which a pure culture of streptothrix was obtained. Five of the fifty-one rabbits were controlled by a rabbit of similar weight receiving a similar inoculation but to which had been given fifteen minutes previously one grain of quinine sulphate intravenously. These controls were killed after two to three months, presenting all organs and blood free from tubercles and diplococcic pneumonia.

As a result of these findings our treatment of this condition has been changed accordingly. Patients coming to the sanatorium with history of hemorrhage or blood spitting, especially of recent occurrence, are given quinine every four hours in five-grain doses for one week. The symptom seldom recurs. Resident patients whose sputum is blood-streaked are given the same treatment. Patients who have hemorrhage are given the same dose but at shorter intervals. Nothing else is done so far as drugs are concerned. The patient is placed on liquid diet, kept in bed, and if it is comforting an ice cap is placed on the chest. Our results have been quite favorable. Hemorrhage has become a rare occurrence. When a hemorrhage does occur it clears up promptly and with little or no bad after-effect upon the patient.

19 Wethersfield Avenue.

Medicolegal Notes.

Practicing Without License—Sufficiency of Indictment.—The Minnesota Supreme Court holds that an indictment charging that, at a certain time and place, the person named therein did unlawfully practice medicine, and for a fee prescribe, direct, and recommend certain drugs and medicine for use and medicinal treatment of a certain named person without a license so to do, states an offense under the Minnesota statute of 1913. It is not necessary, under this statute, that the indictment negative the exceptions in the statute; such exceptions not appearing in the enacting clause of the act.—State v. Bohls, Minnesota Supreme Court, 175 N. W. 915.

Admission of Negligence Admissible in Evidence.—The Minnesota Supreme Court holds that in an action against a physician for negligence in treating the plaintiff's intestate, wherein the complaint fairly construed charged negligence in failing to ascertain his ailment, the defendant's statement after the patient's death, and in response to his mother's charge of incompetent treatment that he knew the patient had been treated wrong, and that he could be punished, was in the nature of an admission against interest relevant to the issue, and, in connection with other evidence therein, should have been submitted to the jury.—Thorkeldson v. Nicholson, Minnesota Supreme Court, 175 N. W. 1008.

Ruptured Aorta Due to Accident.—Where a workman operating a windlass has a hemorrhage from a ruptured aorta and dies, there being no direct evidence of extraordinary exertion suddenly displayed, it is held that his death is due to an "accident" within the Illinois Workmen's Compensation Act. The words "accident" and "accidental injury" within that act were meant to include every injury suffered in the course of employment for which there was an existing right of action at the time the act was passed; also to extend the liability of the employer to make compensation for injuries for which he was not previously liable and to limit such compensation. If an injury can be traceable to a definite time, place, and cause and the injury occurs in the course of the employment, it is accidental within the meaning of the act.—E. Baggot Co. v. Industrial Commission, Illinois Supreme Court, 125 N. E. 254.

Unlawful Practice of Medicine.—One who maintained offices where he treated any and all persons who might apply to him, for various and sundry disorders and diseases, for compensation, without having registered with the district clerk of the county, as required by the Texas Penal Code 1916, chapter 6, was held to be unlawfully practicing medicine, regardless of whether such person claimed to be a physician or a practitioner of medicine.—Black v. State, Texas Criminal Appeals, 216 S. W. 181.

Patient's Privilege as to Physician's Testimony.—It is held to be improper for the physicians who treated an injured person to accept employment as medical experts for the defendant in an action brought for the injuries by their former patient. It is also held that the fact that such injured person, being incapable of volition in the choice of a physician, is taken to a hospital where he is treated as a free patient, does not deprive him of his privilege, under the New York statute, to have the testimony of physicians concerning information acquired in a professional capacity excluded.—Bauch v. Schultz, 109 Misc. (N. Y.) 548, 180 N. Y. Supp. 188.

Hospital Records as Evidence.—Clinical reports of a hospital were introduced in evidence without the person who made the entries being called as a witness. The senior surgeon, who signed them, testified that some of the facts stated in the reports were within his personal knowledge and others were not, and stated that "clinical records are not infallible by a long ways; they are frequently wrong, I will say." It was held that the trial judge did not err in instructing: "As to these hospital records, they have been received in evidence in this case. Their probative effect, that is, how much of them you believe, or how much of them you disbelieve, is left solely as a question for your determination."—Wilson v. Detroit United Ry., Michigan Supreme Court, 175 N. W. 172.

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MANNER OF PRODUCTION OF OCULAR CONTUSIONS.

SEVERAL theories exist for explaining the lesion of commotion of the retina, but they do not apply to ocular contusion in general since the latter is really only a commotion of great amplitude produced by a greater physical force. Arit was the first to offer a theory of ocular contusion which was later accepted by Berlin and then modified and in that form maintained by Baeck. According to this theory the trauma produces a displacement of the ocular globe and a shock against the orbital contents on the side opposite the point of application of the force. At this point the wall of the globe is indented and then assumes its former position. An instantaneous compression of the choroid results and a vascular paralysis follows with a transudate of albumin from the blood into the retroretinal space with edema of the retina. The hemorrhage in the fundus oculi may be explained by this same theory: the globe is forced against the rigid optic nerve surrounded by its sheath which causes minute ruptures of the ocular membranes and vessels in the peripapillary region, hence the various hemorrhages in the fundus. This theory also explains the localization of traumatic hemorrhages, especially those taking place in the posterior pole of the eye.

The German school, headed by Denig and Lohmann, offered another theory of the pathogenesis of ocular contusion. The ocular shell becomes depressed at the point at which the traumatic force acts, resulting in a sudden hypertension of the vitreous with a contrecoup on the opposite pole of the eye. As thus presented, this theory is untenable, because the shock is not transmitted in a single direction by the liquid, but in all directions, and it can be rightly questioned why the posterior pole is alone involved. To overcome this objection the Germans maintain that, since the intraocular fluid does not vary, the envelopes of the eye are submitted to a sudden traction in an opposite direction in those portions near the point of the contusion. This traction is of necessity transmitted progressively to distant parts up to a diametrically opposite point where two equal inverse forces meet, and it is at this point that the ocular membranes are subjected to the greatest tension so that their dissociated elements offer a point of lesser resistance to compression by the vitreous suddenly hyperdistended. The compression results in vascular paralysis with an exudate and edema of the retina.

It is evident that this description of tissue tension is entirely theoretical because in reality, it is modified on account of the insertion of the envelopes of the globe to the papilla. Therefore, the maximum traction is often in the region of the papilla independently of the point of application of the trauma. If the macula is submitted to the greatest tension it will be the structure most involved, and this explains those cases of contusion with a marked decrease of central vision. This differs from Berlin's theory in that the Germans replace external compression by the contents of the orbit, by internal compression exercised by the vitreous on tissues previously weakened.

A third theory endeavors to explain more particularly the peripapillary ruptures of the choroid and the macular changes—two phenomena which are similarly produced. The eyeball is rotated by the trauma while the intraocular tension is not increased to any great extent. Immediately after, the rotation is arrested by the optic nerve so that the globe turns back in an inverse direction. As a result of this sudden movement rupture of the choroid ensues at the point of election, between the papilla and macula, where the choroid is attached to the scleral ring, on the more resistant and elastic portion of the choroid. This torsion produces the immediate changes occurring in the macula, quite independently of the blow and contrecoup which produce the edema of the retina. This explanation shows why the persisting traumatic changes occupy the central area of the fundus oculi so exclusively and it may possibly explain certain instances of post-traumatic atrophy of the optic nerve. Pechin assumes that the changes arising in the optic nerve are due to its elongation, the result of a traumatic luxation of the globe.

All these theories have their weak points because none of them is applicable to every case. The conditions under which the contusion occurs are so variable—the force of the trauma, its direction, its point of application, and its duration, that a single theory cannot possibly apply to each and every case. Possibly all of them are applicable in different cases.

ETIOLOGY AND SYMPTOMATOLOGY OF ARTERIOSCLEROSIS.

So far as the etiology of arteriosclerosis is concerned it is difficult to explain accurately the many causes that lead to this condition. Arteriosclerosis is really another term for the process of aging. In arteriosclerosis, the vascular system—the arterial portion of it in particular, as well as some other tissue cells are wearing out. While there are some factors which certainly and others which possibly hasten the aging process, in the majority of instances nothing is known of the exact manner in

which this is done. Dr. George William Norris writing on the subject in the *American Journal of the Medical Sciences* for July, 1920, says that among the factors which play an active part are (1) The wear and tear of life. (2) Infectious processes. (3) Intoxications. (4) Mechanical strain. As to the influence of heredity, it is obvious that while we know that heredity exerts a dominant influence in tending to long life it is quite as impossible to explain this influence as it is to explain the variations in growth and longevity in various species of animals. Why do some persons enjoy or rather have so great tenacity of life that they will undergo hardships, vicissitudes, physical strain, infectious disease, exogenous intoxications, and severe trauma, while others have so little vitality that they are incapable of withstanding rough usage of any kind?

After passing in review infectious diseases, intoxications and mechanical factors Norris considers those chemical factors, the internal secretions and protein metabolism, errors in which are regarded by some as the fons et origo of all human physical ills. While it is likely that arterial hypertension and vascular disease may result from disturbance of the internal secretions, it must be borne in mind that in the state of existing knowledge with regard to these secretory glands nothing very definite can be said. However, of all the secretory glands most is known concerning the thyroid gland and it is well established that the secretion of this gland exerts a marked influence upon the circulation, greatly increasing the work of the heart and the rate of blood flow and dilating the peripheral vessels. Sajous has suggested that an excessive protein diet acts through its effect upon the thyroid gland and has pointed out that many of the results of overeating resemble the symptoms of hyperthyroidism. There also appears to be an interrelation between the ovaries and other glands of internal secretion. Arterial hypertension is often first manifested at the time of the menopause. But as Norris remarks, these and many other thoughts along this line are suggestive and interesting, but largely speculative and not explanatory of the basic cause of arteriosclerosis. If endocrinology fails to solve the problem of arteriosclerosis, does another branch of chemistry, metabolic chemistry, promise more fruitful results? From the laboratory standpoint the answer is no, but clinically it seems established that overindulgence in food, especially protein food, has bad results.

As to the symptoms of arteriosclerosis they are almost too numerous to mention and, as Norris states, it is well to be sceptical regarding what appear to be purely functional derangements without demonstrable cause in individuals past middle life. Arteriosclerosis is a general disease, that is to say the chemical changes which cause vascular disease affect other tissue cells directly, just as they do the arterial walls, and therefore there is or should be a "presclerotic" stage. As in most pathological conditions the earliest stage is often impossible of recognition. Norris deprecates the use interchangeably of the terms arteriosclerosis and hypertension. The two conditions are often simultaneously present and prolonged hypertension frequently leads to arteriosclerosis, but that the reverse is true appears more than doubtful. In conclusion, Norris thinks that clinical arteriosclerosis may simply be an involutional process, a part and parcel of aging; or it may be mechanical or toxic in origin. Just how this involutional process is brought about we are not in a position to state. But it seems more than likely that it will ultimately be shown to be the result of chemical changes associated with the bodily metabolism, which exert their effects upon the individual visceral, vascular, and somatic cells either directly or through the mediation of the ductless glands.

THE ETHICS OF PRESCRIPTION WRITING.

IT is often said that prescribing is a lost art, and no doubt the chief reason why medical practitioners nowadays so seldom write prescriptions is because they do not know how to do so; they have never learned the art. While it may be true that many proprietary preparations are so skilfully devised and compounded that their effect is better than that of a written prescription, on the other hand many ready made formulas are used only because the physician is ignorant of how to write a prescription himself and is willing to rely on the statement of the manufacturer with regard to the therapeutic efficiency of the preparation. As Dr. James Burnet points out in the *Prescriber* for July, 1920, it certainly is a breach of the ethics of prescribing to recommend to a patient a preparation the action of the ingredients of which is not known to the prescriber, yet this is done almost every day. Another breach of ethical prescribing is the common one of merely telling the patient what to get. It is not only unethical but in a high degree dangerous to order drugs in this way. Of course, the druggist may be too careful to supply dangerous drugs when ordered in this slipshod fashion, but too frequently he is tempted to supply what is asked lest he lose his customer's patronage. Again it must be borne in mind that a slovenly prescription is never ethical.

According to Burnet to be strictly ethical a prescription should fulfill all the following essentials: (1) It should be carefully written on a properly prepared piece of paper or on a sheet of note paper, not on a scrap of anything that comes handy. (2) It should preferably be written in ink. (3) It should contain the name, and probably also the address of the patient for whom it is intended and should always be dated. (4) It should contain carefully worded directions for its use. (5) It should be initialed, or preferably signed, by the writer. (6) When it contains dangerous ingredients the words "not to be repeated" ought to be incorporated. (7) It should contain no incompatibility or proprietary remedy whose action is unknown to the prescriber. Burnet says that students too often

qualify without having had their attention drawn to these matters. The modern tendency is to discount prescription writing altogether and to store the mind with pharmacological actions, most of which have not been put to any real clinical test, and consequently are of comparatively little value from the point of view of the actual practice of medicine. The author deprecates the present tendency to ignore the practical side in teaching and remarks that the student of to-day will be the practising doctor of to-morrow, but one would rather think from the instruction given him that he was intended to be a research student in a laboratory to the end of his days.

Acute Myoclonic Encephalitis and the Electric Chorea of Dubini.

Litvak of Paris contributes an article with this title in *La Riforma Medica* for March 27, 1920, xxxvi, 13. In 1846 a modest practitioner of the Milan Hospital, Dubini published a monograph on "electric chorea," his study having been presented before the Congress of Scientists at Naples. The affection was apparently a new one and limited to Lombardy. The term "electric chorea" was devised to characterize the motor phenomena, which were of the sort seen in the ordinary or Sydenham chorea but resembling the contractions produced by the electric current. The muscular behavior was constant and pathognomonic. Next he mentions other symptoms as headache and pain in the nucha and spine. Other phenomena were fever, sopor, stupor or delirium, muscular rigidity, and other more or less vague symptoms. In these cases general convulsions usually developed and led to coma. The disease was so grave that of 38 patients but 2 recovered. Nothing characteristic was found at autopsy. Trua, a colleague of Dubini, later made the discovery that stupor was not a mere complication but an integral part of the disease. Another colleague, Pignacca, noted four cardinal symptoms—the muscular shocks, muscular contractions, epileptiform attacks, and cephalic symptoms, including headache and somnolence. Half a dozen other Italians and a number of foreign physicians discussed the disease—the latter apparently only from the Italian descriptions. According to a recent study, cases of Dubini's disease were reported for about twenty years after his original description. The present author, however, shows that the condition was seen long after that period, for in 1884 Grocco wrote a monograph on it which included his personal cases. He was probably the first to grasp the infectious nature of the malady. He fixed the seat of the process in the brain and cord. Despite some want of agreement the similarity between this affection and the myoclonic encephalitis of to-day may possibly point to one and the same affection.

An Epidemic of Alopecia.

Captain Rutherford, a British Army surgeon, contributes to the columns of *La Presse Médicale* for April 28, 1920, xxviii, 26, an account of an alleged epidemic incidence of alopecia in association with the Teutonic retreat of 1918. During the progress of the latter the alien army took with them all of the potatoes, farm animals, and the thrashed wheat, while the unthrashed wheat was burned. Other articles taken along comprised the linen, while the mattresses were slit in pieces, perhaps in the hope of finding concealed money. Many of the inhabitants were driven into Belgium and Holland, and as far as possible the whole area was inundated and otherwise devastated. The results may be imagined, for at a stroke the inhabitants were deprived of food, shelter, fuel, and means of transport. Certain maladies sprang into existence, among the first being influenza associated in part with overcrowding among the refugees. Next is mentioned scabies and a tetter-like eruption. In the aged there developed cardiac weakness and edema, while nephritis subjects promptly developed uremia, probably from the chilling of the surface. Under favorable circumstances this type of nephritic might have lived in relative health and usefulness for years. The author personally in his official capacity treated over 12,000 of these subjects for various ailments over a period of five months, but a complete analysis of the material is not attempted in this connection. The balance of the article is devoted to an account of alopecia which took the form of a defluvium—a simple shedding of the hair. This was seen in between 2 and 3 per cent. of those under treatment. The loss did not occur at the acme of the physiological misery but after the reaction to better conditions. The author is inclined to look upon it rather as a reflex of four years of tension of war conditions than to the final acts of the enemy. At any rate, the loss followed the armistice and the condition continued to develop for some months later or up to March, 1919. There were but few cases of baldness of special types, as alopecia areata and alopecia from seborrhea, and in the vast majority of these cases the condition must be regarded as symptomatic of the general state.

Fixation Abscess in the Treatment of Bubonic Plague.

An abstract in the *Office International d'Hygiène Publique* for March, 1920, xii, 3, from the Bulletin of the French Medico-Chirurgical Society of West Africa describes the treatment of 256 cases of bubonic plague with fixation abscess. The authors are Foulon and Forgues and the locality is Saint Louis, Senegal. The mortality was about 36 per cent., which was asserted to show an improvement over that accompanying the ordinary methods in use. Turpentine was used to excite the abscess, 3 c.c. being injected under the skin of the arm or leg, the seat of the buboes. The treatment must be instituted early and the abscess opened early, else phagedena may develop. The procedure is believed to lessen the chance of the pulmonary involvement and to favor the abortive course of the primary bubo and thereby alleviate the exquisite tenderness of the latter. The germ of the idea is found in the discovery by Arthaud that in ulcerated buboes pulmonary complications are much less likely to occur. Plague subjects with ulcerations almost never die with secondary pneumonia and resist toxemia better. Further, subjects with indigenous phagedenic

ulcer who contract bubonic plague seem always to recover. Again, as far back as 1918 it was noted that in accidental suppurations following hypodermic injections of a certain medicament (known as septacrol) the abscess formation had salutary results. In a discussion which followed, the fact was brought out that for Senegal the mortality in untreated cases in the late epidemic was not over 40 to 45 per cent., which tends to throw doubt on the value of the author's method, since the mortality in his cases was 35 per cent.

Psychopathic Degeneration and Disequilibrium.

The subject of the half responsible is discussed by Babonneix and Brissot in a recent number of the *Revue neurologique*, abstracted in the *Journal de médecine et de chirurgie pratiques* for April 10, 1920, xci, 7, with special reference to military life. First to note is dissociation of mental powers, some of these being weak or rudimentary, while the others are normal or excessively developed. Quick intelligence is seen side by side with instability or perhaps complete lack of affectivity involving absence of sympathy for others. Next to these dissociations should be noted lack of adaptation to environment. There is no self-discipline, hence no response to discipline from others. The subject is antisocial and in military life insubordinate. The third feature is impulsivity, the subject acting quickly and without any attempt to count the cost. Some acts may seem to have no motivation at all. Peculiar personalities are seen, one of which is the mythomaniac or habitual liar. Fervor and passion for some hobby are common, the subject going in heart and soul for some activity—hence there were many would-be aviators of this type. One of the most common is the passion for inventing something and the impractical inventor who neglects all other activities is apt to be of this type. The disequilibrated subject is never a debile or weak-minded man, but his balance is upset. In fixing responsibility for crime, etc., the authors would be guided in part by the presence or absence of physical stigmata—craniofacial asymmetry, ogival palate, and anesthesia of the pharynx and conjunctiva.

Sterility of Masculine Origin.

Deluca and Widakowich of Buenos Aires contribute an article on this subject to the *Revue française de gynécologie* for February, 1920, xv, 2. It is a grievous technical error, they hold, to subject a woman to dilatation of the cervix and other interventions when the trouble may be with the husband; to say nothing of the false position in which she is placed with its accusations and recriminations. Hitherto data have been lacking on this subject in Argentina and this first contribution is but a modest one. The male alone has been studied in this connection and the authors have found that one man in ten is an azoospermic, a percentage which agrees well with that of other countries furnishing large statistics. Richet has claimed that this ratio is biological and universal, uninfluenced by climate or diet. But this does not accord with the fact that in the author's material every azoospermic had suffered from gonorrheal epididymitis. Perhaps Richet's 10 per cent. is merely an expression of the frequency of gonorrhea, but this malady has not the same incidence in all localities. Male responsibility for female sterility is of course twofold. First, the man may be rendered azoospermic by this disease and hence unable to procreate. Secondly, and much more frequently, he may retain his own power of procreation, but infect his wife after marriage, with resulting tubal sterility. If we consider both components jointly, the man, or the disease gonorrhea, is responsible for more than two-thirds of all the sterile unions, the percentage in some figures reaching as high as 70.

News of the Week.

Survey of Industrial Cripples in Ohio.—The Industrial Commission of Ohio has made application to the federal government for its share of the appropriation provided by the Fess Bill to create commissions to make a survey of the physically handicapped. Ohio, so far as is known, is the first State to apply for a part of this appropriation, and will be the first to undertake an extensive survey of its industrial cripples. According to the *Ohio State Medical Journal*, the contemplated survey will be very similar to a survey of crippled children which is being initiated by the Ohio State Medical Association in cooperation with the Ohio Institute of Public Efficiency, the State Department of Health, the Board of State Charities, the State Department of Public Instruction and the Ohio Society for Cripples which has been organized by Ohio Rotary Clubs.

Defective School Children.—Of the thirty-five thousand pupils in the schools of Cleveland, Ohio, one-third are physically defective, according to the findings of a city health and hospital survey by Dr. R. P. Emerson, professor of children's diseases in Tufts Medical School, Boston. Improper feeding, over-fatigue, and lack of home control are some of the factors which contribute to this physical unfitness.

Trachoma in Ohio.—Thirty-four children from public and parochial schools of Columbus, Ohio, and a number from other towns in that State, have been operated on for trachoma as the result of a survey of school children in the towns concerned by the United States Public Health Service and the State Department of Health.

Housing and Health.—In the opinion of Health Commissioner Royal S. Copeland the housing situation in New York City is such that unless action is taken immediately public health and public morals will suffer immeasurably.

"Kissing Bee" Ended in "Vaccination Scramble."—A party of "sub-debs" in the town of Lewes, Del., was attended by a seventeen-year-old Lothario from Dover. Various kissing games were staged in honor of the visitor. The next day he was sent to the isolation hospital, whereupon there was a general rush to doctors to be vaccinated on the part of the other participants in the "kissing bee."

Popular Prohibition Beverages.—From the Washington City superintendent of police comes the statement that toilet water and hair tonics are

growing in popularity in that city as beverages. The statement is based on statistics collected during the past six months. During that period there were 543 whiskey drunks and 225 alcohol; then came the tipplers of flavoring extract, numbering 142; hair tonic, 1,033; bay rum, 153, and toilet water 33.

Forty-three-Day Fast.—A negro bandit died in the Schuylkill (Pa.) prison on August 11 after fasting for forty-three days. This fast exceeded by three days that of Dr. Tanner, who broke the fasting record a number of years ago.

Smallpox on Steamship.—The British steamship *Princess May*, which arrived at New York from Port Antonio, Jamaica, a few days ago, with forty-three passengers, all negroes, brought an additional case of smallpox to the number already being treated here. The patient was sent to Swinburne Island; the rest of the passengers were sent to Hoffman Island for observation.

Compulsory Physical Training at McGill University.—With the installation of complete gymnasium equipment of the most modern type, beginning next year each student of the first two classes will be compelled to undergo at least two hours' physical training weekly. This may be in the gymnasium or on the track and in the field.

Secrecy on Part of Physician Not Obligatory in Case of Communicable Disease.—A guest in a small hotel in a small town in Nebraska consulted a physician, who found the patient to be suffering from a communicable disease (presumably venereal in character). Being medical adviser to the family who ran the hotel, the physican warned the landlady as to the nature of the guest's affliction, and instructed her in measures to guard against contracting the disease while caring for the room. The landlady ordered the guest to vacate, whereupon he brought an action against the physician for damages for "alleged breach of duty arising from confidential relationship between defendant, who is a physician, and plaintiff, who was his patient." The Nebraska Supreme Court directed a verdict in favor of the defendant, holding that a physician is not compelled to maintain secrecy in the case of communicable disease when the health of other persons is endangered.

Dr. Archibald Keightley, a former practitioner in New York, who has resided in London for a number of years, has returned to this city, where he will shortly resume practice, paying special attention, as previously in London, to the disorders of nutrition and those dependent upon defective metabolism. His temporary address is care of the editor of the MEDICAL RECORD.

Dr. L. Duncan Bulkley announces his retirement from active practice. He will in future devote his attention to a consultation practice in dermatology and the treatment of malignant disease.

Dr. Dunning S. Wilson has accepted an appointment as director of the medical department of the French Lick Springs Hotel, French Lick, Ind. Dr. Wilson served in the Medical Department, U. S. A., on the Mexican Border and later with the A. E. F., receiving while there a citation from General Pershing, and being retired at the close of the war with the rank of lieutenant-colonel.

The Bubonic Plague.—A press dispatch from Paris dated August 14 states that four cases of plague have been discovered in that city, but adds that no apprehension is felt as the Pasteur Institute serum has been found to be curative in 93 per cent of the cases in which it has been tried.

According to the Mexico correspondent of the New York *Tribune*, the plague outbreak in Vera Cruz has been overcome through the efforts of Dr. Carl Michel of the U. S. Public Health Service, who was sent unofficially to that city some time ago. By the exercise of tact and diplomacy he overcame the prejudice of the local health officials and caused their cooperation in instituting an antirat campaign, as a result of which the threatened epidemic was averted.

More Typhus in Mexico.—Forty-eight cases of typhus fever have been reported in San Pedro de las Colonias, State of Coahuila, Mexico. The town had been without water for forty-eight hours, according to advices under date of August 8.

Sedative Action of Sugar.—Following the recent riots at the State Reformatory for Women, Bedford, N. Y., Acting Superintendent Mrs. Frank L. Christian, has been testing the peace-making qualities of sugar. With the increased allowance of sugar and enlarged portions of food, the plan "to stuff them to stupor and sweeten them to "peace" seems to offer a prospect of success.

Medical Society Elections.—THE CHATTAHOOCHEE VALLEY MEDICAL AND SURGICAL ASSOCIATION, at its twentieth annual session held at Warm Springs, Ga., July 13 and 14, the following officers were elected for the ensuing year: *President*, Dr. William C. Gewin, Birmingham, Ala.; *Vice-President*, Dr. Thomas Neal Kitchens, Warm Springs, Ga.; *Secretary-Treasurer*, Dr. William J. Love, Opelika, Ala.

Charitable Bequests.—By the terms of the will of the late Watman Haas of New York City, Mt. Sinai Hospital and Mt. Sinai Training School for Nurses will receive $10,000 each. Other provisions were made as follows: $5,000 each will go to Mt. Sinai Hospital, Montefiore Home, United Hebrew Charities, Young Women's Hebrew Association. Hebrew Benevolent and Orphan Asylum, Hebrew Sheltering Guardian Society, Hebrew Technical Institute, Home for Aged and Infirmed Hebrews, Educational Alliance, Jewish Protectory and Aid Society and Crippled Children East Side Free School, and of $2,500 each to Mt. Sinai Pension Fund, St. Vincent's Hospital, Presbyterian Hospital, Hebrew Technical School for Girls, Beth Israel Hospital, and Home for Hebrew Infants.

Samuel Haas of New York City, who died last May, left $5,000 to Mt. Sinai Hospital, $2,500 to Montefiore Home, and $1,000 to the Hebrew Benevolent Orphan Asylum.

The suit to break the will of Charles W. Fairbanks, who died in Indianapolis, Ind., in 1918, has been decided adversely, and the will stands. By its provisions the following bequests are made: The Methodist Hospital of Indianapolis gets $50,000, Ohio Wesleyan University at Delaware, Ohio, $25,000; Depauw University at Greencastle, $25,000, and St. Vincent's Hospital, Indianapolis, $2,500.

Exhibit of Work of Crippled Children.—Articles made by the crippled children of the Bakule school in Prague, Czecho-Slovakia, are on exhibition at the

Horace Mann School, Columbia University. The Bakule school is fostered by the Junior Red Cross of America.

Neglect of Vital Statistics.—According to the Children's Bureau of the Department of Labor, twenty-five of the forty-eight states, or more than half, fail to keep satisfactory records of the population. The department urges that more attention be paid to vital statistics.

Tribute at Bier of General Gorgas.—When the body of the late Major-General William C. Gorgas arrived at the port of New York on the United States Army transport *Pochahontas*, August 11, a salute of thirteen guns boomed as the ship passed Governor's Island. The body was removed in a hearse to the ferryboat Elmira, by which it was conveyed to New York. It was preceded by a detail of 100 men of the Thirteenth Infantry and followed by automobiles conveying Mrs. Gorgas and others of the escort. The body lay in state for two hours in the mortuary of the Pennsylvania station, where many representatives of civic, patriotic and other organizations paid honor to the great scientist. Upon the arrival of the body in Washington it was escorted to the parish house of the Church of the Epiphany by two troops of cavalry. Brief services were held for members of the immediate family. The body lay in state until Monday, August 16, when it was buried with military honors in Arlington National Cemetery.

Obituary Notes.—Dr. STANLEY DAVIS TERRY of New York City died August 7. He was seventy-five years old and wsa a graduate of the College of Physicians and Surgeons, New York, in 1875.

Dr. HENRY E. MERENESS of Albany, N. Y., died August 5 at the age of seventy-one. He was graduated from Albany Medical College in 1874.

Dr. WILLIAM J. KARLSLOE, a retired physician of New York City, died at the Post-Graduate Hospital August 8, at the age of sixty-nine. He was graduated from Louisville University Medical Department in 1893. Dr. Karlsloe was born in Sweden but came to this country in early life.

Dr. SHERMAN COOPER, a retired physician who had practised for sixty years at Westfield, N. J., died August 8 in New York City, at the age of eighty-eight. He was graduated from New York Medical College in 1857, and served as surgeon during the Civil War.

Dr. OLGA DAVIS, known as the "Good Angel of Chicago's Ghetto," died August 10 at Mackinaw Island where she had gone to recuperate after a serious operation. She was graduated from the University of Illinois College of Medicine in 1909.

Dr. ROBERT A. ROBINSON of Jamaica, L. I., died August 11.

Dr. WILLIAM M. HANDLEMAN of New York City died August 8, at the age of thirty. He wsa graduated from Long Island College Hospital in 1911. He was a member of the Bronx County Medical Society.

Dr. EMIL HEUEL of New York City died August 11 at the age of fifty-eight. He was graduated from New York University Medical College in 1883, specializing in otolarynology. He was visiting surgeon to St. Luke's and the Polyclinic Hospital, and was a member of the American Medical Association and other bodies.

Dr. WILLIAM FRANCIS GODWIN died at his home in Englewood, N. J., August 11, at the age of eighty.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, July 23, 1920.

Health of London.—Dr. W. H. Hamer, the medical officer of the London County Council, has issued recently his report for the year 1919. The outstanding feature of the report is that in the closing weeks of the year the births exceeded any previous figures, and the increase has been maintained during 1920. More marriages took place in London last year than in any previous year, with the exception of 1915. There was considerably less mortality among the civil population, and the death rate among infants under one year of age was the lowest on record. The figures of the births, marriages and deaths for 1919 and 1918 are as follows:

	1919	1918
Births	82,525	70,796
Marriages	50,222	42,893
Deaths	59,114	75,928

In an introduction to the report Dr. Hamer draws attention to some salient facts, among these being that the year 1919 was one of exceptionally low mortality, although there was much increase in the number of deaths from influenza and allied causes in the first quarter. Save for two weeks of cold and inclement weather during February, the conditions were favorable to health. The report pionts out that the population of the County of London at the census of April 3, 1911, was 4,521,685, and it was estimated by the Registrar-General to have declined to 4,518,021 in the middle of 1914. The births during 1919 numbered 82,525, as compared with 70,796 in 1918, and a yearly average of 110,951 during the pre-war period 1911-14. The Registrar-General estimates the birthrate at 18.2 per 1,000 of the total population. The movement of the birthrate during the year was remarkable, for while in the first quarter the births were lower than in any quarter since the beginning of the war, in the closing weeks of 1919 births were being registered at a rate in excess of all previous records. The actual number of births registered in London increased continuously up to the commencement of the eighties, and remained practically constant until about 1900; the annual average during this period was some 132,500. By 1911 the figure had fallen to about 110,000, and this number was maintained up to the time of the war. The increase in marriages, in conjunction with the decline in the outward movement of the population served to arrest the decline in total births. Had the war not intervened these factors might probably have operated to keep the births at about this level during recent years. On this assumption the loss in births caused by the war up to the end of 1919 would have amounted to 114,496. The deaths among the civil population during 1919 numbered 59,114, as compared with 75,928 in 1918. The Registrar-General gives the deathrate as 13.6, the corresponding rates in years back to 1916 being 19.2, 15.7, and 14.6. The deathrate among infants under one year of age was 85 per 1,000 births, a rate below any hitherto recorded in London, the lowest rate previously having been 91 per 1,000 births in 1912. As for in-

fectious diseases, the summarized particulars are as follows: During the year 1919, 26 cases of smallpox were notified, four of which proved fatal. There were 342 cases of typhoid fever, as compared with 357 in 1918. The deaths numbered 63, against 82 in 1918. There was a substantial reduction in the notification of measles, the figures for the year being 29,112, as compared with 45,115 in 1918. Deaths, too, were far less, being 359, in contrast to 1,651. The mortality was only 0.08 per 1,000, this being a great deal below any rate hitherto recorded even when the diminution in birthrate has been fully taken into account. Scarlet fever, however, showed a big increase, the figures being 12,935 for 1919 and 6,807 in 1918. The deaths numbered 147. The number of cases of diphtheria notified was 9,459 as compared with 8,173 in 1918, and the deaths 775, or 106 more than the previous year. Deaths from pulmonary tuberculosis in the civil population during 1919 numbered 5,332, a decrease of 1,716 from the previous year. Tuberculosis other than phthisis caused 992 deaths in 1919 as against 1,575 in 1917 and 1,398 in 1918. The number of primary cases of tuberculosis notified in London during 1919 was 15,587, against 19,178 for 1918. Reference is made in the report to cases of anthrax which occurred in London during 1918 and which was commented on in a previous letter. In 1919 11 cases of anthrax were notified in London, three of which proved fatal. Seven were directly attributable to the patient's employment and four to infection from shaving brushes. The brushes which were responsible for cases of anthrax in London, as well as in other parts of the country, were covered by a certificate issued by the Japanese Government to the effect that they had been properly disinfected. It is remarked in the report that in view of the widespread distribution of the Japanese brushes, the extension of the disease in Ireland was not to be wondered at, and had it not been for the stringent methods adopted by the health authorities it is probable that the outbreak would have assumed larger dimensions. Dr. Hamer, dealing with the question of the treatment of tuberculosis under the National Health Insurance Acts, states that in the area of the County of London there are 33 dispensaries, of which 11 are provided by the central fund, two by other voluntary committees, 11 at hospitals, and 9 by municipal authorities. In addition, the Council has 685 beds for children and 275 beds for adults. The number of patients treated in institutions during 1919 were 192 men, 635 women, 616 boys and 609 girls. There were also 976 children dealt with in cooperation with the Invalid Children's Aid Association and 365 by other means. In the report particulars are given of the progress of the scheme for the diagnosis and treatment of venereal disease which, as a result of the Regulations issued in July, 1916, came into operation on Jan. 1, 1917. The number of beds available in hospitals for the use of in-patients is at present 211. The following table shows the extent to which the facilities have been utilized by London patients during the three years the scheme has been in operation:

	1917	1918	1919
Number of hospitals	22	25	26
New patients	12,211	12,538	20,908
Attendances	96,398	131,869	232,659
In-patient days of treatment	48,860	49,590	54,431
Pathological examinations for practitioners	2,992	5,122	8,258
Practitioners on the approved list	108	178	240

Dr. Hamer gives a detailed account of the results of medical inspection of school children. In a general survey of the work, from the points of view of the effects of dirt, overcrowding, and hunger, conditions especially liable to undergo aggravation during and directly after a war, the improvement noted has been good beyond expectation. At the same time, 83,007 children in the elementary schools were found during the war to require treatment for one or more defects.

Speech by the Minister of Health in the House of Commons.—Dr. Addison, the Minister of Health, made a very important speech on July 15 in the House of Commons on the work and future work of his department. With regard to the question of the prevention of disease, Dr. Addison said it must be borne in mind that the Department came into being during the armistice, when half Europe was devastated by plague and other scourges, and when the first thing to be done was to secure this country against infection. It was necessary to organize a sanitary cordon round the land, and this duty had been discharged with remarkable success. Missions were sent to Poland, where typhus was ravaging the country, and to other parts of the world, and up to the present none of the scourges prevailing elsewhere had afflicted the people of Great Britain. Last year another invasion of influenza was feared, and as in the previous year 37,000 people, mainly adults, had died, it would be seen that the visitation was as terrible as anything of the kind the country had experienced for hundreds of years. A group of experts was organized and sat constantly in session, devising means for warding off the danger. Protective vaccine was distributed and freely used by large numbers of people, and though offense was given to opponents of this method of treatment, the results justified the means. The country escaped the epidemic. New measures were also being taken in the treatment of tuberculous diseases, in view of the fact that large numbers of patients after leaving the sanatoria break down again, to their great disappointment and sorrow, and the loss of public money. Village colonies composed of persons affected had been established. The communities worked at trade union rate of wages, and were largely, though not altogether self-supporting. Referring to matters affecting mothers and children, he said that more than 700 women were being prepared under training schemes for service as midwives. He had a startling figure to disclose, showing the improvement which had taken place recently in the infant deathrate. Towards the end of last century and at the beginning of this the rate was practically stationary at about 150. It began to fall in 1906, when it was 132; in 1918 it was 97, and last year 89. For the last three quarters of last year and for the first quarter of this the figure was only 78, about half what it was twenty years ago. Turning to the position of the voluntary hospitals and their assistance by the Ministry, Dr.

Addison said they had under the Poor Law hospitals containing more than half the hospital beds of the country. He had arranged to have these surveyed from the medical point of view and also so that they might be aware of the financial side. The position of the voluntary hospitals had been brought to his attention on many occasions, and meetings had taken place with those responsible for their direction. For the present, the King Edward Fund, in consultation with the Ministry, had put aside a quarter of a million ($1,250,000) for the relief of the immediate necessities of the hospitals and grants from that sum were now being made. Other proposals were being worked out. Those who represented the voluntary hospitals, and who came to the Ministry to discuss the matter seemed to have had the idea in their heads that the Ministry was greedy to take hold of these institutions for some purpose of its own. The Ministry had enough to do, and had long lost any intention of being greedy in that way. Many of these institutions were the pioneers of the world in their efficient service, and it would be a mistake of the first order to seek to interfere with that efficiency. Any scheme that the Ministry put forward would be designed to promote their public utility and to help them. In another matter the Ministry had also taken an essential step. They were doing what they could to secure that further provision should be made for scientific and medical research, and the Treasury had made a grant for the services of medical research of £125,000 as compared with the figure of less than £60,000 previously arranged. In no direction was expenditure more justified, and he would give one or two illustrations. A grant was made from that source with regard to T. N. T. poisoning, for which they were paying several thousand pounds per week compensation. They gave a few hundred pounds out of the research fund, with the result that T. N. T. poisoning had been practically abolished. As the result of another of the grants made out of the fund, work was done in the Eastern Command in connection with heart cases, resulting in that command alone, in a saving of £50,000 in one year. During the war various grants were made in connection with typhoid. In the South African War the total strength of the British Army was about 580,000, and the ration strength 208,000. There were 67,684 cases of typhoid and 8,022 deaths. During the recent war the total strength of the British forces at a low estimate was 5,000,000, with a ration strength of 1,200,000. The men were living under miserable conditions in muddy trenches, and had the number of typhoid cases been in the same ratio as during the South African War there would have been 400,000 cases and 56,000 deaths. But research work had gone on, and the actual result was that throughout the whole war in the British forces there were only 7,423 cases of typhoid and 266 deaths. There could be no greater justification for expenditure on intelligently directed research.

Cancer Mortality in Great Britain.—According to the Registrar-General's Report for 1918, cancer mortality, if stated in the form of an ordinary crude death-rate, was higher in 1918 than in any other year, but if comparison be made by means of standard rates which allow for the present abnormal age constitution of the male civilian population, there will be seen to have been an appreciable decrease from the previous year's record. Standardization fails to eliminate entirely the fictitious increase due to the exclusion from the population in war years of a large number of men furnishing very few deaths from cancer. An attempt at a fuller correction on this account shows that the standardized cancer mortality of 1918 was probably lower than that of 1911-14 also.

Menace of Typhus in Eastern Europe.—In a Chadwick Lecture on "Health Conditions in Eastern Europe," delivered at the Surveyor's Institution, Westminster, on July 15 last, Dr. Norman White of the Ministry of Health, who is a member of the League of Nations Typhus Commission, laid stress on the serious menace to the West of Europe caused by the prevalence of virulent disease in the countries on the western borders of Soviet Russia. Dr. White said that the sanitary conditions there were deplorable enough before the war. Since 1914 they had grown steadily worse. In 1917 the death-rate exceeded the birth-rate in every town and village of Poland. A virulent epidemic of typhus still prevailed especially in Galicia. Soap, fuel and changes of clothing were unobtainable in many parts; the poorer classes were almost universally infested with lice, which carried the disease from the sick to the healthy, and privation had lowered the resistance of the population to infection. Overcrowding was rife; 325,000 houses had been destroyed in Poland during the war and 438,000 in Galicia, and there was a continuous stream of refugees across the border from Russia, many infected with typhus, nearly all infested with vermin, and most of them clothed in rags, which fell in pieces on any attempt to disinfect them. Dr. White quoted the experience of Holland in 1918-1919 as an illustration of the danger to the rest of Europe of the focus of epidemic disease, which further was an important factor in the promotion of social and industrial unrest, and declared that unless generous help was forthcoming quickly from outside, the situation would get entirely beyond control.

In an annotation in the *Lancet* July 17, 1920, this subject is referred and attention is directed to the splendid work done and being done by members of the Medical Corps, U. S. Army, in Poland, sent by the President under the command of Colonel Harry L. Gilchrist and known as the American Typhus Fever Expedition. Colonel Gilchrist, in a report contained in the *Military Surgeon* for June last, sums up the needs of Poland as follows: Soap in thousands of tons, hospital linen and undercloth-ing in hundreds of thousands of sets, hospital equipment for thousands and thousands of beds; and declares that if unless checked "this epidemic will threaten the whole of Europe." There is no doubt that Poland's need is extreme and will appeal with special emphasis to Americans because their medical men have solved the problem of the means whereby typhus is spread, and have interested themselves in the ills of this sorely stricken country.

Laboratory Transmission of Sleeping Sickness.—Levaditi and Harvier succeeded in transmitting encephalitis lethargica to rabbits and monkeys by inoculating portions of the cerebellar peduncles of human being dead of the disease. The cause is evidently a filtrable virus.—*Le Progrès Médical.*

Progress of Medical Science.

The Boston Medical and Surgical Journal.

August 5, 1920, clxxxiii, 6.

1. The Diagnosis and Treatment of the Hemorrhagic Disease. Ralph C. Larrabee.
2. The Use of Quartz Light in Dermatology. E. Lawrence Oliver.
3. Observations Upon Ductless Gland Therapy. Charles H. Lawrence.
4. Observations Upon Various Types of Diabetics Under the Present Method of Treatment. F. Gorham Brigham.
5. The Use of the Serum of Convalescents in the Treatment of Influenza Pneumonia: A Summary of the Results in a Series of One Hundred and One Cases. George P. Sanborn.

3. Observations upon Ductless Gland Therapy.—Charles H. Lawrence emphasizes the fact that the symptoms of the early stages of disordered endocrine function are at present often overlooked because they are not well understood. Though the symptoms of such conditions are often polyglandular in character, there exists a "characteristic and recognizable syndrome for a primary derangement of each individual gland." The recognition of the syndrome is essential for intelligent glandular therapy. These syndromes are briefly described by the author.

4. Observations upon Various Types of Diabetics under the Present Method of Treatment.—F. Gorham Brigham, from a study of a large number of diabetics over a period of ten years, draws the following conclusions: 1. That by all the modern methods of low calory diet the diabetic patients do better than by former methods. 2. That without careful blood estimations diabetics cannot be satisfactorily treated and good results obtained. 3. That the complications of diabetes will develop even though the urine contains no sugar if the blood figures remain high. 4. That the prevention of obesity will reduce the number of diabetics tremendously. 5. That the study of other functions, such as kidney function, and the removal of all possible foci of infection, are essential to having the diabetic patient do well. 6. That the routine twenty-four-hour urines must be more frequently done, or routinely done, to be able to recognize diabetes as well as other kidney conditions early, and allow earlier treatment. 7. That the disease diabetes illustrates the importance of laboratories where simple routine analyses can be done at a reasonable figure.

New York Medical Journal.

August 7, 1920, cxii, 6.

1. The Bordelaise Conception of Encephalitis Lethargica. René Cruchet.
2. Encephalitis Lethargica. Joshua H. Leiner.
3. Encephalitis Lethargica. Samuel Schwartz.
4. An Epidemic of Typhoid Fever of Water Borne Origin and Carrier Transmission (*Concluded*). Leon H. Cornwall and James P. Crawford.
5. The Symptoms of Epidemic Encephalitis. I. S. Wechsler.
6. Intravenous and Intraspinous Treatment of Meningococcus Meningitis. David Goldblatt.
7. Encephalitis Lethargica in France and Switzerland. Charles Greene Cumston.
8. Chronic Peritonsillar Abscess, Cause and Treatment. Maxwell Quackenbos.

1. The Bordelaise Conception of Encephalitis Lethargica.—René Cruchet. (See MEDICAL RECORD, August 7, page 225.)

6. Intravenous and Intraspinous Treatment of Meningococcus Meningitis.—David Goldblatt holds that intravenous therapy, combined with intraspinous treatment, aims at a rapid sterilization of the blood and the meninges, and thus shortens the period of morbidity. It reduces the required number of intraspinous treatments, and if started early may abort the disease. With a moderate amount of care the intravenous therapy is free from danger should be used in cases that clinically indicate a severe type of the disease.

Journal of the American Medical Association.

August 7, 1920, lxxv, 6.

1. The Future of the Physician. Frederick Peterson.
2. A Five or Six Year Course in Medicine. John A. Kolmer.
3. Teaching the Pathology of Function. Howard T. Karsner.
4. A Plan for a Graduate Course in Pediatrics for General Practitioners. John Lovett Morse.
5. How the Pediatric Teaching of Nutrition May Affect the Nation's Welfare. Henry Dwight Chapin.
6. The Teaching of Medicine. A. G. Ellis.
7. The Diagnosis of Human Plague. C. L. Williams.
8. Clinical Manifestations of Infection of the Lateral Sinus. Francis P. Emerson.
9. Migraine Therapy. Bernard Fantus.

1. The Future of the Physician.—Frederick Peterson says the physician of the future is to be a master of public health. He will push and help instruction in health in the public schools. The healthy people will flock to him. He will fortify the weak against the onslaught of disease. He will recognize the earliest subjective signs of inroads of disorder and learn to defend his patients from its further encroachment. His mission will be to lengthen the health span of life.

5. How the Pediatric Teaching of Nutrition May Affect the Nation's Welfare.—Henry Dwight Chapin. (See MEDICAL RECORD, May 15, p. 848.)

7. The Diagnosis of Human Plague.—C. L. Williams, after discussing briefly the different types of plague (bubonic plague, pestis minor, septicemic plague, and pneumonic plague), states that plague is one of the few diseases which can be absolutely diagnosed by the bacteriologic findings. Any case still showing well-marked signs or symptoms can be positively shown either to be plague or not plague by proper laboratory methods. *Bacillus pestis* can always be found, if it is present. The procedures for the recovery of the organisms and the postmortem appearance are described.

The Lancet.

July 17, 1920, cxcix, 3.

1. The State and the Future of Medical Practice. Sir George Newman.
2. The Myoclonic Form of Acute Epidemic Encephalitis. Arthur W. M. Ellis.
3. Suppression of Urine in Pregnancy and the Puerperium. Its Relation to Symmetrical Necrosis of the Renal Cortex. Robert Jardine and Alex. Mills Kennedy.
4. Hemorrhage Following the Operative Treatment of Internal Hemorrhoids, with Particular Reference to Severe Secondary Hemorrhage. W. B. Gabriel.
5. The Complement-Fixation Test in Gonorrhoea. W. Magner.
6. Removal of Metallic Foreign Bodies by Surgical Operations under Direct *X*-Ray Control. C. Fred. Bailey.

3. Suppression of Urine in Pregnancy and the Puerperium.—Robert Jardine and Alex. Mills Kennedy, working on behalf of the Medical Research Council (Great Britain), report eleven cases of suppression of urine in pregnancy and the puerperium. In each case the patient suffered from what is known as the toxemia of pregnancy. The cause, they hold, seems to lie in the action of a toxin, and if there is chronic interstitial nephritis present there is grave risk of suppression of urine. When suppression of urine is fairly established treatment by medicines, transfusion, etc., seems hopeless. Decapsulation of the kidneys in cortical necrosis has done no good, and one cannot see how it can be of any use. In a case of nephritis it might do some good. In one such case some urine was secreted, and the patient lived longer after the operation than any of the cases of necrosis operated upon, but the result was the same. It is impossible to differentiate between cortical necrosis and chronic nephritis, and it is quite apparent that the two may coexist. A history of a previous nephritis would argue against necrosis. The only hope is in prevention, by the careful early treatment of toxemia of pregnancy. Of the eleven cases reported, pathological reports on the condition of the kidneys are available in eight instances, the findings in which are given. Successful treatment will depend upon the earlier recognition of the toxemic state and the application of such remedies as will eliminate or counteract the toxin before it has caused necrosis of the tissues or vascular thrombosis.

4. Hemorrhage Following the Operative Treatment of Internal Hemorrhoids.—W. B. Gabriel bases this contribution on an analysis of 500 cases of internal hemorrhoids operated upon at St. Mark's Hospital for Diseases of the Rectum (London) in the course of the last sixteen months. Ligature was performed in 470 cases, including 62 cases in which ligature was combined with treatment for a fissure or fistula. The clamp and cautery method accounted for 18, and Whitehead's operation for 12 cases. It was found that severe

secondary hemorrhage following a ligature operation for internal hemorrhoids is a possible complication, occurring in this series at the rate of just over 1 per cent. of cases—5 in 470. The rectum necessarily becomes a septic area when the bowels are opened three days after operation, and it is difficult to see how the risk of a secondary hemorrhage from sepsis can be further eliminated. The average date for the hemorrhage is seven days after operation. It usually follows an action of the bowels, hence in the postoperative treatment the prevention of constipation is of the greatest importance in minimizing the risk of trauma. The bleeding tends to be concealed, and a suspected case of hemorrhage should be investigated, without delay, with a tubular speculum. Plugging the rectum with a vulcanite or rubber tube is the most generally efficient method of controlling the hemorrhage, which is to be combined with suitable general treatment.

British Medical Journal.

July 17, 1920, i, 3107.

1. The Scope and Equipment of an Anatomical Institute: The Proposed Institute of Anatomy at University College, London. Professor G. Elliot Smith.
2. An Operation for the Radical Cure of Inguinal and Femoral Hernia. Sir G. Lenthal Cheatle.
3. Open Ether, Without Chill. Lionel Jas. Picton.

2. An Operation for the Radical Cure of Inguinal and Femoral Hernia.—Sir G. Lenthal Cheatle, from the experience gained in operating recently upon eight cases for the radical cure of inguinal hernia at King's College Hospital, evolved an operation, the essential features of which are as follows: The patient is placed in the Trendelenburg position, an incision is made to one side of the middle line, the rectus abdominis is split longitudinally, and the abdominal wall is retracted to the side of the operation. The peritoneum is smoothed away by a dry swab from the parietes. The operation is conducted without opening the peritoneum. The sac between the internal ring and the surface of the peritoneum is delimited by insinuating the forefinger between it and the external iliac artery and vein. The sac is ligated at the peritoneal surface. The part of the sac that extends into the inguinal canal is pulled up into the subperitoneal space as far as it will come, tied as low down as possible, and then it is allowed to slip back (or is replaced) into the inguinal canal; so that it cannot act as a guide for a recurrent hernia.

Indianapolis Medical Journal.

July, 1920, xxiii, 7.

1. Some Points on the Diagnosis and Treatment of Goiter. John F. Barnhill.
2. Anomalies of the Bile Ducts and Blood Vessels as Related to the Performance of Cholecystectomy. H. K. Bonn.
3. The Genesis and Meaning of Tics (*Continued*). H. Laveson.
4. Anesthetic Notes. Arthur E. Guedel.

1. Some Points on the Diagnosis and Treatment of Goiter.—John F. Barnhill states that objectively there are at least three types of goiter: (1) A type that may very properly be called physiologic goiter. This occurs chiefly in girls during puberty, and in pregnant women, and may disappear spontaneously when sex development is complete, or when confinement has taken place. (2) That which is large, clearly observable, and often of such size as to greatly deform the patient's neck. (3) That which may be comparatively small, even so small as to attract no attention from the physician, and therefore may be overlooked as the real cause of a serious and often fatal malady. The larger the goiter usually the fewer and less distressing are the symptoms, and the less danger to life. Conversely, the smaller the goiter within certain limits the greater the number of severe symptoms and the greater the danger to life. Since it is now well proved that the thyroid when diseased may throw into the system a toxic secretion which will set up serious heart and nerve disturbances, it becomes an essential in the examination of all such cases to examine most critically the thyroid gland when these symptoms are present, and to endeavor by the use of every diagnostic aid to correct or eliminate the thyroid as a causative factor. Failure correctly to diagnose toxic goiter will seldom occur if the following points are observed: (1) Always examine the neck for thyroid enlargement and pulsation in all cases of nervousness, sleeplessness, sweating, extreme weakness, and especially of rapid heart action. (2) Especially should the thyroid be investigated if in the presence of the above symptoms, or even some of them, there should be a history of exhaustion on slight exercise and of loss of weight. (3) Toxic thyroid disease runs its course almost without exception with no rise in temperature. The absence of fever in cases with rapid heart, sweating and loss of weight justifies a thorough investigation of the thyroid gland. (4) Employment of laboratory tests. The treatment of goiter depends upon the type, and stage of progress. Nearly all goiters may at first be considered medical cases. When not cured by medical and hygienic measures, they then fall into one of two classes, namely, those wholly surgical, and those both medical and surgical. All large cystic and colloidal goiters are wholly surgical. Probably all cases of thyrotoxic goiter are both medical and surgical. The writer presents eight cases representing the different types and their treatment.

Long Island Medical Journal.

June, 1920, xiv, 6.

1. Study of a Case of Lateral Sinus Thrombosis. Purdy H. Sturges.
2. Kidney Stone. Arthur H. Bogart.
3. Stone in the Kidney. Arthur H. Bogart and Howard T. Langworthy.
4. The Problem of the Treatment of Diseased Cartilage. Thomas B. Spence.
5. Acute Osteomyelitis in Children. Frank E. Brown.
6. Diagnosis of Early Gall Bladder Disease. Russell S. Fowler.
7. End Results of Operation for Tuberculous Peritonitis. Charles H. Goodrich.
8. A Rational Modern View of Nephritis. Henry G. Webster.
9. Prevention of Puerperal Sepsis. Ralph M. Beach.
10. Massive False Congenital Diaphragmatic Hernia with Dextro-Cardia. Harry W. Mayes.
11. The Basis of Treatment of Nephritis. Frank Bethel Cross.
12. The Diagnosis of Hemorrhage, Embolism and Thrombosis. Frederick C. Eastman.
13. Occipital Intermittent Claudication. Tasker Howard.
14. Case of Diaphragmatic Hernia in an Adult.

6. Diagnosis of Early Gall Bladder Disease.—Russell S. Fowler states that any patient, fat or thin, young or old, having mild or severe cramp in the epigastrium ordinarily looked upon as indigestion, the patient being free from tenderness over the appendix or history of tenderness over the appendix, on operation will show ninety times out of a hundred gall bladder disease and the other ten will show a surgical lesion of the appendix, stomach, liver or pancreas. If to this symptom of cramp in the epigastrium is added pain or soreness over the gall bladder or a history thereof, a diagnosis of gall bladder disease can be made with certainty.

13. Occipital Intermittent Claudication. — Tasker Howard, in presenting a case, emphasizes that the symptom known as intermittent claudication involves three factors: (1) Local arteriosclerosis with narrowing of the vessels and consequent lessening of the blood supply to the parts, (2) intermittent further narrowing of the vessels through spasm, due to a hyperirritable vasomotor system, and (3) a further relative circulatory insufficiency when the demand for blood is increased by the use of the part. In the case which he reports arteriosclerosis was obviously present, the pain was induced by physiological activity of the part or by cold, and was relieved by rest or by measures aimed at controlling arterial spasm. The vessels involved in this case are certain branches of the external carotid, particularly the occipital, with its ramifications not only up over the scalp but down to various muscles on the posterior aspect of the neck, and possibly the ascending pharyngeal.

La Presse Médicale.

May 15, 1920, xxviii, 31.

Petty Signs of Lethargic Encephalitis.—Roger first outlines the major symptoms of this affection, including the atypical ones and then takes up the so-called

petty signs, restricting his paper to two of these, viz.: the facies of paralysis agitans, which he styles the pseudo-parkinsonian facies, and the paralysis of accommodation. These signs have sometimes enabled him to make a retrospective diagnosis. The disease usually goes through two stages, somnolent and post-somnolent or depressive, and the two signs may appear during this post-somnolent phase as well as during actual convalescence. The patient may have passed through his somnolence completely, and his ptosis disappears at the same time. It is then that we note a fixation in the lower part of the face. In repose the musculature seems atonic and the folds in the face effaced. During conversation the muscles do not show their accustomed play and mimesis is also poor. The upper face may or may not participate. The masklike effect may persist for two weeks to one month or more. The nucha at the same time is slightly rigid as indicated in part by the peculiar attitude of the head. This symptom may persist for an indefinite period and in one case one year after the disease the subject could not move his head with the normal suppleness. More rarely a parkinsonian tremor may be added. In regard to paralysis of accommodation, this has been a very uncommon symptom, the author mentioning but two cases. The subjects noted its presence after the extrinsic pareses had disappeared, when they first sought to read after the passing of the diplopia. They were obliged at this juncture to change the reading focus. A middle-aged subject had actually bought some presbyopic glasses when the disorder suddenly vanished. The light reflex was conserved. The condition persisted in full for 3 or 4 weeks and was slow in vanishing completely.

Gazette hebdomadaire des sciences médicales de Bordeaux.

May 16, 1920, xli, 20.

Relations Between Grippe and Epidemic Encephalitis.—Micheleau of Algiers, a forensic expert, writes exhaustively on this important subject. We have become, he says, very sceptical about the autonomy of maladies which appear to lack a causal element and definite anatomical lesions. Yet we know that diseases *sine materia* do exist. May not an unknown bacterium secrete a toxin of such peculiar tropism that it gives rise to a definite disease picture? On the other hand we have to consider the unknown *x* which is known as the *genius epidemicus*. The author seems to have been on duty in Europe with Algerian troops in the spring of 1918, at which epoch a wave of influenza appeared in Flanders. At this juncture he cared for several thousand cases of the latter malady. Among his grippe cases he saw much somnolence, a peculiar urge to sleep. The fever and other general and local symptoms seen were those of influenza. But in these cases the affection was soon over and indeed might have been termed a "three day fever" as far as the majority of them was concerned. The sleep component he thinks might have been of cosmic motivation—a reaction from the war tension which belongs under the head of the *genius epidemicus* and might conceivably be present in any malady. Under such conditions the toxins formed from any type of pathogenic bacterium might conceivably produce somnolence. The author, the better to illustrate his contention, gives two case histories which would ordinarily have passed for influenza. Later the diagnosis leaned very strongly to epidemic encephalitis. This was of the myoclonic type in one patient, while in the other case the patient first went through a grippal broncho-pneumonia, which had as a sequela a cerebral affection in which somnolence was a factor. In the absence of our present information concerning sleeping sickness, the author seems to think, both these cases would unhesitatingly have been regarded as cerebral influenza.

Le Progrès Médical.

May 8, 1920, xlviii, 19.

Hepatic Insufficiency.—Loeper discusses very thoroughly a subject that of late years seems to have shown some falling off in interest, perhaps from the demonstration that the so-called insufficiency symptoms pertain rather to the organism as a whole than to the liver alone. The liver has many functions so that insufficiently ought to manifest itself in a number of ways. The author, however, restricts the essential manifestations to three—portal hypertension, icterus and toxemia. In the first named of this triad the blood cannot traverse the liver, so that ascites and splenomegaly result from back pressure. The interference with the passage of blood increases the tension in the portal vessels before the phenomena of stasis develop. It is therefore apparent that the author uses the term hepatic insufficiency in a sense not usually accepted. We mean ordinarily a cellular insufficiency not connected with organic disease while in the author's sense is meant the secondary insufficiency of organic disease. Ascites from this angle is hepatic insufficiency. The author remarks in passing that every increase of salt in the diet means an aggravation and every reduction of salt a diminution in the ascites. The second great symptom of hepatic insufficiency is jaundice. This is not only inconstant but is not parallel with the degree of ascites; yet icterus with its secondary symptoms, like bradycardia and pruritus, does in its way indicate hepatic insufficiency. There is, however, a notable dissociation here, which shows the essential separation of the components of vascular stasis and obstruction of the gallducts, together with the phenomenon of hemolytic jaundice. In regard to hepatotoxemia this is still more complex than icterus. Passive obstruction of the portal system is a single phenomena; icterus is twofold in nature while toxemia is multifold—the author isolates three forms, viz., that due to defective neutralization of food products and the forms due respectively to absorption of bile and absorption of biliary salts. The hepatic parenchyma, however, is itself toxic, as has been repeatedly shown by animal experiment. The author, after having established a variety of hepatic toxemia which is due to absorption of bile pigment, later denies that any toxicity on the part of these has been proven.

Le Bulletin Médical.

May 29, 1920, xxxiv, 28.

Pathology of Edemas.—This number contains a symposium on the above subject. Achard leads off with a general paper making a distinction between the constitutional and lacunar water. The latter in edema accumulates in the great serosæ, subcutaneous tissues, etc. He then discusses the combined water-chloride retention and its control by diet. Aside from the dietetic factor the causes relate to circulatory and eliminatory insufficency. There are other less understood causes of edema seen in dyscrasias. Clinically there are sharply delimited forms, as phlegmatia dolens due to phlebitis, the cardiac form from asystole, the renal form, the so-called lipocytic or intracellular form which can be experimentally produced in animals. Therapeutically we have forms which yield to local treatment, to diet, to digitalis, to theobromine, etc. The author does not mention the recently reported successes from the use of ŏuabine in ascites. Leblanc considers the pathogeny of edema with especial reference to the lipocytic form due to increased power of imbibition of the cell. Its relationship to the other edemas is at present problematical. The property of lipoids, which are not soluble in water, to regulate the hydrophilic or hydrosyntactic power of the cell seems paradoxal. The author has sought to determine the lipemic coefficient in subjects with nephritic dropsy. Apparently there is no law of relationship between retention of water and chlorides and the lipoid content of the blood. A paper by Ameuille is devoted to the timely subject of the paradoxes of the edemas. He cites certain unusual types such as the inanition type seen in prisoners on low diet. This form is not severe, confined perhaps to swelling about the malleoli. The ordinary causal factors can be eliminated. The condition vanishes promptly when the regulation diet is resumed. It is not known that professional fasters have developed this edema. Gastinel and Boutelier discuss the semeiology of edemas of the face in very exhaustive fashion.

Society Reports.

THE AMERICAN PEDIATRIC SOCIETY.

Thirty-second Annual Meeting, Held in Highland Falls, Ill., May 31, and June 1 and 2, 1920.

THE PRESIDENT, DR. THOMAS W. SOUTHWORTH OF NEW YORK, IN THE CHAIR.

President's Address—Segregation of Pneumonia.—Dr. THOMAS S. SOUTHWORTH delivered this address, in which he stated that more and more attention was being paid to the prevention of infectious diseases, especially such as bore particularly on the child. Here adequate separation of the sick from the well was indispensable, and the principle was capable not only of stricter enforcement, as in rural communities, but of intelligent extension everywhere into new fields. One of these was pneumonia, for which less had been accomplished in the way of limiting its ravages than for any other malady of like import except pandemic influenza. This was not due to lack of interest in the problem, but rather to its complications, since the process we called pneumonia was several pathologic entities of diverse etiology and with somewhat loosely correlated clinical manifestations. While untiring zeal had been expended to find a remedy for the pneumonias, the possibility of guarding against their inception had not been so clearly considered. One great avenue was not properly guarded and that was the exposure of susceptible individuals in dangerous propinquity to active cases of the disease. It had long been known that the pneumonias were caused by microorganisms of recognized pathogenic virulence, yet it had been their custom to treat pneumonias in the general wards of hospitals and to place about them in the home only the ordinary precautions of the sick room. Segregation of such cases might have been practiced by thoughtful individuals, but the idea had not found its way into the general medical conscience nor been advocated widely in our literature. Evidence of the infectiousness of pneumonia was not wanting. Whenever it appeared among children quarantined for measles it spread rapidly, with an appalling mortality. The writer had, therefore, for years insisted, when possible, upon the prompt isolation of the first cases of pneumonia among children having measles, with a resulting limitation of the number of cases, and had extended segregation to all the pneumonias. The question before them was whether they individually were to assume responsibility for permitting exposure of cases of pneumonia which they would not permit to much less serious types of illness, the latter having been declared quarantinable, while the pneumonias thus far had not been. The obligation was imperative to anticipate the day, not far distant, when the movement to control the scourge of pneumonia might make the retention of such cases in a general ward as repugnant to our medical sense of propriety as a case of open tuberculosis.

Studies on Blood Sugar: The Effect of Blood on Picrate Solutions; A Consideration of the Limitations of the Lewis-Benedict Method.—Drs. DAVID MURRAY COWIE and JOHN PURL PARSONS of Ann Arbor presented this paper, in which they reported a series of experiments the results of which tended to show that blood contained substances other than sugar which induced a color change in the picrate solution employed in the modified Lewis-Benedict blood-sugar method. Under normal conditions these substances did not interfere with the established normal range for this method. Under pathological conditions, however, several of these substances which showed the most marked influence were epinephrin, acetone, and diacetic acid. Creatinine might interfere but it did so in a less marked degree. As picrate solution reacted to smaller quantities of acetone than were normally found in the blood the questions might well be raised: 1. "Do not the acetone bodies of the blood contribute to the established normal blood sugar range for the Lewis-Benedict test?" 2. "As epinephrine in infinitesimally small quantities induces a color change in the picrate solution, is it not possible that this substance when thrown into the general circulation, as is supposed to happen in emotional states, may induce a so-called hyperglycemia without mobilizing the glycogen stores of the liver?"

Dr. OSCAR M. SCHLOSS of New York thought that the Lewis-Benedict method under normal conditions was probably an essentially accurate clinical method, though it might have a moderate error such as was present in any colorimetric method. He had run a series of observations, in which he had used the Lewis-Benedict method, and a control series in which the method of Bertrand was used. The Lewis-Benedict method gave results that were constantly higher, but the difference was consistent and did not influence the results of observations made in normal cases. It was quite true, however, that a marked increase in creatinine would influence the results. The relationship of acetone and adrenalin required that a careful test of the accuracy of this method be made.

Dr. COWIE said that workers on this side of the water and those on the other side had expressed very different opinions in reference to the effect of heat on picrate solutions. The experience of Addis and Benedict, as well as their own, showed that prolongation of the heat produced an increase in the intensity of the color. They had not run the acetone tests beyond ten minutes, but up to that time a color change had been produced.

Epidemic Encephalitis Lethargica.—Dr. L. E. LA FETRA of New York presented this communication, in which he reviewed the experimental work of Loewe and Strauss, and presented an analysis of 11 cases of encephalitis lethargica treated in his service at Bellevue Hospital since January 1, 1920. He said it was evident both from the difference in the lesions and also from the results of animal experimentation that poliomyelitis and epidemic encephalitis were distinct diseases. He had not found that epidemic encephalitis followed influenza with sufficient regularity to warrant one in stating that it was caused by influenza, though influenza might possibly predispose the patient to infection or increase the virulence of the prevalent virus. Of the 11 cases four died. The children ranged in age from five to twelve years. There was no relationship between any two of the patients, and they did not live in close proximity with each other. In only two cases was there any history of influenza. The symptoms were varied, but in most instances there was marked headache, accompanied occasionally by dizziness. Vomiting occurred in about one-half the cases. Two of the children were very wakeful and talkative for a day or two, and then became lethargic. The outstanding features when the disease was well under way were lethargy, general weakness, and ptosis, or paralysis of the ocular or facial muscles, with double vision in several instances. Fever was usually very slight, from 101 to 102° Fahr., and that only for a few days. Weakness of the muscles of the face gave the mask-like appearance. The muscles of the extremities had a peculiar wax-like tone, and the limbs remained in the position in which they were placed. It was noted that the fatal cases had higher white cell counts than those that recovered. The spinal fluid was under little or no increased pressure, and in some instances was perfectly normal, there being no increase in the number of cells. In most cases, however, globulin was present and there was an increase in the number of cells, the average number ranging from 50 to 100, all of which were mononuclears. In one fatal case the cell count was 275. The fluid was sterile on culture. Recovery took place gradually, there being first a return to consciousness, then a diminution of catatonia and paralysis, and last of all the asthenia and ptosis disappeared. Two patients showed seriosu sequelae, one imbecility and the other spastic paralysis and mental impairment. Undoubtedly, as with poliomyelitis, abortive, mild atypical cases of the disease occurred. Many of these probably went unrecognized. The disease was differentiated from tuberculous meningitis by the high cell count and finding the tubercle bacillus in the latter. The course in tuberculous meningitis was two or three weeks, while in encephalitis lethargica it was longer. In encephalitis ptosis and facial palsy appeared early and did not progress. In differentiating the disease from poliomyelitis, one must be guided by the epidemiology. Poliomyelitis was more apt to occur late in the summer and in the fall, and the cell counts in the spinal fluid were higher with a larger percentage

of polynuclears. In encephalitis the cells were practically all mononuclears, but that point was not absolutely diagnostic. From cerebrospinal syphilis the disease could be differentiated by the negative Wassermann and negative gold chloride tests; from brain tumor by the absence of choked disc and changes in the spinal fluid; from meningism by the absence of other diseases that would cause meningism. Meningism was likely to give an increased spinal fluid with normal findings. The mortality of the disease was about that of poliomyelitis. How great a proportion might show damage to the brain it was too soon to state. The treatment until a specific serum was produced was symptomatic.

Dr. ROWLAND G. FREEMAN of New York felt inclined to think there was some relationship between encephalitis lethargica and influenza, inasmuch as this disease was not seen until following the epidemic of influenza, when a good many cases were seen for a few weeks, and then one no longer saw them. The literature seemed to show that the disease had invariably occurred after influenza, and not after other conditions. While little was known of the ultimate results of the disease, they seemed not altogether favorable.

Dr. HENRY HEIMAN of New York thought it was sometimes impossible to differentiate between epidemic encephalitis and tuberculous meningitis if the tubercle bacillus could not be found. Loewe and Strauss had cultivated the organism of encephalitis lethargica, and had shown that the disease could be diagnosed by animal inoculation. Rigidity of the neck was not often present in encephalitis lethargica, while this symtom was usually found in tuberculous meningitis. In encephalitis lethargica the patient could be aroused while in tuberculous meningitis this was not as a rule possible. In the latter disease the cell count of the spinal fluid was high, while in encephalitis lethargica it was apt to be low, not more than 60 or 70. A cell count of 270, such as Dr. La Fetra had mentioned, was rare; their highest count in encephalitis lethargica was 87. Frequent and careful search for the tubercle bacilli should be made in every case supposed to be encephalitic lethargica, and the eyes should be examined to detect the presence of choroid tubercles.

Dr. CHARLES GILMORE KERLEY of New York said the great variability of the symptomatology was the outstanding feature of this disease. There was only one symptom that was constant, and that was the high degree of stupor resembling an opium narcosis. Dr. Kerley described three cases illustrating the difference in the symptomatology in this disease. One of these cases was of particular interest because the patient, when well on the way to recovery, had a relapse, and was now recovering from the relapse. This case he thought was very unusual.

Dr. JOHN HOWLAND of Baltimore thought the disease more common than was generally believed; in its atypical forms it was apt to pass unrecognized because of the relatively slight changes in the cerebrospinal fluid. They had had thirty or forty cases of the disease under their care, and had found the symptoms very irregular, though it was scarcely necessary to mention that point. Sequelae might persist for a long time. Four patients who had suffered from acute symptoms for periods ranging from six weeks to three months were under observation at the present time on account of abnormal symptoms, particularly at night. They were apparently normal in the day time, but were sleepless and restless at night. This sleeplessness might last for weeks. As time went on more atypical cases and more of the sequelae of this diseases would probably be seen.

Dr. ISAAC ABT of Chicago told of a child presenting the classical symptoms of encephalitis lethargica, who after a time became restless. A second lumbar puncture was made, which showed an increased number of cells and a turbid fluid. It was found that the child had a brain abscess. There seemed to be a tendency to center attention on this form of encephalitis and to forget or overlook the other forms.

Dr. DAVID MURRAY COWIE asked if any cases had been cared for in the wards of general hospitals, and, if so, whether the disease had spread.

Dr. OSCAR M. SCHLOSS of New York said that although encephalitis never occurred to the degree that it had during the recent epidemics, it occasionally occurred as a complication of measles and scarlet fever. Last winter he saw two cases following measles in which the encephalitic was typical. Sporadic case had been seen for some years, in which the symptomatology was practically that of "encephalitis lethargica."

Dr. LA FETRA, in closing the discussion, further emphasized the points brought out in reference to the differential diagnosis of encephalitis lethargica, and stated that undoubtedly the same symptoms could be produced by other germs and viruses, such as were seen in a meningitis complicating scarlet fever or the so-called X disease of Australia. As to whether the disease was contagious, they had made an effort to isolate the cases, but a few had been taken into the ward under the impression that they were tuberculous meningitis and in no instance was there a secondary case.

Acute Cerebrocerebellar Ataxia: With Reports of Cases.—Dr. J. P. CROZER GRIFFITH of Philadelphia presented a résumé of 17 cases previously reported pointing to an involvement of the cerebellum as well as to other parts of the brain and added three new cases. The first case exhibited incoordination, nystagmus, affection of speech, confusion of mind, increased knee jerks, but no paralysis. This patient made a rapid and complete recovery. The second patient had a staggering gait, dizziness, incoordination, but no nystagmus or affection of speech. This child continued to show incoordination three and three-quarter years later. The third patient exhibited a staggering gait, nystagmus, vertigo, affection of speech, and mental backwardness. The eye grounds were normal. A year later the symptoms were still present, but in a much less marked degree. A fourth patient showed symptoms suggestive of encephalitis lethargica. While convalescing, marked incoordination and affection of speech became manifest, and recovery was very slow. The affection of speech still persisted. The conclusions drawn from these cases and from those collected from the literature was that this condition in which acute hemorrhagic encephalitis involved the cerebellum, though not common, was certainly more frequent than was supposed. It might be designated "acute cerebellar encephalitis" because symptoms indicating the involvement of the large brain were always present, though the degree to which the processes involved one or another part of the brain varied with the case. The cause of cerebrocerebellar encephalitis varied decidedly. In the majority of the cases reported, however, some infectious disease preceded the attack. This was true in two of the cases reported in this paper, while in the other two no such connection could be found. The prognosis so far as life was concerned seemed good, and so far as statistics went it appeared that the disease left no traces in the majority of instances. In all the cases reported lumbar puncture was done and was always negative.

The Significance of Xanthochromia of the Cerebrospinal Fluid, with Report of a Case.—Dr. ISAAC ABT of Chicago reported this case because of the yellow coloration of the spinal and ventricular fluid. The infant was thirty-seven days old at the time of death, and was of eight months' gestation. Interest also attached to this case because of the occurrence of bronchopneumonia and pyelitis. Xanthochromia was found in the complete syndrome of Froin and in the incomplete syndrome of Nonne. Froin's syndrome included massive coagulation, while Nonne's syndrome included increased globulins, but not massive coagulation. The importance of cell increase was mentioned by some and ignored by others. Xanthochromia was most frequently found in cases of tumor, inflammation, or trauma cutting off part of the spinal canal. The cul-de-sac so formed usually contained a yellow fluid which coagulated *en masse*. The pigment came from the blood ultimately. In addition to the process of transudation which occurred in a cord compression, it was readily seen that any condition which permitted red blood cells to escape into the spinal fluid might produce a yellow color when the red cells had been dissolved and the hemoglobin freed. The globulins were always increased in a yellow fluid, whether massive coagulation occurs or not. Xanthochromia might be due to transudate in the case of a tumor pressing on the cord; exudate

in the case of meningeal inflammation, and hemorrhage in cases due to trauma, inflammations, and tumors. Increased cell count occurs in cases of meningitis, and is also found in cases of tumor and hemorrhage. In the last case the presence of red cells usually excluded other conditions, although blood might be present as a concomitant finding in tumors and meningitis. Pellicle formation was of little importance, being usually found in meningitis, though it had been reported in a case of tumor without meningitis. Where the process had been of short duration and compression had not been sufficient, massive coagulation might not occur. In fact, many writers stated that Nonne's incomplete syndrome was merely a precursor of Froin's complete syndrome. Some cases of Nonne's syndrome probably never reached Froin's stage. Similarly, conditions causing hemorrhage might never give sufficient plasma and fibrin to cause coagulation. Another class of cases causing a yellow spinal fluid was that type associated with red cells in the fluid. Many considered this a separate syndrome, and applied to it the name erythrochromia. It was shown by quotations of cases from the literature that no hard and fast line could be drawn between yellow fluids on the basis of the presence of red cells. The other differences which were stated as distinguishing erythrochromia from xanthochromia were proved to be not differences at all, because such properties as variability of a single fluid as regards color and globulin content applied just as well to one as to the other. The case reported was that of a child brought to the hospital as a feeding case. About the fourteenth day the temperature rose to 106° Fahr., and the child was seized with severe convulsions. The urine showed pyelitis, and upon examining the lungs patches of bronchopneumonia were found. The convulsions, and urinary and pulmonary findings persisted until the end. The anterior fontanelle was tense and bulging. On the thirtieth day spinal puncture yielded 4 c.c. of distinctly yellow fluid. The fluid was clear, but the first 2 c.c. yielded a filmy pellicle. The second tube, containing 2 c.c., did not change. Three days later the right ventricle was punctured and 20 c.c. of yellow fluid was removed. In both specimens of fluid there were red cells, increased globulins, and increased cell count, most of which were polymorphonuclears. The child died on the thirty-seventh day, and autopsy showed a fibrinous, hemorrhagic meningitis and encephalitis. There were numerous subpial hemorrhages, a marked internal hydrocephalus, sub-acute pyelitis, and bronchopneumonia. Two other cases were quoted from the literature, in which ventricular punctures were performed. In one of these the fluid was yellow and the condition was due to a tumor of the pineal gland. In the other the fluid was colorless and the yellow color of the spinal fluid was due to a tuberculous mass at the foramen magnum. Previous to this case the youngest case on record of xanthochromia of the cerebrospinal fluid occurred in an infant of nine months. The case reported was one illustrating the second type of xanthochromia. Both the spinal and the ventricular fluids were yellow and both contained red blood cells.

Dr. J. MILTON MILLER of Atlantic City recalled a case which he had reported before the society three years ago, a child three weeks old with meningitis. The first and second lumbar punctures were negative. Finally a ventricular puncture was made and a yellow gelatinous fluid obtained, but it did not coagulate.

Nature of the Reducing Substance in the Urine of Children Suffering from Nutritional Disorders.—Dr. OSCAR M. SCHLOSS of New York read this paper, in which he reviewed the work of Langstein and Steinits, which had led them to believe that the reducing substance in the urine of children suffering from nutritional disturbances was lactose or galactose. Experiments which he had carried out did not confirm this finding. The only reducing substance which he had found constantly present in perceptible amounts was glucose. There was usually a nonfermentable reducing substance similar to that found in normal urine. This might be lactose, but its amount was too small to identify it with certainty.

Dr. DAVID MURRAY COWIE of Ann Arbor asked whether in the cases in which he did not find a fermenting substance like glucose or lactose he had run the acetone test.

Dr. HENRY HEIMAN of New York asked whether an attempt had been made to exclude glucose and then to test for pentose and galactose.

Dr. SCHLOSS replied that the acetone and creatinine would of course be present in the nonfermentable fraction. Both substances were excluded, the acetone by boiling the urine and the creatinine by first precipitating with mercuric nitrate solution. If pentose were present it could only be in the non-fermentable fraction. The proportion was so small it was difficult to determine its presence with any degree of certainty.

Bodily Mechanics; Its Relation to Cyclic Vomiting and Other Obscure Intestinal Conditions.—Drs. FRITZ B. TALBOT and LLOYD T. BROWN of Boston presented this communication, in which they called attention to the fact that faulty bodily mechanics was responsible for a great loss of efficiency among adults during the war. Under the strain of training and of war many men broke down in France. As they could not be sent home they were given special training which restored 80 per cent. to full physical efficiency. The lack of proper training during the growing and formative period of life had cost the British government a great deal of money during the war, and also much anxiety as to how to obtain the required man power. The physical examination of 700 men entering Harvard University showed that 80 per cent. had bad bodily mechanics, and only 20 per cent. had good bodily mechanics. Time spent on training during childhood brought more far-reaching results in the correction and prevention of poor bodily mechanics than the same time spent on adults. Poor bodily mechanics was responsible for three abnormal conditions in childhood. Correcting improper posture often corrected chronic constipation, hastened the cure of recurrent vomiting, and cured certain types of attacks of acute abdominal pain in children. It therefore seemed that posture must be the principal cause or the principal contributing cause of these conditions. Illustrative cases were cited.

Dr. CHARLES GILMORE KERLEY of New York said it seemed to him that it was a faulty structural condition rather than the faulty mechanics that was the primary cause of these troubles. He asked Dr. Talbot whether he had made an *x*-ray study of the intestinal tract in these cases. He said he asked this because he had been studying along these lines and had found practically the same things true except that an *x*-ray study usually revealed a defect in the intestinal tract. In these cases one almost invariably found an elongated sigmoid, and associated with the elongated sigmoid and faulty posture one found all sorts of intestinal disturbances. An abdominal belt worked wonders.

Dr. GODFREY R. PISEK of New York expressed the hope that this paper would be brought to the attention of the general practitioner rather than to that of the pediatrist. The work of the orthopedist was important in these cases, but alone it would not be successful, because an orthopedic appliance was only for temporary use until the child's general nutrition could be improved. In attempting to correct the poor posture a lead tape showing the change in the curves of the back, chest, and abdomen when in proper and improper posture was a gerat help.

Dr. L. E. LA FETRA of New York called attention to the work of the American Posture League established by Dr. Goldthwaite of Boston. This organization had for its object the encouragement of proper posture in school children. Prizes were awarded to those who had the best posture. The results of a number of years of this propaganda would undoubtedly be excellent.

Dr. DEWITT H. SHERMAN of Buffalo suggested that in the treatment of bad posture it was advisable to go a little further than either the orthopedist or the surgeon did and to institute abdominal massage. A return to normal condition in these patients would be greatly expedited by a proper use of massage.

Dr. D. J. MILTON MILLER of Atlantic City recommended, in addition to the other methods used in the treatment of these cases, rest on the back or right side for an hour to an hour and half during the day, preferably after meals.

Dr. HENRY HEIMAN of New York spoke of the part played by bodily mechanics in the production of orthostatic albuminuria. The correction of faulty posture was most important in overcoming this condition.

Dr. RICHARD M. SMITH of Boston emphasized the necessity of following up these children after they had been taught correct posture, owing to the fact that there was a constant tendency to relapse into their faulty habit. Belts and exercises were important as reminders of the necessity of maintaining a correct posture.

Dr. TALBOT, in closing the discussion, stated that *x*-rays of the intestinal tract were taken in most of the cases, and in a number elongated colon was demonstrated. In some instances, if the child was lying down the *x*-ray would show almost nothing, but if the child stood up there would be a great deal of ptosis. The same individual might assume both a good posture and a poor one, and it had been shown that the colon might be 5 inches higher when the individual was in the good posture than when in the poor one. The most important thing in these cases was to keep the patient in your own hands and to guide the treatment. The next most important thing was to prevent fatigue, since fatigue caused poor posture and poor posture caused fatigue, thus establishing a vicious circle. The belt alone would not do everything; with it there must be proper curative exercises, and these latter formed a very important part of the treatment. He was glad Dr. LaFetra had brought out the possibility of preventive work in the schools. Personally he felt that this was one of the most important things that should be undertaken in connection with school hygiene. The rest treatment to which Dr. Miller referred was most essential, and should be taken on the back with the hips raised so that the abdominal organs would fall within the abdomen. The question had been brought up whether these children would not get well without treatment. If one weighed all the factors it seemed to him that they recovered sooner if properly treated than they would have done if untreated.

A Brief Case Report of an Epidemic of Hemorrhagic Diarrhea Due to the Streptococcus Mucosus.—Dr. A. D. BLACKADER of Montreal read this paper. He stated that he was called to Waterloo, a town sixty miles southeast of Montreal, because of an epidemic of diarrhea. On March 22 the first case was reported; on the following day five additional cases were reported, and reports continued to come in until 65 cases were recorded in the town itself and a number within a short radius. About one-fourth the entire number of cases occurred in adults, though the larger proportion were in children under six years of age. High fever, nervous symptoms, and vomiting ushered in the attack and diarrhea set in early. Mucus and blood appeared in the stools and increased rapidly in amount until they composed almost the entire stool. The attack lasted from a few days to fourteen to twenty-one days in some cases. The temperature in the severe cases went as high as 106° Fahr., while in the milder cases it was comparatively low. Notwithstanding the severity of the attacks no deaths occurred. Careful examination of the stools in two cases showed *Streptococcus encapaulatus* and colon bacilli in one, and in the other large numbers of *Streptococcus mucosus*. Few other bacteria were found and no organisms of any of the types of *Bacillus dysenteriæ*. An inspection of the milk supply and a study of the situation seemed to eliminate this as the source of the epidemic. The water supply of the town came from springs, and inspection indicated that several of these were insufficiently protected against contamination. The epidemic occurred after a few days of pronounced warm weather when the snow melted rapidly on a still frozen soil. The absence of any of the *Bacillus dysenteriæ* indicated that the streptococcus must be the chief organism concerned in the production of the epidemic.

Phlyctenular Ophthalmia and Its Relation to Tuberculosis.—Drs. BORDEN S. VEEDER and T. C. HEMPELMANN of St. Louis presented this paper which was read by Dr. Hempelmann. He stated that among pediatricians the impression was widespread that phlyctenular ophthalmia was closely associated in some way with tuberculosis, but as yet many ophthalmologists were unwilling to concede this relationship. In order to throw additional light on this question, 196 children with phlyctenular diseases were subjected to a careful study to determine the possible presence or absence of tuberculous infection. Skin tuberculin tests were positive in over 92 per cent. of the 196 children. The results of the complement fixation test for tuberculosis were strikingly similar to those obtained in cases of proved tuberculosis. In over one-half the cases tuberculous lesions involving other organs than the eye were definitely demonstrable. Children observed for periods of one year or more showed an even greater proportion of tuberculosis lesions, more than four-fifths giving evidence of tuberculosis. The study revealed an intimate relationship between these two diseases, but brought out no other points bearing on the etiology of phlyctenular ophthalmia.

Dr. JOSEPH BRENNEMANN of Chicago stated that Dr. Gibson and he had done a piece of work similar to that just reported and found a positive tuberculin test in something like 98 per cent. of the cases of phlyctenular disease. He had seen a great many of these cases in dispensary but not in private practice. Before making this investigation he had thought phlyctenular ophthalmia was not a tuberculous disease, but he now felt that it was either a manifestation or an accompaniment of tuberculosis. Finding phlyctenular ophthalmia was not, however, sufficient ground for stating that the child had tuberculosis.

Dr. HENRY J. GERSTENBERGER of Cleveland suggested suggested that the exudative diathesis might have something to do with phlyctenular ophthalmia. Many tuberculous children, if one took a careful history, would be found to have had eczema or intertrigo. These two factors might also play a part in the etiology of the conditions near discussion.

Dr. FRITZ B. TALBOT of Boston stated that in a series of 100 cases of phlyctenular ophthalmia at the Massachusetts General Hospital, 21 per cent. showed other signs of tuberculosis, such as adenitis, bone tuberculosis, or pulmonary tuberculosis. The von-Pirquet reaction was positive in all the chronic cases of phlyctenular ophthalmia, though many of them showed no other signs of tuberculosis.

Dr. B. RAYMOND HOOBLER of Detroit described work that he had done on this subject in association with an ophthalmologist in a large clinic. They had found injections of old tuberculin in small but increasing doses one of the most satisfactory methods of treating this condition.

Dr. HEMPELMANN said he had been very much interested in the work Dr. Gibson and Dr. Brennemann had done, and he had merely wished to carry the clinical investigation a little further. The object of this paper was to get the ophthalmologists to recognize the relation between phlyctenular disease and tuberculosis, so that they would recognize the need of general care for these children. As to the exudative diathesis, they had obtained very slight history of lesions attributable to that condition in this series of cases. Such statistics as they had obtained showed that phlyctenular ophthalmia was no more frequent in children having exudative diathesis than in others. They had studied the effects of tuberculin in the treatment of phlyctenular ophthalmia, starting with doses of one-millionth of a mg. of old tuberculin. The ophthalmologists were not convinced that either local recovery or general improvement resulted. In this series of cases the ones giving negative reactions were mostly those in whom the test was not repeated and in which no intracutaneous test was made.

A Study of Pneumonia During the Recent Epidemics.—Dr. HENRY HEIMAN of New York presented this communication, which consisted of an analysis of a series of 336 cases of pneumonia admitted to the Pediatric Service of Mt. Sinai Hospital during the pandemic of influenza. Of these cases 48 were lobar and 288 bronchial pneumonias. Not all were influenzal pneumonias. The mortality for the entire series was 16.6 per cent. Though a variety of organisms were found in the sputum, including the influenza bacillus, pneumococcus, streptococcus and staphylococcus, none was sufficiently prominent to justify conclusions. The most frequent complication was otitis media which occurred in 75 of the 336 cases. Empyema developed in 17 cases. In the presence of this complication, he advised against early operation before the acute stage of the pneumonic process has subsided. Hygienic care, efficient nursing, plenty of fresh air, a bright sunny

room, quiet surroundings and close supervision were of prime importance in the treatment of pneumonia in children. A cleansing bath should be given each morning as a protective measure, and vigilance should be exercised to guard against infection of the eyes, skin and mouth. While fresh air was very necessary, he did not favor the cold air treatment. The digestive tract should receive the closest attention. For the moderately severe cases with high temperature, hydrotherapy might be employed in the form of warm packs. Atropine and adrenalin might be indicated in the toxic cases. The promiscuous use of dry cupping might be regarded as a demonstration of spectacular therapeutics of no real value. The general use of digitalis he could not recommend in children; as a rule the pulse was not lowered or the blood pressure raised by this drug. It was to be hoped that there would be a further differentiation of types of pneumonia in infants and children with the hope of securing specific therapy.

Dr. GODFREY R. PISEK of New York stressed what Dr. Heiman had said with reference to allowing an empyema to develop fully before subjecting the child to operation. He thought the pediatrist was the one to decide as to the proper time to operate.

Dr. J. P. CROZER GRIFFITHS of Philadelphia said they had seen a great deal of pneumonia in 1918 and 1919, in the influenza epidemic which struck them with unusual severity. Everyone, however, was struck by the fact that the number of children suffering from it was small as compared with the number of adults, and that the disease in them was not nearly so severe. In the epidemic of influenza in 1919 and 1920, which was much less severe than the former one, there were a large number of cases of pneumonia occurring in children and a high mortality rate. This was true both in the wards of the Children's Hospital and in the cases seen in consultation in private practice. There was a marked absence of leucocytosis. The organism most often found was the hemolytic streptococcus. They had noted, too, that it was extremely common to have empyema develop, and that it came on very insidiously. It was present so often in cases that ordinarily would have been diagnosed as free from this complication that puncture was done as a precautionary measure, and repeatedly such cases would show fluid. Perhaps the question when to operate was a surgical matter, yet it was a question which had been put to them and one which they had been unable to answer. Many cases during the past winter had not shown the usual drop of temperature with the sudden rise, but had developed empyema while the pneumonia was still present.

Dr. ROWLAND G. FREEMAN of New York claimed that there was no method of treating pneumonia as valuable as fresh air, and the colder the air the better. In cold fresh air the patient took his food better and ran a lower temperature. He had never seen a patient harmed by cold air, and he had seen a great many helped. He did not think whiskey was indicated in younger children, though it might sometimes do good in older children. In one children's institute in New York they used whiskey whether the physician ordered it or not, and the results were not good. Dr. Freeman said that for many years he had not used digitalis in children, but was now using it in large doses and found it very valuable, especially in older children when given early.

Dr. JOSEPH BRENNEMANN of Chicago brought out the point that statistics based on hospital experience were very different from those in private practice; there was no such high mortality in private practice. A hospital ward was not a good place for children suffering with pneumonia. Another factor that vitiated hospital statistics on pneumonia was the fact that nearly every baby suffering from severe malnutrition had a pneumonia as a terminal condition.

Dr. A. D. BLACKADER of Montreal said that in Montreal they had found that hospital statistics concerning pneumonia and those from private practice represented two entirely different phases of the disease. In Montreal the mothers would not have their children in a hospital if they could keep them at home. Alcohol should not be used in every case of pneumonia in infancy and childhood, but there were cases in which it might be used. If given it should be prescribed in carefully regulated dosage as a drug. Digitalis upset the stomach, and any drug that had this effect should be used cautionsly. In children the cardiac muscle was fairly strong, so that digitalis was not needed. While fresh air was desirable, the line should be drawn at flowing air and drafts. Rest was most important, and for this reason hydrotherapy should be used with moderation.

Dr. RICHARD M. SMITH of Boston emphasized the importance of conserving the out-go of energy in the treatment of pneumonia, and for this reason he thought it a good plan to give codeine in some form.

Dr. E. W. SAUNDERS of St. Louis recommended iodide of potassium as a means of liquefying a tenacious sputum that blocked the bronchial tubes and was instrument in keeping the temperature high.

Dr. HEIMAN, in closing the discussion, said he had not attempted to give a formula for the treatment of pneumonia. He had simply attempted to generalize and suggest remedies that, while they might do no good, would certainly do no harm.

Further Progress in the Study of the Relative Efficiency of the Different Mercurial Preparations in the Treatment of Congenital Syphilis in Infants and Children as Determined by a Quantitative Analysis of the Mercury Elimination in the Urine.—Dr. WALTER R. RAMSEY and O. A. GROEBNER of St. Paul presented this paper which was read by Dr. Ramsey, who stated that the treatment of syphilis with the different mercurial preparations was still a haphazard affair, the rule being to give as much mercury as the patient would tolerate without salivation or diarrhea. Assuming that the amount of mercury eliminated in the urine during a given time would give a fair index of the amount in the circulation, Ramsey and Ziegler made some experiments, the report of which was read before the society in 1918 and printed in the *American Journal of the Diseases of Children* in the November number of the same year. In these experiments it was demonstrated that mercury, whether given by inunction, by mouth or by hypodermic injection, was eliminated in the urine in appreciable amounts. Where only one dose was given by any of these methods mercury continued to be eliminated in the urine for a variable time, and in one case as long as ten days. In this new series of experiments, they had sought to determine with some degree of accuracy the amount and rapidity of absorption and elimination of the mercurial preparations in common use, as determined by quantitative estimate of the amounts eliminated in the urine. The method was the same as employed in the previous experiments. It would be observed that where 50 per cent. mercurial ointment was used the elimination began soon after administration, the maximum elimination occuring during the following three days, the elimination being fairly complete within five days. With the 33⅓ per cent. mercurial ointment, even when double the quantity was used, the elimination did not begin in appreciable amounts until the second day after inunction and then in much less quantities than when the 50 per cent. ointment was given. When the mercurial ointment was simply used by smearing on the skin, without rubbing, the amount eliminated was much less than when used as an inunction. In the case of calomel ointment it would be seen that the elimination was delayed and the total quantity eliminated was much less than with the mercurial ointment, although two grams was used for each inunction. With mercurial salicylate in oil, used hypodermatically, it would be seen that the maximum elimination was in the first twenty-four hours, smaller quantities continuing to be eliminated for six or seven days. The mercuric chloride solutions used hypodermatically continued to be eliminated in amounts not sufficient to be measured for six or seven days. In one case there was an appreciable amount of protein in the urine following its use, a point which was mentioned in our last publication. Calomel and gray powder by mouth were apparently not absorbed to any great extent, the calomel being absorbed, however, to a much greater degree than the gray powder. It did not seem to make any difference whether the calomel was given in one or divided doses, the elimination was the same. The practical deductions which might be drawn from this series of experiments were therefore as follows: (1) Mercurial ointment, 50 per cent., was to be preferred to the less concentrated and should be repeated

not more often than twice weekly instead of daily. (2) Calomel ointment was absorbed, but less rapidly, and to a less extent than the mercurial ointment, and should therefore be given in greater concentration twice weekly. (3) The salicylate of mercury in oil should be given hypodermatically twice weekly instead of once. (4) The mercuric chloride by hypodermic injection, although the dose was very small, continued to be eliminated for several days, but owing to the fact that its use was frequently followed by the appearance of protein in the urine it should be excluded in the treatment of syphilis. (5) Calomel by the mouth was absorbed in small amounts and continued to be eliminated for a considerable time so that it was probable that it would be sufficient to give it at intervals of several days without producing diarrhea. (6) Gray powder was absorbed to a small degree and eliminated rapidly, so that fairly large doses, repeated daily, would probably be necessary to maintain mercury in the circulation. In one case of congenital syphilis treated by inunctions, not repeated oftener than once weekly, the clinical progress was apparently not less satisfactory than in cases where daily inunctions were given.

A Study of the Incidence of Hereditary Syphilis.—Dr. P. G. JEANS and Dr. J. V. COOKE, St. Louis, made this study aided by a grant from the U. S. Interdepartmental Social Hygiene Board. The method used was the histological examination of a series of placentas, together with a Wassermann reaction on the fetal blood collected from the umbilical cord at birth. In order to determine the reliability of such a method it was necessary to secure additional Wassermann reactions on the mother, and on the infant after two months in as many cases as possible. It had been shown that there was a high percentage of agreement between the results of the Wassermann reaction on the maternal blood and histological evidence of syphilis in the placenta. The necropsy findings in still born infants likewise corresponded closely with the placental histology in so far as syphilis was concerned. The writers had hoped therefore that a similar close agreement could be demonstrated between the placental histology and fetal blood Wassermann on the one hand, and the living infant on the other, in which case the incidence of hereditary syphilis in the middle and upper classes could be estimated by examination of the placenta and cord blood. Their material collected from several sources included about one-fifth the children born in St. Louis over a period of months, almost equally divided between charity and private patients. The results presented were based on data thus far collected from the first thousand cases. Up to the present time they had examined 129 infants at two or more months of age. Of these 10 per cent. presented undoubted evidence of syphilis, and the remainder were just as evidently non-syphilitic. Classification of this group according to race showed an incidence of 15.8 per cent. among negroes and 5.5 among whites. The histological examination of the placenta as to the presence or absence of syphilitic changes corresponded to the established diagnosis in 95.5 per cent. of the cases. The lack of correspondence consisted entirely in finding no syphilitic changes in the placenta in cases in which the infant had syphilis. In every instance in which the placenta was noted as showing syphilitic changes the infant was found later to have syphilis. In this group of cases in which the diagnosis was established, the Wassermann reaction on the placental cord blood corresponded to the diagnosis in the infant in 96.5 per cent. Here also the discrepancies were entirely due to finding of a negative Wassermann reaction in the fetal blood in instances in which the infant was syphilitic. In every instance in which the fetal blood gave a positive Wassermann reaction the infant was later found to have syphilis. Of the 1,000 cases, 574 were of the dispensary or poorer class, and in this group there was an estimated incidence of syphilis in 9.6 per cent. Classified according to race, the incidence among negroes was 14.4 per cent. and among the whites 5.8 per cent. The observations tend to confirm the reliability of the method of estimation and establish the justification of applying either or both methods of estimation. Among private patients able to pay a physician's fee and private room rates in a hospital, the estimated incidence based on examination of placentas was 1.4 per cent. Including the doubtful cases the incidence was 1.9 per cent. Estimating the incidence from the Wassermann reaction on the cord blood the incidence was found to be 1.6 per cent., again showing the close agreement between the two methods. In some instances in which the infant had syphilis the maternal Wassermann reaction alone was positive, in others the placenta alone. Therefore, in order to give a clean bill of health to an infant at birth it was necessary to have all three examinations negative, that was, maternal Wassermann reaction, placenta, and cord blood, and even then there might be some uncertainty. The fact that the treatment of the mother during pregnancy will result in a non-syphilitic child had been proved by other observations. In this series this observation had been confirmed. It was their feeling that the whole group fairly represented a cross section of the population of St. Louis and if such was the case the incidence of hereditary syphilis at the time of birth was 6 per cent. When syphilitic changes were present in the placenta the infant was syphilitic even though the Wassermann reaction was negative on the fetal blood, and vice versa; the infant had syphilis if the cord blood showed a positive Wassermann even though the placenta appeared normal. The infant might be syphilitic if both placenta and cord blood were negative. A syphilitic child might be born to a woman with a negaitve Wassermann, and a mother with untreated syphilis and a strongly positive Wassermann reaction might have a healthy child.

Dr. H. J. GERSTENBERGER of Cleveland stated that in going over their records of 20,000 patients treated since 1906, they had found an incidence of syphilis of 14 per cent. They had found the highest percentage among poor whites of American ancestry, the next highest among negroes, then Italians, and the fewest number among Jews. During the last six years they had been checking up their clinical diagnosis by the Wassermann test, and had found very little difference in the incidence as determined clinically alone and since the Wassermann test was being employed; what little difference there was being in favor of the Wassermann test. Dr. Gerstenberger cited an instance of twins, eight weeks old, one of which showed the skin manifestations of syphilis while the other was perfectly normal. The Wassermanns corresponded with the clinical findings. Both children were still alive and the Wassermann reactions still remained the same.

Dr. HENRY HEIMAN of New York asked Dr. Jeans what his experience was with cases of congenital lues subjected to treatment and then a second Wassermann test made. Some thought that in these cases of congenital lues "once a positve Wassermann always a positive Wassermann."

Dr. L. R. DEBUYS of New Orleans pointed out the necessity of making a Wassermann test on each individual infant no matter what the mother's reaction might be.

Dr. LANGLEY PORTER of San Francisco referred to a small series of cases tested at the Sloane Maternity in which they had had some difficulty with the anticomplementary properties of the cord blood. They had found an incidence of syphilis of 6½ per cent. With one exception in the luetic cases the placenta showed changes both grossly and microscopically.

Dr. JEANS stated that statistics based on clinical examination always gave a lower incidence of lues than those based on the Wassermann reaction. With reference to the serological cure of congenital lues, they had been getting a negative serological result in every instance in which the child came for treatment for the required length of time, so that he could say that it was not only possible to get a negative serological result in congenital lues, but that it was the rule under proper treatment. They had found the placental blood becoming anticomplementary in so few instances that they had not thought it worth while to report that finding.

Preliminary Observations on the Pathogenicity for Monkeys of the Bacillus Abortus Bovinus.—Drs. E. C. FLEISCHNER and K. F. MEYERS of San Francisco presented this communication in which it was stated that the intravenous injection of known strains of *Bacillus*

abortus bovinus produced in monkeys a definite symptom complex characterized by irregular temperature, loss of weight and positive agglutination reactions. At post mortem it was possible to recover the organisms from the spleen, lymph nodes and kidney of the infected animals. While this type of infection was interesting from the sicentific standpoint, deductions as to the possible danger incurred when large numbers of the bacteria entered into the intestinal tract could only be drawn by feeding the organisms. Macacus monkeys were fed daily over varying periods of time with cultures of known virulent strains. Using the *B. abortus* as an antigen agglutination reactions became positive, and on sacrificing the animals the infecting bacilli were found in the spleen, lymph nodes, and kidneys. A goat was infected by injecting into the udder a very virulent strain of *B. abortus* recovered from a hog suffering from abortion disease. The muscles of this goat were fed to a Macacus monkey for fifty-two days. A positive agglutination reaction developed and at post mortem the spleen and lymph nodes were enlarged, and enormous numbers of *B. abortus* were recovered from the viscera. It seemed reasonable to assume that the *B. abortus bovinus* was pathogenic for monkeys that had been fed virulent strains of the organism in large numbers. It was known that abortion disease was much more prevalent among cattle than bovine tuberculosis. For many years there had been a tremendous economic loss because we thought we must eradicate bovine tuberculosis. *B. abortus bovinus* did not seem to be pathogenic for human beings, and he did not wish to leave the impression that we must eradicate abortion disease from cattle at the present time.

Lesions in the Mid-Brain; Report of a Case.—Dr. J. H. MASON KNOX, Jr., read this paper in which he stated that because of the compactness of the structures in the mid-brain and because of its many complicated connections the study of disturbances in this region was often puzzling. The case reported was therefore interesting because the symptoms were comparatively definite and the pathological findings fairly circumscribed. The patient was a colored boy of three years, brought to the Harriet Lane Home of Johns Hopkins Hospital, February 3, 1915, because of general weakness, trembling, and drooping of the eye-lids. The family and personal history of the patient were negative, the boy having appeared perfectly normal until six months before admission, when he stopped crying almost completely. Physical examination showed enlargement of the epitrochlear glands and the eye symptoms. The pupils reacted to light, the left better than the right; there was occasional lateral nystagmus of the right eye; marked bilateral ptosis of the eyelids, apparently equal on both sides, and a definite deviation of the eyeball to the right. Two weeks later the patient returned with the history of having had two attacks of paraplegia, and of having become very weak after the second one. The symptoms referred to persisted until his death forty-two days after coming under observation. The acquired ptosis and the curious tremor of long standing noted in the extremities, together with the gradually developing paralysis of the movements of the eye-balls, except those produced by the external recti, with resulting external strabismus, in a child previously well, led one to venture the diagnosis of a tumor of the mid-brain, interfering with the nuclei of the third and fourth cranial nerves. The ataxia might also be accounted for by lesions in this region, involving the red nucleus or cerebellar tracts. Toward the end there was meningitis, probably of tuberculous origin, associated with hydrocephalus, although the tubercle bacilli was not demonstrated. A positive von Pirquet reaction and the subsequent devolpment of meningitis suggested that the tumor was probably tuberculous in origin. The post mortem findings confirmed in the main the clinical symptoms described, there being a tuberculoma the size of a hickory nut in the midbrain, involving the corpora quadrigemina and occluding the aqueduct of Sylvius. The order in which symptoms developed was of the utmost importance in reaching an accurate diagnosis. When the early symptoms were general and attributable to increased cerebral pressure, such as headache, vomiting, optic atrophy, hydrocephalus, etc., followed it might be with ptosis and oculomotor palsies, one would be inclined to place the lesion outside the midbrain, since such symptoms might result from meningitis or tumor elsewhere, possibly in the pineal gland. Whereas, as in the boy here reported, the limitation of the symptoms for months to ptosis and paralysis of the oculomotor nerves and tremor without evidence of intracranial pressure supported the diagnosis of an injury beginning in the midbrain, and, as far as it went in this case, the absence if an increase of growth or of sexual development suggested that neither the pineal nor the pituitary glands were involved.

The Ulcerated Meatus in the Circumcised Child.—Dr. JOSEPH BRENNEMANN of Chicago presented this paper, in which he stated that following circumcision there was often ulceration, scab formation, narrowing of the meatus, painful urination, and occasionally hemorrhage at the end of urination. The condition seemed always associated with the "ammoniacal diaper." The lesion was treated by the application of vaseline or wet boric acid dressings to the meatus if inflamed and prophylaxis of the ammoniacal diaper. The cause of the latter was probably a metabolic disturbance not yet fully understood but probably due to overfeeding with cows' milk fat as a result of which there was an excessive excretion of ammonium salts in the urine. In order to liberate ammonia, ammonium salts must be broken down, and as this was commonly effected by an alkali it was well to rinse the diapers well to remove all excess of soap and also to boil them for a long time to eliminate the possible influence of bacterial action.

Dr. CHARLES GILMORE KERLEY of New York stated that he had found the condition Dr. Brennemann described quite frequent in office practice. Cases of this kind he had classified as eczema of the meatus or orifice of the urethra. The treatment consisted in giving citrate of potash, applying an ointment of 5 per cent. boric acid and putting the diaper on like a T-shaped bandage. If the condition occurred in children with hyperacidity of the urine, the fats and sugars in the diet were cut down. All the cases that he had seen had occurred in children who had been circumcised. The condition was not infrequently seen in from three to six week following the operation. The cases he had seen recovered promptly under proper treatment.

Dr. HENRY HEIMAN of New York regarded the condition as purely traumatic and treated it by applying pure nitrate of silver, and avoiding irritation by the diaper.

Dr. MCKIM MARRIOTT of St. Louis expressed the opinion that the ammonia was not present in the urine when it was passed, as the kidney did not secrete a urine containing any appreciable amount of free ammonia. It was the result of the breaking down of either ammonium salts or urea. Ammonium salts were increased in certain types of feeding and these might be broken up by the action of an alkali, either as the result of soap left in the diaper or as the result of standing with alkaline soapy stools. A more important factor in the production of ammonia in the diaper was bacterial decomposition of the urine, either of the urea or of the ammonium salts. Quite a number of bacteria were capable of doing this. It could be prevented if the attempt was made to keep the child's buttocks and perineal region perfectly clean and if the diapers were thoroughly boiled.

Dr. J. P. CROZER GRIFFITH of Philadelphia advised, in order to avoid irritation of the genitals, a diaper used by a considerable number of the foreign population—one which was square, and in which the two lower corners, one on each inner side of the right and left thigh respectively, were brought up and pinned to the diaper above the hips.

Dr. JOSEPH BRENNEMAN, in closing the discussion, emphasized the fact that the ammoniacal diaper was very frequent and common with them and that he felt it was largely responsible for the condition under discussion. They had not found, as Dr. Kerley said, that the cases got well quickly; in some instances it took a long time to heal the lesion. He had passed through the stage when he believed the condition was due to eczema, to trauma or to narrowing of the meatus, and had been forced to the conclusion that the ammoniacal

diaper was the main factor in producing the lesion. He felt that the stool and bacteria, if they were involved in the production of this lesion, played a minor part.

(To be continued.)

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held March 16, 1920.

SECTION IN MEDICINE.

DR. CARY EGGLESTON IN THE CHAIR.

THE program of the evening was furnished by the staff of the hospital of the Rockefeller Institute.

The Excretion of Urea.—Dr. DONALD VAN SLYKE made this presentation, in which he stated that in measuring the rate of urea excretion as an estimate of kidney function there were two major factors, aside from the excretory ability of the kidney, which influenced that rate, and which must be recognized and allowed for before the third factor, namely, the state of the kidney function, could be estimated. These two factors were the concentration of urea in the blood, and the rate of volume output of urine. The blood urea concentration was recognized by Ambard as a factor, and he found that other factors being equal, excretion increased as the square of the blood urea concentration, that was, doubling the blood urea would quadruple the rate of excretion. In work done by Dr. Austin, Dr. Stillman, and Dr. Van Slyke at the Rockefeller Hospital, however, it had been found that the rate of urea excretion in both man and dog was in simple proportion to the blood urea concentration, that was, doubling the blood urea doubled the output. Ambard's more complex assumption might have been due to errors in the experimental data on which his calculations were based, as the present accurate methods for blood urea determined were not then available. The second factor assumed by Ambard was the concentration of urea in the urine. He found that excretion varied inversely as the square root of this concentration. They had not been able to find any regular relationship whatever between urine concentration and rate of urea output, but had found a close relationship between *volume* rate of urine excretion and urea output. With a constant blood urea concentration, increase in the urine volume increased the rate of urea output. A larger volume, so to speak, washed out more urea. The increase in urea excretion was not entirely proportional to the increase in volume output. It was proportional to the square root of the volume, that was, in order to double the rate of urea excretion solely by increasing urine volume, the latter must be increased not twice, but four times. These relationships were expressed by the equation: $D = K\ B\ \sqrt{V}$, when D was the rate of urea excretion, K a constant characteristic within certain limits for normal individuals, B the blood urea concentration, and V the volume output of urine. When D and V were put on a per kilo basis by dividing by the body weight, W, the equation became $\frac{D}{W} = K\ B \sqrt{\frac{V}{W}}$, or $D = K\ B\ \sqrt{V\,W}$. The constant K was proportional to the rate at which the kidney excreted urea. Transposing the equation gave $K = \frac{D}{B\sqrt{V\,W}} = 7.5 \pm 3$, when D was expressed as grams of urea excreted per 24 hours, B as grams urea per liter of blood, V as liters of urine per 24 hours, and W as body weight in kilos, the value of K is 7.5 ± 3.0 for normal individuals. Normal values usually fell between six and eight; values below 4.5 were distinctly abnormal, and indicated diminished kidney function. This formula held for limits of volume output below about four liters per day. Increases beyond this point, even up to the rate of 20 liters per day, did not increase any further the rate of urea output. The rate of volume output at which further increase ceased to cause further acceleration of urea output they had called the "augmentation limit." It was characteristic for different individuals, and might vary between three and six liters. In practical application of the formula, when values of V above four liters were observed, four was used in the formula instead of the observed volume. The formula here developed had arisen from work inspired by Ambard's conceptions, and was similar in purpose to Ambard's. It had, however, he believed, been freed from quantitative errors which were involved in Ambard's equation at the beginning and had until now been left there.

Dr. HERMAN O. MOSENTHAL said this subject had been admirably handled by Dr. Van Slyke. His presentation had cleared up many of the points in Ambard's original formula which were unnecessarily complex. It was especially important to note that Drs. Van Slyke and Austin had demonstrated that the excretion of urea was not absolutely dependent upon the concentration of urea in the blood, but that the volume of urine excreted had a definite influence. The power of the kidney to eliminate any solid substance was dependent upon two factors, first, the ability of the kidney to concentrate the solid material, and, second, the amount of water that was put out in the urine. The paper, to-night, furnished very definite data as to how the normal kidney behaved in this regard; it might be a very much more difficult matter to determine the applicability of these laws in kidney disease, especially because, as had been mentioned, the ability on the part of the kidney to eliminate was really composed of two elements, the excretion of urea, and the excretion of water. An impairment of function that limited the output of either substance would entail a diminished urea output. The subject, therefore, was rather complex and did not admit of absolutely clearcut interpretation as to how the kidney was affected by the disease. In hospital work, with unlimited opportunities, the old Ambard's constant yielded results that accorded very well with the clinical picture. In private practice, as the test was formulated at present, it required too much time to be of practical value.

On Certain Differences in the Action of Strophanthin and Digitalis in Patients.—Dr. ROBERT L. LEVY read this paper, in which he said it was highly desirable to have for use in clinical medicine a safe effective preparation of the digitalis series for intravenous use. The employment of a member of the digitalis group proper had not proved feasible because of the impracticability of obtaining a preparation uniform in potency. Crystalline strophanthin, sometimes called "ouabain," obtained from the seeds of *Strophanthus gratus*, had been employed for intravenous therapy, but because of its reputed great toxicity had not been widely used in the clinic. Variations in the potency of the solutions of this drug had been observed. Such studies of its action in patients as were available were fragmentary, and the results to be drawn from them therefore inconclusive. The observations were carried out in collaboration with Dr. Alfred E. Cohn. The drug chosen was crystalline strophanthin inasmuch as it was a pure substance having definite chemical and physical properties. The crystalline substance employed was isolated from seeds of *Strophanthus gratus*, chemically identified and biologically standardized by the cat method of Hatcher. The average cat unit was found to be 0.014 mgm. per kilogram. For use in the clinic the crystals were dissolved in M/50 phosphate solution with pH 7.0, and autoclaved in hard glass ampules. In this manner alterations in reaction of the solution were prevented, and biological potency was preserved. Equivalent amounts of strophanthin by vein and of digipuratum by mouth in terms of cat units were administered to patients. In this way a series of comparable observations both in the same and different individuals was obtained. The strophanthin effects could in this way be viewed with reference to known and fairly constant digitalis standards. While the treatments were being given electrodes leading to the string galvanometer were kept constantly in place, and curves were made at intervals of fifteen minutes during the first three hours and then at one-half hour intervals for the second three hours. Another electrocardiogram was usually made the same evening and once daily thereafter until the curve had resumed the form seen in the control. Strophanthin was given usually in two doses at an interval of one hour—the first 0.4 to 0.5 of a milligram, the second 0.3 to 0.5 of a milligram. Digitalis was

administered in comparable doses and at the same intervals in the same patient on different occasions. The giving of relatively large doses, as recommended by Eggleston, had been found feasible. Rarely, however, had it been necessary in cases of auricular fibrillation to give more than one gram to produce the desired effects. Clinical observations were made on 29 cases to whom 66 courses of treatment were given. Of these 35 were strophanthin and 31 digitalis. Of these 29 cases 14 were auricular fibrillation, 12 occurring in heart disease and two pneumonia. In 15 cases the mechanism was normal. Four of these cases had heart disease, six pneumonia and five cardiorenal disease. For purposes of discussion the cases might be divided into patients suffering from auricular fibrillation and those exhibiting normal cardiac mechanism. In auricular fibrillation an effect on rate was usually obtained with strophanthin within one-half hour. Such an effect was of relatively short duration (three to seven days). The T wave of the electrocardiogram was altered less frequently than with comparable doses of digitalis, namely, in only 26 per cent. of the cases observed; and the action on the heart muscle, of which the T wave might be regarded as an expression, occurred later and disappeared earlier than the effect on conduction. With digitalis the initial effect on the rate was observed in about three hours after beginning its administration, the maximal effect being reached in about ten to eighteen hours. This effect persisted for a considerably longer time than was noted with comparable doses of strophanthin (thirteen to sixteen days). The T wave of the electrocardiogram showed the characteristic change in 90 per cent. of the cases. In patients with normal mechanism the rate was affected by strophanthin in four of sixteen observations. T wave changes occurred about as infrequently (30 per cent.) as in the cases of auricular fibrillation, and the effect on conduction occurred in a like percentage of cases and usually outlasted the effect on rate. No serious untoward effects were observed after strophanthin. The onset of abnormal rhythms, namely, ventricular premature beats and ventricular ectopic tachycardia, occurred in 52 per cent. of fibrillators and in 12.5 per cent. of cases with normal rhythm. Such toxic effects occurred always within twenty minutes of the injection of the dose causing them, and disappeared within eight hours. Nausea and vomiting were noted in 10 per cent. of cases. Comparable doses of digitalis by mouth caused undesirable effects in a much smaller percentage of observations.

Dr. HAROLD E. B. PARDEE stated that he considered this an extremely valuable study on the action of digitalis, and that it must have involved a great deal of work. The first part of the work must have taken a number of months. It was extremely interesting to see that strophanthin was different from digitalis in its effect on the T wave. There must, however, be further investigations before they could understand exactly what was meant by this effect on the heart muscle. Considering his own observations on the T wave following the administration of digitalis, Dr. Pardee said he was interested to hear that Dr. Levy noticed the effect on the T wave only after twenty-four-hour intervals. The reason must have been that the doses were smaller and not comparable to the doses of digitalis which he had given. If Dr. Levy had given larger doses of digitalis he would have obtained the effect quicker. Dr. Levy had established a proportional relation of the dosage of strophanthin and digitalis before he started, and it was interesting that the proportional doses did not produce proportional effects. It was also of great interest that following the administration of strophanthin there was so often a ventricular tachycardia, an unpleasant thing for the physician to observe in a patient as the result of medication. He thought the administration of strophanthin should be carried out only by those people working with it in hospitals until we knew exactly what effect it had upon the heart muscle. He had seen patients killed by strophanthin, and it was hard to say whether this specific effect of strophanthin in causing ventricular tachycardia might lead to ventricular fibrillation with resulting sudden death.

Dr. E. LIBMAN said that he had a few years ago tested out the intravenous use of strophanthus quite extensively. In only one case did it seem at all probable that the administration of the drug had caused a fatal termination. That patient, however, had a thrombus in the left auricle, and as was well known, sudden death might have occurred at any time, independent of any therapeutic method.

Dr. EGGLESTON emphasized the point brought out by Dr. Pardee, saying that the more he saw of the use of strophanthin in the present state of our knowledge the less he thought it ought to be used except under special circumstances. If adequate doses of digitalis were given by mouth the necessity for strophanthin intravenously would be largely obviated. On the second division of Bellevue Hospital a large number of patients who might have been considered as requiring strophanthin were successfully treated with large doses of digitalis by mouth. Dr. G. Canby Robinson had recently expressed the idea that one could largely do away with the use of strophanthin by resorting to adequate oral doses of digitalis. There had come to Dr. Eggleston's attention during the past few years several cases in and about New York in which death had followed the intravenous intramuscular use of strophanthin. These cases were under the care of men experienced in cardiac therapy, so that no blame could be placed on the technique or the selection of cases, but they rather indicated that the drug was not without serious drawbacks from the point of view of its dangers.

Dr. LEVY, in closing, said that he wished it clearly understood that he held no brief for strophanthin. The investigation was undertaken to ascertain facts concerning the clinical pharmacology of this glucoside. That the margin of safety between the toxic and therapeutic dose was small had been known for a long time. It was felt, however, that there was a need for a drug of the digitalis series for intravenous use, for there were times when urgent cardiac stimulation was required. Again there were patients who because of nausea and vomiting were unable to take digitalis by mouth. Individuals in coma, as for example, critically ill cases of pneumonia with auricular fibrillation might require cardiac support which could only be given by intravenous injection. Finally there were patients who did not respond to digitalis by mouth in whom satisfactory effects could be obtained by intravenous therapy. If the effects of digitalis could be obtained by giving it by mouth, then digitalis was the preparation of choice. This study was undertaken merely to ascertain the true value of strophanthin in the clinic based upon careful observation of its physiological action.

The Formation and Fate of Methemoglobin in Pneumococcus Septicemia.—Dr. WILLIAM S. STADIE made this presentation. He said that the pneumococcus changed hemoglobin into methemoglobin. Hence it seemed that methemoglobin formation might occur in pneumococcic infections and might be the cause of the cyanosis. However, a study of thirty-two cases of pneumonia had shown that there was frequently a diminution of the oxygen content of arterial blood and that the essential cause of cyanosis was the incomplete oxygenation of venous blood in passing through the lungs. To study the rôle of methemoglobin formation in pneumonia, a new method for the quantitative determination of methemoglobin in blood was devised. First, methemoglobin formation by chemicals was studied. It was found that the methemoglobin was always in the red blood cells, and while any proportion of the hemoglobin could be changed to methemoglobin the methemoglobin was eliminated from the blood stream with such great rapidity that it could not be found in the blood as early as fifteen minutes after the change of 40 to 50 per cent. of the hemoglobin to methemoglobin. Examination of the watery extracts of all the organs by means of the spectroscope showed that there was no storage of methemoglobin. The urine was always negative, and hence it was probable that the methemoglobin formed was rapidly destroyed. It was doubtful whether there was a catalytic production of methemoglobin from hemoglobin by the action of chemicals. The pneumococcus produced methemoglobin with great facility. The presence of the living organism was necessary. Filtrates and autolysates of pneumococci failed to change the hemoglobin. In rabbits the injection of pneumococcus produced a rapid diminution in the amount of hemoglobin present in the

blood. This diminution was due to methemoglobin formation; but in its production by chemicals this methemoglobin was rapidly destroyed, so that it could rarely be found in the blood of the infected animals, even though 40 to 50 per cent. of the hemoglobin had been so changed. It was only just antemortem that the methemoglobin could be found in the circulating blood. Here again examination of watery extracts of all the organs by means of the spectroscope was negative for methemoglobin, and the urine did not contain it. In occasional cases of lobar pneumonia, usually fatal ones, there occurred a sudden and rapid reduction of the amount of hemoglobin in the blood. This was due to a change of hemoglobin to methemoglobin, and these cases usually had very marked septicemia, from 1200 to 15,000 pneumococci per cubic centimeter of blood. However, repeated attempts by many investigators to find the changed pigment in the blood had failed, and from the above experimental work the following conclusion seemed to be justified. The nonoccurrence of methemoglobinemia in pneumonia, even when there was a marked fall in oxygen capacity, was, they believed, explainable by the results reported in this paper. Methemoglobin disappeared from the circulation with great rapidity, whether it was introduced by injection of methemoglobin or formed within the circulation by the action of chemicals or of pneumococci. Taking into consideration this fact, the ability of the pneumococcus to form methemoglobin, and the consistent failure to find it in the blood in the cyanosis of pneumonia, it appeared that the following statements represent the most probable explanation of what occurs: In the occasional cases of pneumonia which showed a decrease in the oxygen capacity of the blood, the decrease was probably due to a formation of methemoglobin. The latter was removed from the circulation, however, as rapidly as it was formed, so that it could seldom be detected, even qualitatively, and was probably never a cause of cyanosis.

The Treatment of Empyema Caused by Pneumococci.—Dr. HOMER F. SWIFT read this paper, in which he stated that the great prevalence of empyema in army cantonments during the past three years had resulted in certain new principles being widely accepted for the treatment of suppurative pleurisy. It was desirable to study the differences between streptococcus empyema and that following lobar pneumonia. These differences were not considered as often as they might be. In the streptococcus cases the exudative pleurisy was frequently present early in the disease, and consequently the patient had marked general depression and but little fibrinous exudate on the surfaec of the pleura. Wide opening in the chest wall led to collapse of the lung, shifting of the mediastinal viscera, and sometimes to compression of the opposite lung. The picture of shock was increased and danger of bacteriemia more marked than if operation was delayed until later. In pneumococcus empyema, on the other hand, the suppurative exudate was not usually found until the acute infection had been present several days and often not until after the time of the crisis. Extensive pleural thickening was usually present. Ordinarily, therefore, the various conditions that caused thoracotomy to be delayed in streptococcus empyema were not operative in post-lobar pneumonia empyema. Among 770 lobar pneumonia patients, in 41 there had been a diagnosis of empyema during life, or found at autopsy. In four it was one of several general complications; these patients were not operated upon, as they represented a type in which no form of therapy was of avail. The distribution by types of pneumococci from which the patient was suffering showed that about 8 per cent. of untreated Type I cases, 7.4 per cent. of treated Type I and the same per cent. of treated Group IV cases developed this complication. There was, therefore, no statistical evidence in their patients that serum treatment predisposed to the development of this complication. Among 37 patients in whom the diagnosis was made during life and operation was performed only three died. In all three the operation was performed after the twentieth day following the onset of the pneumonia. In all the patients in whom the operation was performed early, that was, from the third to the eighteenth day following the onset of the pneumonia, recovery was the rule. No advantage could be discovered for delaying operation by repeated aspiration of the fluid that contained pneumococci. They, therefore, felt that the fluid obtained by exploratory puncture—and this was the only certain diagnostic procedure—should be examined both microscopically and culturally. If pneumococci were found by both methods, it was safe to make a diagnosis of suppurative pleurisy and to operate at once, provided the patient's condition was not a contraindication to a general operation.

Dr. B. S. OPPENHEIMER said that he had not seen so many cases of empyema this winter as Dr. Swift reported, but those he had been able to follow had all done well on the policy of waiting until the patient was quite recovered from the pneumonia and then operating promptly. Some of these had been pneumococcus cases. He asked Dr. Swift to analyze his series to show the relation of the operation to the course of the pneumonia.

Dr. LIBMAN said that he did not suppose that Dr. Swift meant that one should operate if fluid was only slightly turbid, and contained bacteria. He drew attention to cases in which there were present two effusions adjacent to each other—the one being definitely purulent, and the other one being only slightly or not at all turbid. He showed how it was possible in some cases to suspect that there was a double effusion. Sometimes the effusion secondary to the distinctly purulent exudate contained a small number of bacteria, and the focus would clear up after the purulent exudation was drained. In cases of tuberculosis, when there were two sacculations present, both of them usually showed clear fluid. In cases of infection of the lung, particularly with pus formation, the pleural fluid might contain a few bacteria, and these bacteria might not be visible.

Dr. SWIFT, in closing, said his object in making this presentation was to point out that it was necessary to study the patient and the type of infecting organism and not to make any fixed rule as to what we should do simply because a diagnosis of empyema had been made. He endeavored to point out the difference between the streptococcus and the ordinary empyema following lobar pneumonia and that the condition of the patient must be considered. If the patient was very ill and clear fluid was found it might be better to wait until the general condition of the patient had improved. However, the presence of pus often kept up the general symptoms which we all recognized as toxic. In patients who were febrile a drop in the temperature and pulse had been observed soon after operation, so that he felt that the sooner free drainage was established the sooner the symptoms passed off. The number of cases was too small to give the comparative rates of recovery in the cases operated upon early and late, but it seemed that the earlier drainage was instituted after the fluid collected the better were the results. One should make cultures of the fluid, as well as examine spreads. In most cases the bacteria were so numerous that one was not long in doubt as to the organism. They had not studied the relation between the date of the empyema and the day of the crisis, but in general the empyema was discovered after the time of the crisis. When the diagnosis of an empyema with pneumococcus infection was made it was time to operate.

Normal Maternity in a Myxedematous Woman.—Adam states that while myxedematous women not infrequently conceive, labor and its sequelæ are rarely normal. The woman in question was thirty-four, and had borne a child. There was no endemic goiter in the neighborhood. The first child was born thirteen months after marriage and was a forceps delivery, ending in still birth. Patient went seven years before another conception, her menses having been normal throughout. She was a typical myxedematous subject, the thyroid gland being extremely small. Intelligence was almost normal. The pelvis showed general contraction. The second labor and the resulting infant were alike normal, labor having been without assistance of any kind. The weight was a little under 3,000 grams. There was no mention of thyroid treatment during gestation, and doubtless the patient was not seen long before labor. —*Le Progrès Médical.*

Miscellany.

A Gypsy Girl as Surgeon's Aid.—The highly developed powers of observation and retentive memories of the illiterate are well known. Negroes usually have remarkable memories. Indians are able to read records in the forests and streams and along prairie trails and wave-washed beaches, undecipherable and often not even visible to the white man.

In Albania the same faculties are highly developed among the Gypsies, who are the pariahs of that land, both Mohammedans and Christians looking down upon them, and absolutely refusing all intercourse with them except on the plane of servants.

A notable instance is afforded in the case of "Mina," now a regularly installed member of the personnel at the American Red Cross Hospital at Tirana. When first introduced to the Red Cross, Mina was selling wood in the streets for a living. She was about 22, and with none of the beauty that sometimes characterizes the Gypsy women. Her face was full of character and intelligence, however, and when she applied to the hospital for work, a place was made for her among the other Gypsy servants.

From the first she exhibited traits not always to be found among her tribe. She was trustworthy, neat and energetic. Nothing pleased her better than to be allowed as a special favor to sterilize the surgical instruments. She would work indefatigably, scouring and scrubbing and fumigating the premises in the hope of being rewarded with this coveted duty.

Her intelligence and scrupulous cleanliness attracted the attention of the doctors, and she was promoted to the care of the operating room. In due time it became apparent that a sense of order was another of Mina's natural virtues. It was noticed that whenever she received a set of instruments to sterilize they were invariably returned to their proper cabinet in the exact order in which they had been originally laid out for the operation. Moreover, it was not long before Mina, though unable to speak or write a word of English, could grasp just what set of instruments would be required as soon as she was made aware of the nature of the operation to be performed. It was then that her accolade was received. To Mina, the unlettered Gypsy, was given full charge of the operating room. Its proper cleaning, disinfecting, sterilization of apparatus, and laying out of equipment were turned over to her, and nobly she rose to the occasion. Not another servant would she allow to cross the threshold.

As soon as the room was vacated this faithful Gypsy was busy with her mops and disinfectants, making it immaculate again. To-day she is regarded as one of the most indispensable members of the Red Cross Hospital personnel. Her memory never fails, nor is there ever the slightest inaccuracy in the laying out of a set of instruments for the doctors and nurses. Untutored though she is, her powers of observation have proved to be a guide quite as reliable as the most carefully thought-out printed instructions for the enlightenment of the better educated.

The "Man-Insect-Bacterium" Complex.—Ferrière, an entomologist of Berne, is responsible for this expression, which calls attention to a state of affairs already too well known in pathology. Of diseases in which the insect is the sole means of propagation may be mentioned typhus, recurrent fever, trench fever, yellow fever, pappataci fever, plague, sleeping sickness, filariasis, etc. Again insects play a certain rôle in the diffusion of typhoid, dysentery, cholera, and tuberculosis. One might add that the insect also plays a rôle in the diffusion of wound sepsis. During the Spanish-American war the Americans lost over 5,000 soldiers from insect transmission. In regard to individual insects the louse since 1914 has been regarded as a menace. The flea has been recognized as the carrier of plague since the recrudescence of the malady in Turkey many years ago. Two main genera of fleas are now accused of transmitting the disease—the Indian or *Xenopsylla* and the European or *Ceratophyllus*. Both are rat fleas. The wholesale destruction of rats causes the fleas to seek other hosts and the crusade against fleas makes it imperative to draw no lines but proceed against all species. In addition to the general use of insecticides it is necessary to clean out all dusty corners and spaces between boards, to take up carpets, etc., for in such localities eggs and larvæ are to be found. Next in order comes the fly problem (so far as France is concerned, although in many localities the mosquito takes precedence). There is hardly a germ disease that the fly could not conceivably transmit, even including anthrax; germs have been encountered in the ova of the fly and the insect not only is covered with germ life but swallows and extrudes the latter. The late war has brought home the existence of the plague of flies, for the diffusion of the insect is universally favored under war conditions. The main strongholds for the fly plague are dunghills, kitchen refuse heaps, and latrines, and it is not difficult to proceed against these institutions. —*La Presse Médicale.*

Wanted a Fat Man.—According to *The Modern Hospital,* the superintendent of a certain hospital, upon tracing down the apparently unwarranted criticisms of his institution, which he knew to be first class with regard to professional and nursing services, food, and other important elements of a well-equipped hospital, found the source of discontent at the very portals. "Quick" and "efficient" attendants at the information desk and switchboard were the trouble makers. Now the superintendent is looking for "a big good-natured man"—two, if necessary,—"men who will wear well, who can smile, and who will make people good-natured in spite of themselves." It takes a fat man, he now thinks, to accomplish that feat.

"Glass Eyes While You Wait."—The London *Daily Mail* announces that ex-soldiers may now obtain in London perfect replicas in glass of their lost orbits "while they wait." The patient sits beside the "artist" who, with glass tubes and blow lamps, faithfully copies in glass "the exact color of the white, the small red veins and the delicate blends of color in the iris." In one of the large London "studios" it is claimed that perfectly matched artificial eyes can be made in twenty minutes.

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DESCRIPTIVE PSYCHOLOGY AND MEDICINE.

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PSYCHOLOGY is a science that has been studied (not without acrimony) from many angles; and in recent times applied in many directions. We have now books on physiological, abnormal, social, vocational and behavioristic psychology and others. Some technical knowledge of psychology is very useful for the understanading and management of the patient and his disease, and in certain lines of practice such knowledge is imperative; yet I find it rather generally lacking. Perhaps for this reason various psychological cults, which appeal to the imagination find easy absorption here.

Besides this, a good deal of confusion in description, classification, and interpretation has resulted from the differences among writers in their vocabulary and their standpoint. Hence I make no excuse for giving a brief account of some of the different fields of psychological work, with their relative values to the physician.

I especially wish to present certain elementary facts and definitions in the science. If these are not final or even are not all correct, they at least represent the situation as fairly and as authoritatively as I have found it possible.

Psychology is the science of the mind and it is essentially one science. For while there is an abnormal psychology, a physiological psychology, a descriptive psychology, etc., these all deal with the mechanisms and laws of mental action. Whether the mind is abnormal or diseased or sound, the scientific data of psychology apply just the same. It is all a biological process, to use a word dearly loved by the psychological intelligentsia. The mind has a kind of anatomy or structure of its own *i.e.* its activity is accompanied with and dependent on the production of certain definite states and processes, such as sensation, perception, reasoning, etc. When the mind functions it does so through the medium of these states, and in accordance with certain laws. The mind cannot act without the formation of ideas, the development of feelings, etc., or without the processes of association, memory, etc. Its activities may be modified, however, and even initiated by the conditions of the nervous system and by the play upon it of the physiological processes of other organs, such as the blood, the internal secretions, and the nutritive and eliminative organs.

We may speak, therefore, of a descriptive psychology which defines and describes; a dynamic psychology which tells of forces and laws; and a physiological psychology which studies the modification and control of mental action through physiological (and pathological) changes. These are all only different methods of attack upon the general problem.

The application of psychology to education and industrial life takes us into the fields of practical activities and human conduct. In abnormal and medical psychology we also apply the terms, methods, and data obtained by the three group-methods mentioned above. The behaviorists deal with conduct, and do not call their science psychology.

Dynamic psychology is a science based on a study of the forces and their interactions which lead to mental activities and human conduct. Dynamic psychology attempts to explain the phenomena of the mind by finding the causes and establishing the laws of mental action. It cannot yet prove the existence of such forces and laws because they are not in the field of observation. But the laws are *conceived* to be such as will explain the phenomena, and, being applied, do seem to explain them. Hence dynamic may also be called a conceptual psychology. (B. Hart.)

Dynamic psychology gathers data also by observation, and groups and classifies them. But its interpretation of the laws of mental action is obtained by reasoning processes, and is worked out without reference to physical phenomena or to physiology. It does not "mix up brain cells and mental acts." Its explanatory laws correspond to certain of our conceptions of physical laws such as that of gravitation, of the nature of the atom, and of the ether. Any given state of mind occurs because of the methodical working of supposed mental forces, and in accordance with certain conceived of laws.

These underlying working forces have been called the "drives," the *élan vital*, the libido, the instincts, etc. As to the nature and unity of this force there is still disagreement. But it seems to be established that mental activity and human conduct have several different "driving" forces. At one time the sexual instinct, *i.e.* the instinct for the preservation of the race, was assumed to be the main driver; then there has been added the instinct of self-assertion and advancement; then that of self-preservation; that for herding together (the group instinct); that for religious observance; and that for social betterment.

Associated with these and forming their effective sides, there are described the emotions, of love, desire, vanity, and self-distrust; of anger and fear, and of religious exaltation and devotion. There may be also something in the nature of a "pull" which incites to mental action and human conduct.

This is shown in the influence of an ideal towards which one strives.

These instinctive forces work both consciously and unconsciously and one may be quite conscious of the emotion or of a driving force and not quite aware of the kind of compelling instinct that arouses it.

It is to secure the proper interpretation of these forces that there have developed the methods of psychological analysis. And efforts have been made to explain in a mechanistic way those morbid mental states called the psychoses and psychoneuroses. Some explain these on the basis of disturbances in the "driving" force of the sexual instinct; others on the basis of a compelling sense of inferiority; others on the dominance of fear, and on disturbances of and antagonisms to the herding instinct. All these "drives" may be modified by abnormalities in mental make-up and development, as for example when the adult life continues to be a juvenile one. These various instinctive urges, when thwarted or deviated, are assumed to lead to emotional perturbations and psychoses. There have been conceived various laws or mechanisms of mental action which go under the names of *dissociations, complexes, conflicts,* and *repressions.* It is believed that the minds shows *resistances* and has a kind of *censorship.* There is an activity of the mind called *projection* by which it is assumed that the individual's complex is passed on to another person. *Symbolism, phantasy, day-dreaming,* and subconscious wishes, defenses, and attempts at readjustment are further agencies in the psychological mechanism. The conceptions of the wish, of dissociation, and of conflict are very important in explaining normal and abnormal phenomena. The existence of a well-organized *subconsciousness* that acts on the conscious is assumed, or perhaps demonstrated.

The definitions and details belonging to this phase of psychological science must be sought in the works of Freud, Jung, Adler, Trotter, and other interpreters.

This conceptual psychology is plainly a sound method of scientific attack. It has worked out various hypothetical laws which may be wholly and are certainly partly true. In fact to a large extent, this psychology tells us in sicentific or technical language what students of human nature and ordinary psychology already know. Since the beginning of neurology at least, we have known for example that a woman's headaches and hysteria were her methods of defense and self-exploitation. Its essential merit has been to show most emphatically the high organization, influence, and importance of the subconscious activities.

However, the laws of a conceptual psychology do not work in the production of mental phenomena, without some correlated activity of the brain and body. One can not explain morbid mental phenomena by conceptual phychology alone. There is always some defect of structure or function. Healthy brains have no delusions or obsessions, no morbid fears, abulias, or melancholias. No matter how deeply fixed is the subconscious disturbance, the delusions of general paresis in a man with a luetic encephalitis are not due to activities and forces altogether psychological. When a person has an injury of his angular gyrus or parietal lobe and has alexia, or agnosia, this psychical state is not due to complexes or repressions or any purely conceptually conceived mental law. When a man gets a blow on the head and has a dissociation leading to a hysterical mental state, there are physical changes as well as mental. Physical changes, toxemias, infections ,internal secretions may lead directly to association disturbances and directly to consequent morbild mental phenomena.

Strong emotions, such as anger and fear, arouse definite physical changes in the body which in turn contribute to the content of the mind and its direction of bodily action. Such emotions show themselves largely through the sympathetic nervous system. On the other hand, morbid states of the sympathetic act as direct exciting forces in producing mental states. A study of these facts may not be a part of a conceptual psychology, but it is a part of physiological psychology.

We may say that mental phenomena and bodily phenomena are both biological activities, representing two different phases of life activity, each to be studied separately. They may indeed be studied separately, but in medicine it is necessary to know their relations and interactions in order to enable us fully to recognize the causes and cure of diseases. Nothing is more important now than to show these relationships. Mental defects and disturbances may be relieved by interpreting to the patient the misdeeds of the mind, the misuse of its resources, its misfits, and repressions and conflicts, but the fact that a defect in the body is often more fundamentally the cause of badly worked machinery of the mind, is quite absolutely established to-day.

In connection with the study of the psychology of trauma the presentation of the relationship between injuries to the central nervous system and mental states, has been discussed by me in an article on the Somatic Origin of the Psychoneuroses (*Journal of the American Med. Assoc.*, May, 1920). Basing my statements on experiments made during the war on the effect of direct, indirect, and remote concussion, I showed what is at times the relationship of physical cause and psychical effect. In other words, it seemed proved by experiment, that the production by physical means of certain definite molecular or wave changes in the arrangements of the brain structure may cause definite morbid or special normal mental states.

A table in which the matter is presented schematically, is given here, showing the results of tremendous detonations on animals and men in zones at definitely removed distances, there being no element of fear:

X is the center of detonating force; Zone A, of a man receiving a direct concussion; Zone B, of indirect concussion; Zone C, of indirect concussion by high frequency waves.

The patient in Zone A is killed. The patient in B or C receives and feels:

1. Concussion waves on the brain; and hears
2. The detonation.
3. Physical changes occur in the nervous system due to concussion with gross, or fine, or molecular waves.
4. Emotion follows, *e.g.* of fear, leading to Nos. 6 and 7.

5. Subconscious desires, defense activities, adjustment activities, leading to No. 7.

6. Organic or biochemical disturbances in the nervous system (toxic or endocrinic, leading to No. 7.

7. Psychoneurotic phenomena.

Under the head of physiological psychology then we study all the physical and physiological changes which excite or lead to changes in the mental state. The action of poisons, autotoxemias, and internal secretory disturbances, form one line of inquiry. Others are the effect of changes in the sympathetic and autonomic nervous systems; the effect of physical injury and disease; the modification of physiological activities of the viscera through the forces of mental action; the study of reflexes, and particularly of that phenomenon known as "the conditioned reflex" by which many abnormal mental and nervous phenomena are explained.

We have then a static, a dynamic, and a physiological psychology. In medical practice psychology must include some knowledge of all three groups and even needs an acquaintance with applied or vocational psychology, and psychometric methods.

Of these three fields of psychology, I shall go into some detail only as regards one, viz., descriptive or static psychology. This is the elementary and introductory phase. A knowledge of it is necessary in order to understand the vocabulary of the sicence. I am presenting it, however, largely in the form of definitions which are based on consultation of standard works by James, Marshall, Warren, Baldwin, Pilsbury, McDougall, Woodworth, and I have used as far as it goes the report of the committee on Definitions of the American Psychological Association. The works of Morton Prince, Janet, and others have been consulted, and I have had the personal advice on some points from Prof. J. McK. Cattell and Prof. Woodworth.

Consciousness is the name given to that quality of the mental state through which a person becomes aware of himself as one distinguished from the rest of the world. It is the distinctive characteristic of mental life in actual process. This conscious state, or state of "awareness," constantly changes, and each state represents but a moment of time. It accompanies all our volitional acts, but there is a large amount of mental activity that goes on unconsciously.*

Consciousness has its focus where awareness is most marked, and its marginal part where awareness is more dim. And consciousness can exist in varying degrees of clearness in connection with more than one mental process. Thus a person can play the piano, reading the notes of the music, and talk or think on another subject. In behavioristic psychology the existence or at least the study of consciousness is ignored.

Subconsciousness: Mental phenomena which in degree of vividness or clearness are below the threshold of distinct consciousness are said to be subconscious. Consciousness and unconsciousness are terms used by some writers.

The subconscious "represents a detached phase of mental life of which the individual is not directly aware. It is a subordinate or co-ordinate consciousness," (Com. A. P. A.) and is considered by one school to be very highly organized and detached to the point of being called anthropomorphic, *i.e.* a separate mind within the conscious mind.

Unconscious is a term often used to characterize reflex and autonomic activity; it is also used to characterize certain modes of instinctive activity, somnambulism, and perfectly formed habits. (Com. A. P. A.)

Sensation is the simplest unit of human consciousness. All afferent nerve impulses which reach consciousness arouse sensation. A pure sensation has no associated images. We have a sensation of a light, a color, a sound but it connotes nothing. When it does associate itself with previous experiences, we get a percept.

Perception: On seeing or feeling an object we instantly associate the sensation with previously recorded impressions. In doing this we perform the act of perceiving, and the result is called a *percept.* Thus we see a round, yellow object, and immediately associate it with previous experiences, which tell us that it is rather rough to touch and of peculiar odor and taste, and we perceive that it is an orange. Thus the process of perception is the grouping of a sensation with previously recorded impressions, the result being that we recognize a particular object which, in perception, is *always outside of us in space.*

Some psychologists put their views in physiological terms, and define perceptions as mental states in which many nerve impulses coming in separately from external receptors are combined to form a single complex experience.

Ideation: An *idea* is the reproduction, with a more or less adequate image, of an object that is not present to the senses. A *percept,* on the other hand, is a representation in the mind of an object that is present before us in space. We perceive the orange; we have an idea of what an orange is. In the building up of an idea we group together or associate our various sensory and perceptive experiences until we finally get this special notion or idea, which comes to our mind without having the object itself before us.

A *concept* is an abstract or universal idea, recognized apart from any special or particular qualities; the word is used with various meanings, however.

By associating various ideas together in a certain regular way so that there comes from them something new, we reach a judgment, and this process of associating ideas to an effective end is called *reasoning.*

Reasoning, then, is a process which leads to some new fact and differs from a casual association of ideas, such as occurs in revery (autistic thinking), or in the ordinary play of association by suggestion, as when a gray horse suggests the presence of a red-haired girl, or when the smell of gas suggests a leak in the pipe. Sometimes in the association of ideas in speech we proceed from one inference to another, or one thing is suggested by another, until we reach a point in the discussion which may be simply the climax of a story, or the exposition of a point of view, or description of some past event. When the associations thus lead to some definite point or idea, we speak of it as the "goal idea," and

*"Consciousness is not equivalent to mind, self, soul, or psyche, but is characteristic of them." Com. A. Psyche Assn.

in most rational speech or description there is this *goal idea.*

Judgments are conclusions reached by the processes of association. These may be elaborate and conscious, or simple and very largely subconscious processes. Thus many conclusions and opinions develop in the mind almost unconsciously or through slight suggestion.

Memory and Orientation: The activities of the mind are dependent on the power it possesses to retain and revive impressions; that is to say, its power to remember and recollect. This faculty of the psychic cells is called *memory.* It means that all stimuli sent to the brain make some kind of impression on the central nerve-tissue, which impression can be revived at future times by other suggestions and stimuli. This process of record and revival is a form of association, and memory revival means the re-establishing of an association (Marshall). Memory forms part in most conscious psychic life. The mind cannot work without its constant help, though the memory may be good, and yet the mind works badly. The feeling of identity or personality is dependent on memory. Memory is usually divided into the power of learning or memorizing and the power of reviving or recollecting.

The knowledge of our relation to the external world, our appreciation of time and space—in other words, our *sense of orientation*—is dependent on the memory.

Cognition is association by similarity.

Recognition is association by contiguity.

There is no sharp line between the two.

Imagination is the associative combination of concepts and percepts into new ideas.

Instinct is the faculty of acting in such a way as to produce certain ends, without foresight of the ends, and without previous education in the performance.—(James.)

Put in another way, it is that form of behavior which involves a series of consecutive reflexes which are dependent on inherited structure and lead to a purposeful end. They may be grouped mainly as reproductive, defensive, aggressive, and social or herd instincts. Some writers enumerate as many as twenty-six. Instincts are built up by evolution in the race and transmitted by inheritance; they develop at various periods of life.

The expression of instinct is usually associated with a percept or idea, and an emotion; and emotion is said to be the affective phase of instinct. The instinctive feeling is automatic, but the conduct and feeling that follow are modified often by training and experience or by artificial motives. So that instructive acts may finally represent the consolidation of habit and instinct.

Feeling or *affect* is not a separate function of the mind, but is a quality of the different mental states; that is to say, every mental state is accompanied by some kind of feeling, either pleasurable or painful, or has some quality that can be regarded as indifference. The affect may not necessarily be distinctly disagreeable, but may pertain to some subjective sensation, like hunger or thirst, or some simple desire of action. In all cases feeling only qualifies or gives a certain character to the mental state.—(Marshall.)

Other psychologists say that *feeling* or *affect* is something only associated with a sensation. It is pleasurable, painful, or indifferent. Certain pleasurable and painful feelings have their seat in the thalamus.

Emotion is an intenser tone of feeling which is usually attached to a percept, idea, or concept in which our primary impulses are opposed or gratified. One perceives the beloved one and feels the emotion of joy. One sees a snake and feels a fear of personal injury.

It may not, however, be exactly or entirely an instinct which is thus satisfied or opposed in the arousal of emotion. There is in the human being a variously named mental force, pressing us on. It is called the *élan vital,* the libido, the instinct, or a "primary impulse, or sentiment" (Shrand). This is derived from instinct, in part, in part from experience, in part it is the urge of living tissue. It is when this force is encouraged or checked that we get emotions. Every primary impulse when opposed arouses anger; when satisfied, joy.

But besides the emotions associated with primary impulses and definite conscious states, there are conditions of painful emotion, *e.g.* in melancholia, not associated always with any conscious and not always with subconscious ideas. There is also the pure causeless emotional exaltation of mania. Here emotion is due to some somatic state that inhibits or stimulates neural activity. These are physiological or pathological emotions.

The list of emotions includes surprise, love, hate, desire, pleasure, displeasure, fear, anger, sorrow, disgust, wonder; and combinations of these also appear.

The emotions are less useful and important as the mind becomes more cultivated and man more civilized; and if civilization goes on without a corresponding control and inhibition of emotions the field for psychoneuroses increases. Emotional indulgence is always associated with physical and glandular and circulatory changes, so that somatic injury can be induced by emotional excess.

Esthetic emotion in its milder degrees is really only a feeling such as is aroused by beautiful color combinations, or the simpler musical sounds. In minds highly cultivated or endowed to appreciate the beautiful, there is when a beautiful thing is presented a percept or a recognition of what some call "significant form." This arouses an esthetic emotion which is associated with the intellectual act of recognition. What primary impulse is favored or opposed here can only be surmised. It differs in the different arts. Often, as in painting, it is possible to have pleasurable feeling at the sight of a picture because it arouses ideas related to our instinct of love, or hate, or social life. In so far as the picture suggests only significant form or a harmonious relation the result is simply esthetic feeling—a vague sensory state. In music, for example, the realization of a significant form in the music is a process of perception, and the hearer may feel the emotion of joy at recognizing this musical form. In poetry the presence of a significant form, *i.e.* the rhythm and rhyme, and assonance, or sonority, arouses esthetic feeling. The ideas of the poem may arouse instinctive feeling or emotion. Thus in poetry we

may have both feeling and a wide range of emotion, which in great poetry is strengthened by appeal to our ideals and by its revelations of new concepts tinged with emotions.

The physical facial expression of emotion has a center in the thalamus, at least to a degree. Certain painful and pleasurable cutaneous sensations have also the seat in the thalamus.

Passion is an intense emotion of short duration; and mood a prolonged but moderate emotion.

Temperament is the instinctive, inherent tendency of the individual to react to particular conditions.—(Ash.)

Character in its best sense is the inhibiting or directing superstructure which is built upon by temperament through experience and habit. It should be the steadying influence upon morbid temperaments.

Personality is the resultant of combining temperament and character. It represents the total response, instinctive and acquired, of the person, to the influences and conditions about him and in him.

The *volition* or will is technically the conscious realization of the strongest and therefore deciding feeling. It is usually accompanied by a motor act, although a person after consideration may reach a conclusion and not act on it until later. The process of volition may comprehend both the formation of a definite judgment or preference and the expression of it in action. We see an apple and a stone. The idea after comparison comes to us that the apple is more desirable than the stone. The desire for the apple and the intellectual and emotional preference for it over the stone sets to work the impulse to take it, and a volitional act is performed.

The volition function is not therefore simply or only voluntary action, but includes the whole conscious process that led to this act. In this process we are made to feel that we have a power within us that can reach any of several judgments and lead us to any one of several choices. This leads us to believe we have a free will and are responsible for our acts; and society holds men responsible on the basis of this view. We accept it as long as we feel that there is the ordinarily free play of association and inhibition, so that the decision or choice comes about without any artificial or abnormal interference.

When an act is done without conscious preference or desire, or in response to an impulse coming upon one from subconsciousness, it is an involuntary or *impulsive* act. Acts which are done under the influence of a conscious feeling like an obsession are *compulsions*. Acts which are the expression and result of habit and which are done without our having any memorable consciousness of them are called automatic. Many acts are brought about by imitation and suggestion, and these are often done with so little conscious volition that they belong almost to involuntary or complicated reflex actions.

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*"Emotions are biological psychophysiological instincts, or instructive reactions later organized into systems with ideas of objects." (Prince)

"An emotion is an hereditary 'pattern-reaction' involving profound changes in the bodily mechanism as a whole, but particularly in the visceral and glandular systems." (Watson)

PARALLEL BETWEEN DREAMS AND PSYCHOSES.

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"Such stuff as dreams are made of."

—Shakespeare.

IN connection with a consideration of certain features of dreams some conjectures and inferences are here offered which, while somewhat immature, it is hoped will be found of interest. At least the subject is an interesting one; for, "if we understand the underlying, the 'hidden,' the basic meaning, motives and dynamic sources of dreams we will find ourselves in a fair way to understand the universal man."

A dogmatic method of statement may appear to have been used, but the only aim has been conciseness. The suggestion of applying the ideas presented to a partial explanation of the clinical manifestations of certain mental conditions is obviously rather vague and needs further elucidation after more careful study. Dr. Kirby has pointed out that "the idea that dreams occur when some areas of the cortex are awake and others asleep has been advanced by many observers, having been mentioned by Benjámin Rush in his book on mental disorders in 1812; that the French neurologists have also used the same hypothesis to explain some of the phenomena of hysteria and that Jung emphasizes certain similarities between a person dreaming and cases of dementia praecox." Therefore, originality is not claimed except in bringing together some suggestive ideas which have apparently been in the minds of numerous writers of authority, to whom appropriate credit is meant to be given. And here I must assume full culpability if I have misinterpreted them.

The purely theoretical character of the matter under consideration makes it, at least at this time, impracticable to present clinical evidence pointing to probability, especially because, as stated later on, the obscure elaborative changes which are assumed to be carrying mental development to still higher levels are likely to be always just beyond material recognition. "Beings advance in time, treading as it were, upon a carpet which they weave with whatever colors and textures they wish but they are ever rolling this carpet up behind them and carrying it with them."*

It follows that no intimation is intended that these intellectual areas or levels can now be anatomically defined nor could one be sure that they ever will be. If their existence is accepted it will probably be on theoretical grounds.

The comparatively simple nervous system of the early vertebrates has been retained as the sympathetic or vegetative system in man and practically continues to do what it did for them. As the animal, in the course of evolution, rose higher and higher in the scale, new and more elaborate stations appeared—the spinal cord, the medulla, the pons, the midbrain and thalamus, the cortex and its different layers. These are big jumps and by

no means list all the intermediate steps. But as these elaborations were added one to another, summarized representations of each lower step appeared in the higher; and it is now believed that there is a representation of the vegetative system in the cortex and most probably of each subsequent station in the progressive development of the higher levels.[5] "The change in direction of mental processes is . . . due to a shifting or advance of the focus of consciousness from one point to another . . .."[6] It is probably not meant that communication was simply established and function turned over to the later and higher developed areas; but, by interruptions, a sublimated, synoptical shadow of the essential workings of the lower levels is transmittted, ever becoming more remote and attenuated as level rises upon level, but the connection never entirely disappearing, and refinement of control becoming more manifest.

It is possible that, were impressions received directly by the cortex without the attenuation which takes place in the various synapses, they would be so strong as to endanger the more delicately moulded cells of the cortex; or, to speak figuratively, their clamor for audience would be so loud as to be deafening.

The propinquity of intercommunication is greater between the levels of the medulla and pons and cortex, as seen in the ability consciously to control or inhibit many motor impulses reflexly excited in the medullary and pontine ganglia; and, as we go higher in the evolution or individual development, the relationship may be ever closer but still distinct. Many of the bonds of association between the steps can be, and others probably will some day be, demonstrated; but the latest elaborations, as such, will likely be too fine for differentation by any means which man will ever possess.

"Veil upon veil shall lift, but there will remain
Veil upon veil behind."[4]

We know that much functional development, probably dependent on obscure structural changes, takes place after birth in the speech mechanism, the cells capable of this development being present but untrained at birth, and that areas for auditory speech memories and later visual speech memories become specialized, this further differentiation taking place when the child learns to talk, and to write, and again when music or a new language is learned;[5] and as each of the successive stages of life, from infancy to full maturity, is reached, probably the multiplicity of experiences and the necessity for the storage of their memories require transfer of conscious command higher and higher. These represent to-day the different levels the individual has passed through since birth. Some day some of them may represent a part of his birth endowment. From a consideration of the primary speech mechanism and the transfer of its control later to the cortex and still later to special speeech areas in the cortex, we are reasonably certain that, after birth, many acquisitions require a transfer, from the medullary reflexes to the cortical areas, of the responsibilities of conscious existence. We may infer that elaboration does not stop here but that differentiation goes on as need arises and that at least several levels of consciousness or specialized areas, more or less distinct but related, are set up in the cortex itself from childhoood to maturity.

We may be willing to admit that this advance of the "focus of consciousness" is at least partially accepted as a fact. And regarding this as partially so we may carry the inference further. Our hearts beat, our lungs respire and our other viscera perform their vital functions; but at such a distance are they, communicatively, from the cortex that, in health, consciousness interprets the attenuated signals received from the vegetative ganglia controlling them only as assurances that everything is going well, thus conveying the sense of general well-being, of bodily satisfaction. Meyer Solomon says: "In viewing mental tendencies and activities from this [his] standpoint we must include not only our infantile (superimposed upon which are our childhood and adult) lives, but also our phylogenetic and ontogenetic—our evolutionary—life history"; and "if we would say that for every psychic fact or state there is a logical and efficient antecedent causative mental state, then we cannot say that that mental state must have occurred in the present life-history of the individual."[1]

There may be a question whether the brain of a child, which we know is roughly moulded in the parental matrix, does not at times reproduce from dimly outlined negatives faint pictures of parental experiences. These may explain the belief that some people have, that they can remember a previous existence, a former incarnation. But, if so, these were imprinted by notably understandable, pre-natal events of more than striking importance, and the individual impression at best is a feeble one.

We almost know that the elaborations above referred to are taking place, and, because of our inability to perceive them, usually consider them as functional differentiations. They doubtless represent to-day the beginning of changes which will be microscopically or chemically recognizable when they shall have progressed further, as they will, in their development. The assumption is that Man will not stop at the intellectual level he has now attained.

A great deal has been written about dreams and their symbolism upon which it is not necessary to dwell, but that dreams have an overshadowing significance is probably admitted, and it may be that a study of their significance will eventually furnish a working hypothesis for the explanation of the mechanism of some mental conditions now incompletely understood. Dreams may be looked upon as a very transient psychotic state—"they border on the pathological."[6] The parallel may be extended. Dreams are fairly accessible clinical material and from their study theories which may explain some psychotic conditions may be evolved; not so much, I think, if symbolism is considered as from the point of view that psychoses represent definite (temporary or progressive) changes in the different cells or areas where is the seat of consciousness and intelligence.

We know that individual cells of the human body are capable of independent existence when the proper conditions are present.[7] Experiments have shown that some human tissue cells live and multiply experimentally in artificial media even when the body from which they were removed has un-

dergone the extreme change of death. We may well assume, then, that when the brain, and hence the body, is in the state which we recognize as sleep it is possible that all the cells of the brain having to do with consciousness may not react in sleep—may not be equally tired and go to sleep—at one time, except under very favorable circumstances where the balance of effort producing the reaction has been very exact. The environmental aspect, so far as independent functioning is concerned, has not in this case been changed as in death.

It may be, therefore, that, in sleep, the whole brain is not always unconscious. When it is, there are no dreams. When it is not, the level which is awake is more or less active and uncontrolled by associations with other levels. "Sleep, varying in degree, is accompanied by a certain degree of consciousness."[1] The experiences and memories of the level or area that is awake are the ones which are most apt to appear in the field of partial consciousness, and even if suggested by somatic stimuli or by sensory impressions received from the environment are apt to be interpreted or distorted by the ideas and memories or experiences peculiar to the level that is awake. "The state of consciousness during sleep, biologically ordained, employs, during its activity, the mental material at hand—the past mental content plus any somatic or external stimuli."[1] In full consciousness the entire brain and all its associations must be awake.

The dreams which would appear in consciousness as memories of the vegetative level are in character too remote to be understood in the glimpses which we might imagine as filtering through. The vegetative level does its work with little ability to store memories that would be intelligently interpreted by the level of consciousness, because it is below the conscious experience of our actual lives. We sometimes have dreams that are indescribable and yet seem very real while occupying the field of partial consciousness. What these represent it is difficult to say. There may be more truth than is generally suspected in the humorists' view that such dreams are due to indigestion, and they may be awakened memories of the vegetative functions aroused, for instance, by combat with a Welsh rarebit or a broiled lobster. However, we can probably arouse no memories, at least of the lower levels, back of the beginning of our actual lives.

When the lower levels are awake and the higher levels are asleep the acquired experiences and associated memories of the latter are as if they had never been. A lay writer of fiction a number of years ago vividly portrayed this state of mind in the hero of "Looking Backward,"[2] when, after the readjustment of the world according to the author's plan, he dreamt he was back again in our civilization; and most of us can remember dreams in which we more or less realistically lived over some portion of our lives. "The mental processes in sleep are natural for that grade of consciousness or mental evolution. Thus we find that creative activity is slight or absent; there is regression to past (adult, childhood and infantile) experiences and tendencies; and the play on our emotions and instincts is marked and free."[1]

In other dreams the higher levels are awake and their memories are apt to be the ones retained. When the lower levels are asleep and the higher awake, some of the inhibition due to aroused memories of experiences stored in the lower levels—fears and limitations because of failures and disappointments—is more or less removed and daring mental flights are accomplished. The "astral body" of the Hindu, if it has any relation to reality, may exemplify this state of mind. "Where the appeal to our instincts is not especially direct, strong, selective, intimate, or individual significant," (*i. e.* when the lower levels are asleep and the instinctive tendencies dormant in consequence), "association and flight of ideas may be marked, rapid, superficial and quickly changing. Intellect, critique, correct interpretation, etc., are below normal. The mental mechanisms may run riot."[1] The instincts are probably to be here regarded as the revised experiences and memories which have accumulated from the beginning of animal life—the further back they were acquired the more ingrained and less understandable to the conscious areas, they are. Instincts of self preservation and race preservation are amongst the earliest; many shades of secondary instincts founded upon these have grown up till Man is—what he is.

Hoch[3] describes fever deliria with variations in the level of consciousness, but he regarded it from a different angle. While pointing out the difference between the temporary impairment of function in fever and the permanent loss due to actual destruction of nervous elements, as in the general paralytic, he does not think it necessary for his purpose to explain further why the level of consciousness should vary. He mentions it as a fact that proves there is no actual loss or destruction of nervous elements (in the fever deliria) to account for the clouding of consciousness, as almost full consciousness can be aroused by an effort. This seems very much like sleep, the higher and more vulnerable areas being, as in fatigue, more readily overcome, in this case by the toxic material of the infectious process—more readily narcotized—while the older, lower and consequently (we may assume) more stable, levels are incompletely or not at all rendered unconscious. Lacking the continuous, complete, normal, associative inhibitions they exhibit the fluctuations in the coherence of thought and the associated disorientation, etc., which we call delirium. The action of "general" anesthetics likewise points to a similar process, wherein the more highly differentiated areas are first overcome, while the lower functions are carried on with but little disturbance until the dose is overwhelming. In the later amentia, as for instance, after defervesence, where the level of consciousness does not vary and where so-called Freudian complexes are apt to be in evidence, the impairment is a more subacute process and may be definitely limited to the associated areas of one level, the disease having found one (more vulnerable) level which it temporarily puts out of business more completely.

A word might here be said of the appearance of wish-fulfilment in dreams, thus showing the analogy to the amentias in which wish-fulfilment is frequently present. There is probably no more common wish present in the lives of many of us

than that we might live our lives over again and order them differently. In the conception of what determines the content of dreams hinted at above, it is quite to be expected that the higher associated areas or levels of intelligence being asleep and their later acquired experiences and memories being out of the way as inhibiting factors, the earlier acquired memories should appear in the earlier and lower levels of conscious elaboration, occupy the field of partial consciousness, and thus allow us to live our lives over. People who have long since died come upon the stage: the memory of their death is asleep in the galleries: and we hear them talk and plan and we enter into their conversation and arrangements as we would have done when alive, but (while vaguely and intangibly, because unreal) perhaps with some added experience and judgment. The wish-fulfilment of the dream is apparently very real while it lasts, but there may not be so much symbolism about it as there is significance; and it may not be so much because it is a subconscious wish that it appears prominently in the lower level of consciousness as because we have given it rather more reflection than other thoughts. Other dreams and conditions which are regarded as wish-fulfilments might be similarly explained.

The sexual dream is usually frankly expressed.[8]

Such a dream as fleeing from danger in sand or other soft and impeding substance might lead one to think the motor areas were asleep while the areas concerned in storing the *memories* of motion, with possibly other associated areas, were awake.

The dream of stumbling, or falling, which is suddenly arrested, may be due to certain activities present in an awake area wherein the dream motion is produced, but the asleep areas are awakened through alarm reaching them by means of their associations. In some dreams one stumbles, or falls through space, and disaster is apparently averted by a general awakening of many associated areas. We may imagine imperious impulses reaching them from their neighbor of so urgent a nature as to have in effect the same result as the sudden violent knock upon the door of an actual sleeper, only to be informed on awakening that it was all a hoax, a false alarm, a sort of joke (if you will) that one area has played upon the others.

Reports of the post-mortem investigations which are being made of the brains of dementia praecox patients will be of great interest. Lambert[10] has stated that function is more subtle than structure and shows that clinically senile changes frequently antedate any microscopically discoverable changes in the brain. The same may be found true in dementia praecox. We already know that in some dementia praecox cases that have gone to autopsy changes have been found.[11] These will, in due time, be confirmed as more or less constant, discredited as unimportant and adventitious or set aside as undetermined in their relationship.

Some application of the idea of varying susceptibility of the different levels or areas of consciousness above referred to might be made to the psychoses in which definite tissue loss or impairment cannot be demonstrated. The higher emotions of patriotism, honor, shame, etc., are the latest acquired; and the most highly differentiated cells or areas, wherever they may be, are probably where they have their seat. These are the most vulnerable at least to senile changes and they lose their "function" (i. e., undergo invisible changes) before they display microscopically detectable deviation from the normal.[10] We observe that in dementia praecox a loss of affectivity is an early and progressive accompaniment and frequently persists during remissions otherwise quite promising.[11] The emotions being impaired, with possibly other correlated acquirements, by disease of the higher levels of consciousness, the dementia praecox may relive the complexities of his former life, while still retaining considerable contact with the outer world, and frequently, as in catatonia, actually seem to live a dream. It is conceivable that the gradual extension of the process to other areas is what causes the progressive dementia; and the brains of those who have shown unmistakable signs of dementia would be particularly interesting. That some, especially certain catatonics, recover, may indicate no more than that the underlying disease process is not always hopeless and incurable, and it is possible that the affected cells have undergone structural changes somewhat less than would be detectable at autopsy. Then, too, there is a probability that all parts of a normally associated area are not impaired together, resulting in variations. Similar inferences may be drawn in the psychoses which are known to be usually recoverable, and it may be that it is the less recently developed cells that are affected in these cases, being temporarily more susceptible for some reason to a different causative influence; but, on the other hand, more stable and less liable to permanent injury.

This takes no account of the *cause* of psychoses not demonstrably organic. It only hints at the possibilities which dream processes may exhibit in the way of explaining how some of the clinical manifestations of various psychoses are brought about, and to point out the fact that there may be a more definite relation than has been thought between the manner of production of the clinical manifestations of various psychoses, when the endocrine imbalance, or whatever it may be[12] that causes the psychoses considered functional, shall have been discovered.

The theory that different areas are differently responsive to a subtle organic cause yet to be discovered may not place the problem of the re-education of the insane in a less prominent position than it now occupies. If, during the actual life of the individual, so-called functional development (obscure and, as yet, unrecognizable structural change) thus takes place, there may be reason to believe that this constructive faculty is not necessarily lost in all cells because of the impairment of some areas, or associated areas. It may follow that re-education is the "functional" development of the unimpaired cells or areas along the same developmental lines; and the success of re-education, so far as the factors present in the patient are concerned, would depend to some extent on whether the assumed disorder or disease process causing the original impairment or loss (certainly loss of function) has been arrested or to what extent the re-education can outstrip the deteriorating process if still in progress, and it may show why deterioration ensues upon the discontinuance of the re-education.

If an underlying causative endocrine imbalance be discovered it may be that more healthy *ideation,* acting upon the vegetative nervous system through the representations of that system in the cortex, may, with or without other therapy, bring about an adjustment; and thus both psychoanalysis and re-education be entitled to all that has been claimed for them and more. So that, even if it be shown that the underlying cause of some mental conditions, regarded as psychogenic, though it be a subtle one, is essentially organic, these resources will still be available, though supplemented by chemical and other therapeutic measures.

Those who are brought daily into contact with the insane must frequently feel that real derangement of the "works"—the brain—exists in many forms of insanity in which no organic cause can be definitely ascertained. That any amount of bad habits of adjustment[4] long continued, or of turning away from reality[5] long persisted in, until it has reached the extreme divergence of the actual psychosis, can *alone* ever get a person into the state which presents, may some day be more than doubted. Many patients seem powerless to help themselves, although they have will power enough in other directions. Their antics, mental and physical, may be comparable to those of a chicken with its head cut off; and, figuratively speaking, a similar disaster has happened to many of them.

From what has been said I would conclude that:

1. Dreams occur when some areas of the cortex are awake while others sleep.

2. Some areas are more vulnerable than others, the susceptibility varying possibly (a) In sleep with hte kind of fatigue; (b) In psychoses with the nature of the toxins or deleterious agents.

3. Observation of dream phenomena may help to correlate the clinical manifestations of various psychoses.

4. Various psychoses exhibit parallel, but more extended, processes.

5. The ratio between functioning areas and non-functioning areas in dreams is inverted in the psychoses; hence, in the latter, contact with the environment is greater.

6. The discovery of an organic etiological factor in the psychogenic disorders, as in the organic group, will aid in a better understanding of the method of production of their clinical manifestations; and,

7. When discovered, psychogenesis may still be considered an important etiological factor.

8. The value of resorting to psychoanalytic, re-educative and other therapy may be enhanced by the discovery of underlying organic causes of insanity.

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PRACTICAL METHODS OF HEART STUDY AND THEIR RELATIVE VALUES.

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THE clinical study of diseased hearts has two objects—the establishment of diagnosis and the formulation of treatment.

Diagnosis to be complete must be tri-phasic—it must be etiologic, pathologic, and functional. The data necessary for diagnosis are assembled by three methods—history taking, physical examination, and laboratory examination. It is difficult to say that one of these three methods is more important than another; but it is true that often one is stressed and another minimized, thus distorting the picture produced in the clinician's mind.

History taking is slighted more often than either of the other methods. It is well known that doctors often obtain brief and inexact histories. In a recent discussion a busy practitioner said: "If you doctors had to see as many patients and travel as far in a day as I, you would not spend so much time in careful study of your cases." The answer came promptly—"If you would make a careful examination at your first visit, many of the subsequent visits would be unnecessary." Still more deplorable is the habit of many able men of assigning history taking to assistants, reserving the physical examination for themselves. I believe that only through a painstaking, personal discussion with the patient and his associates can the clinician obtain an exact and complete history. It requires the stimulus of responsibility in the case to lead any doctor to obtain "the truth, the whole truth, and nothing but the truth." One who takes histories *only* lacks initiative and his responsibility is nil. Being human he permits inaccuracies and omissions, and he fails to follow up leads which would stimulate his interest if he was to make the diagnosis. Only through careful history taking is the clinician likely to obtain the intimate knowledge of the patient's personality and habits necessary for full understanding of the situation. In no other way can he so easily establish the degree of confidence and respect necessary to insure the patient's full cooperation in the treatment. A detailed study of the patient's past goes far toward assuring the success of psychotherapy, an important element in the treatment of nearly all sickness. I believe that, in general, history taking calls for greater ability and considerably more time than physical examination.

In heart disease the history goes far in determining the cause of the defect and the functional capacity of the heart. Mere statements that the patient has had certain diseases, as syphilis, rheumatism, or hyperthyroidism, are not especially helpful, for inquiry regarding the course of the sickness will occasionally develop the story of some other venereal infection, myalgia, or simple goitre

instead of the diseases named. The symptoms and complications of previous diseases and the rate of convalescence from them should be known in order to estimate correctly their relation to the defective heart. Having elicited a history of acute arthritis, one should question carefully in the attempt to ascertain its primary focus, if such there be, otherwise the fundamental cause may never be discovered nor treated. Tonsils may have been inflamed many times without appearing to be grossly diseased; teeth with abscessed roots may look all right, but have a bad history; cholecystitis is notably elusive to physical examination, but may have caused suspicious sickness in the past. Inasmuch as degenerative heart lesions are the ones most often needing treatment, it is essential to inquire in great detail regarding habits of life, both recent and remote. Has the patient gone to excess in either work or play, or, quite as important, has he done too little of them. Has he eaten excessively or fast; has he specialized in meats or sweets. Has he slept too little. Has he carried unusually heavy mental burdens, either real responsibilities or foolish worries. Is there reason to believe he has had chronic errors in metabolism. Has his life been unbalanced in any sense. One must know how the patient has actually lived, not accepting the patient's opinion regarding excess, else the underlying cause of the degeneration may not be corrected, and downward progress will continue in spite of remedial treatment. Along with the loss of cardiac reserve power there usually comes a train of symptoms, some of which often are not elicited when the history is taken, and which may be misinterpreted if no physical signs of heart disease have developed. Weakness, dyspnea, pain and palpitation on exertion are the commonest symptoms, but not necessarily the first to attract the patient's attention. The weakness of cardiac failure is peculiar in that the patient is usually most conscious of it in his chest, while in other debilitated states, and also in health, fatigue from walking or running is usually most troublesome in the legs. Weakness which is most marked after a night's rest is not to be mistaken for cardiac weakness, although it may be a manifestation of some error in metabolism which can become a cause for cardiac deficiency. Sleeplessness, unusual nervousness and irritability are early symptoms. Indigestion, giddiness and faintness, and perhaps scanty urine and loss of weight are occasional early symptoms. Precordial tenderness is a sign of cardiac fatigue, but it may give an exaggerated impression because of an unusually responsive nervous system.

The history gives us better light on the functional capacity of the heart than any other source of information. Various tests based on pulse rate, blood pressure readings, and the intensity of heart sounds have been introduced for this purpose, but none of them has even reasonable accuracy. The best test is the one used by our fathers—have the patient exercise until short of breath; note the amount of work endured; observe the general condition of the patient as he rests, his apparent fatigue, color, severity and duration of dyspnea, behavior of pulse, occurrence of anginal pain, etc.; then judge roughly how the patient compares with the normal for his age and type. But all such tests are subject to modification because of the psychic state which is commonly associated with a complete examination. A careful inquiry into what has happened in the past, day after day, will let us know if the patient's endurance is defective and will give us a good idea of the degree, duration and course of the weakness. Unfortunately there is as yet no accurate arithmetical measure for cardiac strength. But if a man can do an ordinary day's work with only ordinary fatigue, his cardiac reserve is good regardless of what physical examination may show.

The importance of estimating functional capacity has not been appreciated fully. Our attention has been focused rather on structural changes, yet we know that it matters little what congenital or acquired defects exist in a heart if only it works well. We often find organic changes of long standing in senile people. The practical question is not how is the heart built, but what can it do. The discovery of a valve lesion or other defect should not condemn a patient to a cardiac cripple's life. We admit with shame that our profession has brought up many children to lives of semi-invalidism because they had functional murmurs or sinus arhythmia, and that many adults have led sheltered lives because of an incorrect diagnosis of organic disease with no attempt to estimate cardiac efficiency. Particularly in degenerative lesions reserve power is impaired long before abnormal physical signs are evident. If diagnosis waits on physical signs then treatment does not begin until defects are well established. If diagnosis is made when reserve power begins to fail, treatment is begun when the trouble is most easily curable, treatment is simpler and shorter and prognosis far better. It seems as if beginning degeneration cried out to us for recognition. Early cases will rarely be recognized except through study of the functional capacity, and defects in functional capacity can be detected most surely and early through careful history taking.

Really all that has been said about functional capacity applies to the whole circulatory apparatus, not only to the heart but also to the arteries, kidneys and blood. The signs of circulatory weakness may be due equally well to disease of any of these tissues. Deficient capillary flow is really what we are diagnosing; that is what causes dyspnea, anginal pain and quick fatigue. Heart disease is rarely limited to the heart and eventually the entire circulatory apparatus is impaired. Having diagnosed circulatory weakness it is desirable to ascertain the location of the pathological changes. But when the etiological and functional phases of the diagnosis have been established, treatment should be begun at once without waiting for structural changes. If the etiology is given due consideration, one can hardly go wrong in the treatment, and cure or a stationary stage may be arrived at without the development of gross physical signs of disease.

Physical examination leads to the recognition of abnormal physical signs. They are usually incontrovertible evidence of structural change. Disease necessarily existed before they became evident, so they may be looked on as comparatively late

signs of heart disease. Failure to recognize disease before the development of physical signs does not mean that disease was absent, but it does demonstrate our incompetency.

We all were taught to proceed methodically with inspection, palpation, percussion and auscultation, but the fascination of murmurs leads the average doctor to reverse the order and probably omit inspection and palpation entirely. Perhaps we all are occasionally guilty of this fault. The most important single observation in the physical examination of the heart is the determination of the location and character of the apex beat. This can be done best by inspection and palpation. If the patient leans slightly forward as he sits or stands, examination of the apex beat will be easier. If he is in the recumbent posture throughout, no examination of the heart can be satisfactory. If he lies on his left side the apex beat will be displaced to the left. If the impulse is so feeble that inspection and palpation do not detect it, auscultation may be used to locate the point of maximum intensity of the sounds, which will often, but not always, be the position of the apex beat. If the apex beat is normal in location and force, there can be no gross defect in cardiac efficiency, hence the importance of this part of the examination.

A vibratory sensation felt by the palpating hand should not be counted as a pathological thrill, unless it can be recognized with ease.

Estimation of the actual size of the heart through percussion of relative cardiac dullness is the source of many disagreements among doctors. The best method in my opinion is light percussion, carried on parallel to the ribs and beginning at least two or three inches beyond the expected limit of cardiac dullness. This is to be done when the patient is sitting or standing and leaning slightly forward. In case of doubt I am accustomed to use immediate percussion, that is, to tap with the percussing finger directly on the chest wall; and again to check this method by auscultatory percussion, that is, by listening with the bell of a stethoscope an inch or two above the center of the line along which I propose to percuss and noting the sudden change in conduction of sound as the percussing finger enters or leaves the area of cardiac dullness. Fluoroscopy will check these methods, but it is not infallible. If during fluroscopy an opaque pointer is pressed against the chest wall at the margin of the cardiac shadow, it will indicate, with reasonable accuracy, the limit of the heart at that level and can be compared with the limit obtained by percussion. With care all the above methods usually can be made to agree and, I believe, will give a correct impression of the heart outline, particularly the lateral limits. Ordinary *x*-ray plates are notoriously inaccurate for this purpose, because of the diverging pencil of rays. If the tube is fixed at 6 feet from the plate, a nearly correct picture is obtained, but this method, I believe, has no important advantage over those already described. The orthodiagraph gives probably the most accurate picture of the heart's size, but it requires special skill for operation and is rarely available. Estimation of the outline of the heart to determine whether it is of the aortic type or mitral type, is best done by the fluoroscope or *x*-ray picture.

Percussion has been in use since the time of Hippocrates, but auscultation was discovered by Laennec in 1816. Some one said that before Laennec's discovery: "Clinical observation, though never blind, has been always deaf." So much harm, as well as good, has been done by auscultation that Sir James Mackenzie has questioned if the world would not have been better off if the stethoscope had never been invented. Be that as it may, there is one region of the heart which has long been known as the region of auscultatory romance and the experiences of the late war have led us to disregard systolic murmurs, unless accompanied by ample proof of their significance. Mackenzie has well advised the profession that, if careful examination elicits only one sign of heart disease, the heart should be considered normal. Beyond all doubt, this applies to murmurs. In order to interpret murmurs properly hearts should be auscultated in both the upright and recumbent positions and before and after exercise. Even then much difficulty will be experienced in diagnosing the significance of murmurs, and the causes of many of them will remain undetermined. The diastolic blow of aortic regurgitation, the presystolic or diastolic roll of mitral stenosis, and the friction sound of pericarditis are the only abnormal heart sounds of great diagnostic significance.

That inexhaustible subject for discussion at afternoon teas—blood pressure—is of only little use in the diagnosis of diseases of the heart itself. In aortic regurgitation there is a large pulse pressure corresponding to the Corrigan pulse. Auricular fibrillation can be diagnosed by listening to the absolutely erratic variations in force of beats and intervals between beats as the column of mercury falls. These variations are more evident near the upper limit of systolic pressure. Pulsus alternans can be diagnosed by noting the sudden doubling of the pulse rate as the column of mercury falls; the new beats being weaker and being inserted midway between the original beats. Other irregularities cannot be diagnosed by the sphygmomanometer.

The polygraph and electrocardiograph are necessary for the careful study of irregularities, but they are not always available nor are they essential for diagnosis except in certain cases. Sinus arrhythmia should be recognized because of its absolute harmlessness. Nearly all of the irregularities of youth are of this type. Practically it is safe to say that any irregularity which continually repeats itself in each respiratory cycle is sinus arhythmia. In case of doubt an instrumental investigation must be made. All of the other irregularities are due to myocardial defects. Premature beats are found in a majority of people after midlife; consequently their harm must be insignificant. On palpation or auscultation one may recognize with ease that an occasional beat is weak and occurs prematurely. There may be confusion between premature beats and partial heart block, in which case instrumental examination is necessary. A regular pulse of 30 to 40 per minute, not transient, is almost surely complete heart block. All forms of heart block should be recognized because they are dangerous.

Pulsus alternans and paroxysmal tachycardia should also be diagnosed because of their seriousness, the former by the sphygmomanometer as al-

ready described, and the latter by noting the absolutely abrupt onset and offset of a regular series of fast beats. Auricular fibrillation and auricular flutter are important because of their response to digitalis. Auricular fibrillation may be detected while taking blood pressure. Any pulse rate over 180 per minute is undoubtedly flutter. I have no desire to minimize the importance of the polygraph and electrocardiograph, but they are not always available and, inasmuch as a correct diagnosis can usually be made without them, it is particularly important that these simple methods be familiar to everyone.

Laboratory diagnosis is of great importance in the study of heart disease, but only in the etiologic aspects. It is of quite as much negative as positive value. Syphilis of the heart is only rarely to be diagnosed without a positive Wassermann test. A clean-cut history of the usual course of the disease with the certain knowledge of improvement under treatment might sometimes be accepted as proof. A positive culture for diphtheria will explain the cause of some cases of heart failure during convalescence from sore throat. A positive blood culture is presumptive evidence that a recent heart failure or inflammation is due to the germ recovered; if multiple emboli occur the diagnosis is beyond question. In the absence of a positive blood culture, the detection of bacteria in localized foci of inflammation is less valuable presumptive evidence of the same diagnosis. For example, gonococci in the genital tract and streptococci in the tonsils. The complement fixation test for gonorrhea, if positive, is proof of the activity of the gonococcus in the body and would suggest a probable relation between the gonococcus and any existing inflammation of the heart. A negative test is of little value. Blood counts diagnosticate severe anemias and leukemias which may not only cause the symptoms of circulatory weakness, but also murmurs and enlargement of the heart. The quantity and character of the urine and the quantity of nitrogen waste in the blood help to differentiate nephritis.

It is my desire to call attention particularly to the methods for the early diagnosis of heart disease and to urge their importance. Americans have been given to excesses of all kinds, and consequently show much circulatory wear after forty. If doctors would recognize cardiac weakness by symptoms rather than wait for physical signs, ten to twenty years would be added to the lives of our efficient, but misguidedly strenuous men. In America we have a particularly large field for the study and treatment of potential heart failure. It is one of the great needs of our country.

There is much about heart disease to remind one of tuberculosis. It must be recognized early in order to be treated while still in a curable stage. Symptoms, with or without physical signs, are of great importance in diagnosis and are important beyond measure in early treatment. Faulty habits of living are fundamental in either condition; exhaustion and errors in metabolism preparing the soil for actual disease. Careful and long continued regulation of the mental, motor and digestive functions is essential to the best results. The end result will often be a cardiac or pulmonary cripple, without active disease, able to do a limited amount of work, and reasonably sure to live many years in comfort if he daily conforms to his new rules of life. Both are without specific treatment, but depend rather on rest for the diseased organ and general supportive treatment. Our attitude toward these two conditions should be more nearly the same than it has been in the past. Tuberculosis formerly meant death, it was recognized late, and treatment was ineffectual. Now we have advanced so that our attack is mainly on the prevention and early treatment of the disease. Prevention, rather than cure, is the watchword. May that also be our goal in heart disease.

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DUODENAL ULCER.

ITS EARLY DIAGNOSIS AND TREATMENT.

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Dr. Bertram W. Sippy of Chicago and Dr. John B. Deaver of Philadelphia, both eminent authorities, in discussing recently the treatment of Duodenal Ulcers before the Philadelphia County Medical Society, agreed that the only treatment for a duodenal ulcer is its excision, a gastroenterostomy performed and the patient is discharged as cured.

An excellent modus operandi, indeed, and no one will deny the fact of its advisability, but, as Dr. Deaver so aptly stated, and Dr. Sippy agreed with him, 100 per cent. of all the cases of duodenal ulcers are brought to the operating room after they are at least of nine years standing, by which he meant to imply that it takes at least nine years for an ulcer to develop and become mature before any surgeon may operate.

Quite a happy state of affairs, indeed! If we are to take this for granted, it means that the general practitioner treats his patient for nine years for some gastric trouble or other and eventually prepares for the surgeon a beautiful case of a gastric or duodenal ulcer.

As broad as the assertions of Drs. Sippy and Deaver may be, yet most general practitioners will have to admit its truth, and why? This is just the aim of my paper.

The general practitioner, however, must not alone be blamed for letting the ulcer mature and eventually land on Dr. Deaver's operating table. The patients themselves, in 75 per cent of all the cases, are the contributory cause of the same. The patients do not seek the doctor's advice right after they get their first symptoms in the gastric region; instead they resort at first to home remedies or advertised nostrums and when they do come to the physician, before the latter has a chance to study the case, the patient not getting immediate relief begins to travel from one doctor to another and each one diagnoses and treats his case, but not for the right ailment.

It requires, on the part of the general practitioner, the use of a little diplomacy to handle the cases that come to him for treatment. He must, at all times, suggest to his patient that, though he may not be able to give him immediate relief, he will, however, in the course of two of three weeks after

careful study of his case, arrive at a definite diagnosis and save him from the necessity of a subsequent operation and probable death.

The physician, must in all instances, when a patient with whatever gastric troubles comes to him, have on his mind the ultimate result of an ulcer, whether duodenal or gastric.

It may be somewhat too broad or too sweeping a statement to make that every case that presents itself for treatment of gastric troubles must be looked upon as a subsequent case of an ulcer. I will, however, say that in 90 per cent. of all the cases the process of an ulcer does begin as a mere irritation and break in continuity of the mucous membrane of the stomach, and then, depending upon the degree of the patient's vitality and the degree of the activity of the entire alimentary tract, the further development of such process may either lead to the formation of an ulcer proper or it may abort itself by a spontaneous proliferation of epithelial tissues and thus close itself up and become "cured."

It may be also stated, with a certain degree of positiveness, that when a commencing ulcer does not abort itself and is allowed to become "matured" and reaches the operating table, the patient, on leaving the hospital pronounced "cured," is by no means cured; he is relieved for a while, for perhaps a year or two, but he usually comes back to the general practitioner for some ailment or other in his abdominal cavity, whether adhesions due to the operation, a probable developing gastric carcinoma, or just a simple gastric neurosis. The patient, long after an operation has imaginary pains which are due to the psychic effect, produced by waiting nine years, living through all the sufferings of agony and pain, and only at the end to be operated upon.

Indeed, what a happy state of affairs it would be if we would only realize that an early diagnosis of a duodenal ulcer would mean the saving of thousands of lives and reduce the suffering of gastric pain to a minimum. The proverb that a "stitch in time saves nine" would be realized here. By the "stitch," however, I don't mean a surgical, I mean a prophylactic, which is the ounce of prevention.

The excision of the ulcer, even in the hands of the skillful surgeon, is, at times, a very serious procedure. It is possible with a great degree of safety, when on the anterior wall, but even then is accompanied with danger of pyloric stenosis; while the resection of the duodenum proper is not advocated by many surgeons because of its great mortality.

Every surgeon will admit, when doing a gastroenterostomy and closing up the pylorus, that no matter how skillful he may be, it is as hard to keep a natural opening closed as it is to keep an artificial opening from closing. The peristaltic action of the stomach will for a long time carry the digested food toward the pylorus and there, not finding its usual outlet, the food will remain for a while, causing a hypersecretion of HCl, and perhaps in time, due to the constant irritation, this will cause a new ulcer to develop; at any rate will give great discomfort and pain to the individual. Though this may happen seldom, yet it does happen in a certain percentage of cases. Dr. Deaver himself mentions one case in a fine, benevolent gentleman, a clergyman, upon whom he operated for ulcers at least four or five times, and who eventually died. Dr. Deaver called this the case of a man predisposed to duodenal ulcers. Another fact which must be borne in mind in some cases, where an artificial passage by gastroenterostomy has been made, is that the food coming into the stomach rolls quickly to the artificial opening, falls "pell mell" into the jejunum and results in a peptic ulcer in the jejunum. Fluoroscopic examinations have proven this to be true in the case of patients upon whom a gastroenterostomy has been done, for when barium or bismuth was given, it could be seen that the powder sifted right through the opening.

The man with the "new opening" in the stomach feels always hungry; he never gets enough. The surgeon ascribes this to the enormous appetite the patient acquires after the operation. To the internist, however, to whom this patient comes a while after the operation, this does not seem to be the fact. The internist finds that this man, though devouring a great quantity of food, yet receives very little nourishment. He is emaciated, pale, anemic, and loses weight.

Now, what are we as internists to do—not to sow the seeds for the surgeon to reap the harvest? How are we to prevent the duodenal ulcer from becoming "matured"? The answer is obvious. Do not let your patient wait and linger and then begin your active treatment when it is too late, when surgical intervention is the only remedy to prevent perforation, hemorrhage, or pyloric obstruction, etc.

If your patient is placed on a diet after the operation, why not place him on the same diet long before the operation—just as soon as you make your early diagnosis of an ulcer in its first stages of development. Yes, this is just the point. How can we arrive at an early diagnosis?

In the 16 years of my practice I have been fortunate enough to observe more than 100 cases, with only one case that was operated upon for a peptic ulcer on the posterior wall at the greater curvature of the stomach. Though every case that presented itself for diagnosis had different aspects from the point of view of general symptomatology, yet most of them, 95 per cent., presented similar gastric symptoms. I have observed that the male is more commonly affected than the female. As to age, there is no limit, at least from 20 to 70. The patients were apparently well until the first attack of a burning sensation in the stomach or a feeling of pressure in the epigastric region. The feeling of pressure which is at times experienced with a sensation of pain that usually appears in the afternoon, or in the first half of the night, also a few hours after the main, heavy meal, should lead us to suspect a duodenal ulcer.

From the anamnesis or the study of the previous histories of the cases under observation, I have found that in the uncomplicated cases the patient awakens in the morning absolutely free from any distress or feeling of pain and remains in this state until the food of his first meal reaches the duodenum, and the heavier the meal, the later his troubles begin. This seems to prove that the so-called "hungerpain" is not a positive factor in the diagnosis of duodenal ulcers, because when the

stomach is at rest from midnight until morning, the patient is free from pain.

Another significant symptom, though not observed in every case, and which is present in most of the cases, is the "water brash" which is the erructation of an ill-smelling fluid containing no particles of food and which is different from the regular vomitus containing particles of digested and undigested food occurring often in pyloric obstruction. Though the symptom of water brash may somewhat mislead us, as it may be due to a cardiospasm or a retroperistalsis, yet it is invariably present in duodenal ulcers, and in conjunction with the other symptoms will lead to a positive diagnosis.

All these, of course, are subjective symptoms and are elicited from the history of the patient. Now, how are we to make our diagnosis? On what subjective symptoms must we rely with surety to arrive at an early diagnosis of duodenal ulcer?

Inspection aids very little in the diagnosis. A gastroptosis or a carcinoma may be diagnosed by this sign. Direct palpation and percussion of the epigastrium are the most significant aids in the diagnosis of duodenal ulcer. Directly to the right of the linea alba, about midway between the border of the lower ribs and the umbilicus, there can invariably be found a round or oval area of pain on the slightest pressure, which varies with the size of the ulcer present, and which diminishes in size with time as the healing process goes on. In neurotic patients who suffer from hyperesthesia, a sign similar to this may be found, but it will cover a larger area. It is advisable, while percussing or palpating over this area, not to use strong force, just a very light, gentle pressure or light tapping with the finger, or better still a small, light percussing hammer may be used. In order to ascertain with more positiveness the existence of this sign, the procedure may be repeated every day for a few days, and if the sign still persists you may with assuredness say that you have diagnosed a duodenal ulcer.

Of course, the laboratory findings of the stomach contents, the blood in the vomitus, the occult blood, the percentage of HCl are of the greatest diagnostic value, and must be applied in every case. Roëntgenology, though a great aid in the diagnosis, is at times very uncertain, and as regards the early diagnosis at least of an ulcer absolutely unsafe.

Having thus arrived at an early diagnosis of duodenal ulcer, long before symptoms such as perforation, hemorrhage, or pyloric obstruction appear, we can with certainty commence our medical treatment, and prevent these latter symptoms, save our patient from the operating table or perhaps from the undertaker's table. I say an early diagnosis, because when a patient comes with a chronic condition, with a nine-year-old ulcer, then the surgeon as our "ultima ratio."

Before we commence our medical treatment, we must strongly impress on our patients that at any time they begin to feel a little better, they are not as yet altogether cured. They must for a long period of time continue with their treatment, with their mode and habits of living, and particularly with their specially prescribed diet.

When we first see our patient and find on palpation and percussion over the "pain zone," in the right epigastrium to the right of the linea alba and midway between the lower border of the ribs and the umbilicus, that significant symptom of pain to be present, we order our patient to bed and cover the area with moist heat. This may be best accomplished by a folded towel wrung out of hot water, over which is placed a hot water bottle, the patient lying on the right side so that the hot water bottle may rest on the bed at his side and not cause heavy pressure on the stomach. The next most important thing is the diet. For the first three days milk should constitute the chief diet, with one or two very soft boiled eggs (boiled one minute.) After the third day, in addition to the milk, a cup of chicken broth and soft boiled eggs may be given. This is to be continued until the end of the first week. After the seventh day, in addition to the above, provided the pain in the percussion zone has modified, a small amount of strained potato soup with butter, but without salt, may be given. At the end of the second week, when all the symptoms have abated, small portions of zwieback or crackers may be allowed and a little farina added to the milk. After three weeks, if the patient shows good progress, the menu may be increased to milk, soft boiled eggs, toasted bread with butter, broth, and one or two broiled lamb chops. The quantity and quality of the above diet may be increased gradually in accordance with the progress the patient is making.

In any instance, it is imperative for the physician to regulate the diet in accordance with the progress of the condition, and not allow the patient himself to deviate or change the diet. The physician must always be on the alert in watching the progress of his case and not arrive at conclusions too soon, believing that his patient is already cured. It may take weeks and sometimes months before a cure can be effected, depending on the degree of severity of the case in hand. Rest in bed must be of four to six weeks' duration in every case.

Medication plays another important role in the treatment of duodenal ulcers. Something must be given to counteract the hyperacidity of the stomach which, so far as is known, is the chief etiological factor causing gastric or duodenal ulcers. Before we commence, however, with our therapeutic agents, we must bear in mind that as the duodenum is the receptacle of the bile and pancreatic juices, we must see if the liver and pancreas, producing these juices, are in good working order. Autotoxemia from the large intestine, due to retention of fecal matter, produced often by constipation, may cause untoward effects on the small intestines, the duodenum and stomach included. Putrefactive gases in the stomach and intestines must be gotten rid of. In a word, we must always be on the lookout for that "vicious circle," the duodenum, and the stomach being the center of all the troubles in any diseased condition of the human body. No matter what part of the human economy is affected, the stomach acts as the receptacle of various drugs and articles of foods and is being naturally affected by it.

Bismuth is being used extensively, but it has a tendency to produce constipation, being often prescribed in cases of diarrhea. Atropine and belladonna are drugs given with a view to check the secretion of HCl, but these drugs check also other

secretions and cause a dryness of the throat. Silver nitrate is a good drug, but can not be used for a long time as it causes argyria. The following is a prescription which I have used with good results:

℞ Sodii sulphatis 30.0
Sodii phosphatis 30.0
Sodii bicarbonatis 40.0

M. Sig.: One teaspoonful in a wineglass of hot water three times a day before each meal.

This combination has a tendency to overcome the hyperacidity of the stomach and the patient taking it is free from the feeling of distress he had before. A smaller dose of the above may also be taken after meals by those who begin to feel this distress coming on an hour or two after meals.

We are well aware that the nervous system, the branches of the sympathetic coming from the celiac plexus entering into the many ramifications with the vagus, plays a great part as the controlling power of all the secretions and may be considered as one of the leading etiologic factors in ulcers of the stomach and duodenum. This branch of the nervous system must be considered in the treatment of ulcers. The phosphates seem to exert a sedative effect upon it, and sodium phosphate, used in the above prescription, is the most acceptable form in which it may be given in conditions of gastric or duodenal ulcers.

As I have already stated, obstipation must in all instances be overcome in the treatment of duodenal or gastric ulcers, and I believe the sodii sulphas (Glauber's salt) also one of the ingredients of the above combination is a happy remedy for the same. The sodium bicarbonate needs no introduction, being an antacid which is a good neutralizing agent in every case where hyperacidity must be overcome.

In conclusion I will say that an early diagnosis of duodenal ulcers is absolutely possible and must be made; and in most cases medical and dietetic treatment, when early instituted, will surely overcome the condition.

All chronic cases that come with a history of passing from one doctor to another for several years, or cases of perforation, hemorrhage, or pyloric obstruction, must and should be referred to our surgical friends.

530 Spruce Street.

BIDDY AND THE COAL BIN.

A CASE OF POLYGLANDULAR DISEASE.

By ROBERT L. PITFIELD, M.D.,

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Biddy G's life had been since childhood a drab one; much pain and suffering had been added to a colorless existence. Nothing had sweetened her life, her home was humble, she had but few, if any, friends other than her family; she never had married, and probably never had a beau; she had a loyal and devoted sister who mothered and nursed and supported her for years. The devotion of this sister was touchingly heroic; her life, too, was drab because of Biddy's complaints.

When I first saw the patient she was a gaunt, grotesque woman of 42. Her face was striking in that it was devoid of any pleasing or intelligent expression, her countenance was as wooden and expressionless as an Alaskan totem pole. Dark violet shadows encircled her eyes, her eyelids were slightly puffy and hung above her lustreless eyes, whey-colored bags faintly greenish in cold lights. Fixed wrinkles encircled the corners of her rigid lipped, austere mouth; the lines never came from smiling but from grim mental pain. When she spoke, the stiff parchment-like skin of her face seemed to smother any expression that would have liked to have appeared from beneath.

Her dull reddish hair was dry, coarse, and unshining. Her neck was long and haggard, the skin hung in thin folds; there was no hint of any thyroid swelling such as should be seen in the throats of most healthy women of her age. The outer halves of her eyebrows were slightly thinned. As she sat in her chair her attitude was ungainly and wooden. She replied when addressed, but never ventured a remark. Her speech was slow, with a suggestion of scanning in its cadence. Even if her health had been good, her intellect never could have been vigorous. Instead of being plump and rosy, as are many Irish women of her age, she was as sapless and seedless as a bit of dried apple.

Her sister, a poor hairdresser, brought her to me because she said that Biddy was a great care to her, was melancholy, had "heart spasms," and could not be left alone. When it was necessary for the sister to go out and earn a few dollars and Biddy was left to herself, she could always be found upon her sister's return sitting in the gloom of the coal bin in the cellar twisting a certain lock of her hair; a bald spot was shown to me where the hair had been pulled out. Biddy's thoughts were more in harmony with the gloom of the coal bin than with the sunlight; a mind in woe cannot endure the sight of happiness in others, and the coal bin shut out such painful spectacles. She loathed people, too, because her queer appearance attracted inquisitive looks, but she went to church whenever she was able. About her neck were hung at least six religious emblems suspended by as many cords and ribbons, and above her heart was pinned another; her morbidness, as is usual in such cases, colored her religion, and she had many fears. Her past history was poor in the following particulars: in her childhood she suffered from a severe attack of scarlet fever, later she had a bad fall down the cellar stairs, and in her thirties the menopause was abrutly precipitated by an oöphorectomy. Since her operation her health had steadily declined; she never had been able to work, did not read, conversed but little except to her sister and then in a peevish vein always. She could knit a little for a few minutes at times, but her span of attention was very short. If she walked much she was at once seized with heart spasms, and these heart attacks terrified her and her sister dreadfully. Her heart was not manifestly enlarged, but its impulse was weak and the pulse was rapid. A faint nitral murmur, systolic in time, was heard. Her blood pressure was low, vasomotor relaxation was manifested by puffiness about the ankles, but true edema pitting on pressure at times was found along the shin bone. Her reflexes were prompt and otherwise normal; a history of syphilis was not elicited; her pupils were equal, responding to light.

It was manifest that this asthenic waif was profoundly neuropathic from some somatic causes, and that these causes were of endocrine origin was most patent. Her thyroid was an impalpable remnant of a normal organ. As has been noted she had no ovaries. There is no doubt that other of her ductless glands were hypoplastic and defective in function. I made no tests of the glucose tolerance of her pituitary gland. Her precordial pains were more than neurasthenic; there was evidently some myocardial weakness. According to Hirshfelder, when there is some minor cardiac defect in the presence of hyperexcitability of the nervous system, anginal symptoms are apt to appear. Hirshfelder classes such a syndrome as one of the five forms of angina pectoris. Her kidneys were normal, she was markedly anemic, and was habitually costive. With no palpable thyroid, dry skin, brittle, scant hair, and a marked neuropathy, the indications for thyroid administration were marked. Immediately after the exhibition of a few grains of the medicament the patient became more cheerful and inclined to like the sunshine; she shortly forsook the coal bin and would sit for hours on the doorstep and watch children play at jackstones and marbles. After a time her sister found that she could leave her for all day; she smiled and looked more cheerful, and was happy in a new vigor that she had not known since her youth, but there was always a pronounced fatiguability, and she was always neuropathic. The temptation of all doctors is to administer too much of a medicine that is acting well, as thyroid did in this case; I gave her too much; her need was comparatively little. She became dyspneic, her heart enlarged, more edema appeared in her feet. The amount, I think, was but 6 grains per diem, but this was sufficient to increase the rapidity of the pulse, and also increased the precordial pain. It became necessary to stop the drug for a few weeks, and digitalis was given in the interim. One grain of thyroid extract t.i.d. was enough to make her comfortable; in some mild cases 1/20th grain or even less is sufficient.

For observation purposes a stay in a hospital was suggested, and to this proposal she gladly acquiesced, much to my surprise. In the ward she made some friends, was happy and contented. In the effort to supply any further glandular delinquencies corpus lutein was administered, but without benefit. For the cardiopathy 1-grain doses of pituitary extract were given. This was followed by great improvement, both physical and mental, and she took this drug for two years with a like amount of thyroid extract. She became less of a burden than before to her sister, and more of a companion, and would help in the small affairs of the tiny home.

The relative economic value of a few hundred tablets of thyroid in that home was enormous. The hairdresser could attend to all of her customers, prosperity began to bless them, they abandoned the single room in the lodging house, and acquired a small house, and Biddy did most of the housekeeping.

Thyroid cannot cure such cases, it can only supply the deficiencies of a crippled gland. After the menopause patients previously thyroprivic can sometimes abandon the drug, as without the menstrual function less demand is made upon the thyroid than before; in this case, however, there was no such event to look forward to.

Thyroid, as I have previously pointed out, is the nutritional hormone of the body; in some cases of hypothyrosis with a psychopathy the results from its administration are magical. In Biddy's case it lessened the invalidism to a degree that made life bearable and sunny to both sisters. An influenzal pneumonia closed the life of this poor creature.

Comment.—The polyglandular chain in this case had suffered two traumatisms; scarlet fever affected some of the components in the chain, a devastating operation had further disturbed the balance of a weakened system interdependent upon its various parts. Thyroid extract weakened the heart, as it is most prone to do in certain cases. Pituitary acted as an adjuvant most happily in restoring muscle tone to the heart, and in other metabolic ways, probably. It is always well to begin with too small a dose than too big a one, especially in the presence of a weakened heart.

5211 WAYNE AVENUE.

ERRORS IN THE DIAGNOSIS OF THE CONTAGIOUS DISEASES.

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SERIOUS consequences may result, both to the individual and the community at large, from faulty diagnosis of the contagious diseases. Unfortunately, such diagnostic errors are by no means rare. The fact that these errors can be avoided in the great majority of the cases, by the observation of but ordinary precaution and a little painstaking, renders the matter the more regrettable.

A careful investigation of the cases in which erroneous diagnoses were made, has revealed the following factors as being responsible for such occurrences, given in their order of importance and frequency: (1) Carlessness in arriving at a diagnosis. (2) Not holding a case under observation when in doubt. (3) Not utilizing laboratory tests at one's disposal. (4) Deficient knowledge and experience in the contagious diseases, both theoretical and practical. (5) Anxiety of the patient's kin for an immediate diagnosis.

Carelessness in Arriving at a Diagnosis.—I find that this factor is responsible for most instances of faulty diagnosis. The carelessness is displayed in the inquiry, in the examination, in the differential diagnosis, or in the deductions. Any one of these is incompatible with a proper diagnosis. If the doctor ignores or dwells but superficially upon the information that he may receive from questioning the mother or other kin of the patient, he loses a valuable asset in the diagnosis. Knowing how long the patient has been ill, the manner of onset, the course of the disease, and, if a rash was or be present, how long its duration and where noticed first, which he can know by merely asking, his understanding of the case will be materially enhanced.

The previous history of the case, which is often neglected, is equally important; in fact with the contagious diseases, it is very important and sig-

nificant. And again by merely questioning the mother, the doctor can know, almost definitely by wisely putting his questions, whether the child has had any of the contagious diseases, a knowledge which might be of considerable assistance in ruling out those diseases.

Last, but not least, interrogation will reveal a possible exposure to any of the contagious diseases, a point of some bearing in the etiological consideration of the disease in question. I find that pitfalls in the diagnosis are often due to the lack of appreciation of these points in the history. Not infrequently the history of the case is entirely ignored, the doctor launching at once into the examination of the patient.

The examination in itself is often conducted but superficially. The doctor is apparently satisfied by merely baring the child's chest slightly, giving the rash present a casual observation, and with an air of bravado and self-importance, makes a snap diagnosis. Examination of the throat is often omitted. If that organ is examined the pathological conditions therein are either overlooked or defectively valued. The thermometer is made use of but infrequently. If it were used, fever might be discovered, which would indicate, or rather ought to indicate, that that sign, together with a sore throat or a rash, or all the three combined, is very suspicious of some contagious disease.

While faulty history-taking and careless examination account for most erroneous diagnoses, the stumbling block in many cases seems to be the differential diagnosis. Even assuming that the doctor has a fair knowledge of the contagious diseases, he fails to appreciate the significance of the leading points in the case; he either under or overvalues these points. He mistakes one rash for another, regards the eruption as due to indigestion or some dietetic indiscretion, takes tonsillitis for diphtheria, or vice versa, takes cervical adenitis for mumps or mumps for adenitis, or takes pertussis for bronchitis or nasopharyngitis or vice versa, and so on *ad infinitum*.

By failing to grasp the true significance from the history and examination the doctor, naturally, makes false deductions. It is just like an example in arithmetic, errors in the addition or other problem lead to a faulty answer. The same thing applies with like veracity in the contagious diseases, errors in the examination or other diagnostic step, lead to a faulty diagnosis.

Not Holding a Case Under Observation When in Doubt.—As a cause of erroneous diagnosis this factor ranks next to carelessness. In any diseases, but in the contagious diseases in particular, a correct diagnosis is often impossible on the first examination of the patient. No matter how expert a man may be in the subject, he will often be unable to decide offhand what the rash is, or what the sore throat is due to. If the first examination is made during the initial stage of the disease, correct interpretation is doubly difficult. Hence the value and frequently necessity of observation, a fact not thought of by many practitioners. Particularly in dealing with the contagious diseases is it imperative to be absolutely sure of the diagnosis, for a wrong diagnosis reacts unfavorably not only upon the patient but also upon the community at large. Through failure of keeping a doubtful case under observation many localized epidemics of the contagious diseases have occurred.

Not Utilizing Laboratory Tests at Disposal.—This applies exclusively to the diagnosis of diphtheria. This disease is often overlooked by the neglect of the doctor to take cultures in cases of sore throat. I find that follicular tonsillitis is very often mistaken for diphtheria, or vice versa. The mucous deposit on the tonsils in cases of scarlet fever is often ascribed to diphtheria. All these errors could be avoided by the taking of cultures. Very often a sore throat, with no evidence of any exudate, diphtheritic or otherwise, is due to diphtheria, which can only be shown by cultures. Nasal diphtheria, similarly, is often overlooked. Apparently cultures do not enter the mind of the doctor when he has a case with a persistent nasal discharge.

Deficient Knowledge and Experience in the Contagious Diseases.—Although as a cause of erroneous diagnosis this factor, fortunately, is only of minor importance, yet its occurrence now and then makes it a point to be considered. This factor is especially applicable to the younger and less active practitioner. Many doctors see contagious diseases but rarely, and even their theoretical knowledge on the subject has withered. Therefore it is not surprising to find these men guilty of making false diagnoses. They are lost in the diversity of the contagious eruptions.

Anxiety of the Patient's Kin for an Immediate Diagnosis.—In a small percentage of cases, pressure on the physician by the patient's kin for a quick opinion on the nature of the illness, is responsible to some degree for the erroneous diagnosis. The mother is anxious to know what ails her child, and the doctor to satisfy that anxiety is apt to make a premature diagnosis. In many instances he cannot express doubt or uncertainty, because that would reflect unfavorably upon his professional prestige. This state of affairs is particularly emphasized in a practice among the poor and the unintelligent.

To illustrate the common errors made in the diagnosis of the contagious diseases, the following cases will be cited. These represent but a small percentage of the cases incorrectly diagnosed by different practitioners. All the cases occurred in the first four months of 1920.

CASE I.—J. P., 8 yrs. Scarlet fever taken as a gastrointestinal rash. A doctor saw the case twice, at an interval of ten days. In consequence of the wrong diagnosis the child was allowed to go to school. The school nurse in her routine examination of school children, noticed desquamation on fingers of patient and promptly sent the child home. I saw the case soon after and on examination found a marked generalized desquamation. The child had been ill 17 days before the condition was finally recognized, by mere accident. Apparently the attending doctor overlooked the case, and even attached no significance to the desquamation, which must have been apparent on his second visit. Due to the mistaken diagnosis, this child had mingled freely with his friends and was daily attending school, subjecting all those with whom he came in contact to the danger of contracting the disease.

CASE II.—A. J., 14 yrs. Urticaria taken as scarlet fever. Child excluded from school and otherwise quarantined. Diagnosis rectified after two days and child released from quarantine. Such cases give rise to great and unnecessary annoyance.

CASE III.—M. S., 4 yrs. Disagreement between two doctors, one making it scarlet and the other a mere "cold." Examination showed definite desquamation of the fingers and toes, which should have been noticed by the doctor diagnosing the case as a mere cold. Case scarlet fever.

CASE IV.—A. M., 3 yrs. Disagreement between two doctors, one saying it is scarlet and the other diphtheria. Neither correct. Examination showed no evidence of either disease. Culture was negative, but was not taken by either of the medical men. Case acute nasopharyngitis.

CASE V.—R. W., 4 yrs. Scarlet fever taken as simple sore throat. Doctor saw case on the first day of illness, rash developed on the following day. If the doctor were not so sure of his diagnosis and kept case under observation for a day, he probably would have made correct diagnosis. Case scarlet fever.

CASE VI.—O. W., 17 yrs. Measles taken as scarlet fever. This mistake is frequently made. Close observation of the rash in this case would have revealed a few maculopapules, which taken with a careful history would have avoided erroneous diagnosis.

CASE VII.—W. B., 7 yrs. German measles mistaken for scarlet fever. This error is rare.

CASE VIII.—S. G., 4 yrs. Scarlet fever taken as German measles. Such errors are common. The diagnosis of German measles should not have been made until scarlet fever could be ruled out definitely. German measles is relatively infrequent, except in epidemics, and most nearly resembles measles. Mild forms of scarlet are often taken for German measles.

CASE IX.—M. V., 8 yrs. Follicular tonsillitis taken as diphtheria.

CASE X.—R. K., 6 yrs. Diphtheria taken as follicular tonsillitis. Cases Nos. IX and X represent the most common diagnostic errors. If cultures were taken such errors could be avoided. Diagnostic errors in throat conditions may lead to serious consequences. The danger of taking diphtheria as tonsillitis is, of course, the more damaging.

CASE XI.—J. M., 18 mos. Diphtheritic croup taken as simple croup. This was treated for two days, without the true nature of the disease being recognized. When I saw the patient he was moribund; his life was prolonged a few hours by immediate intubation. This error is not infrequent, and in seriousness has no equal.

CASE XII.—R. J., 23 yrs. Chicken pox taken as small pox. If the doctor had observed eruption closely, he would have seen the characteristic crops of varicella, a picture quite different from the shotty papules of small pox.

Innumerable other diagnostic errors are daily made, which could be avoided in most cases. It is the duty of the physician, therefore, in justice to himself, the patient, and the community, to use all his energies and all the means at his disposal to make a correct diagnosis. This can be done without any great travail. A detailed and careful history should be obtained, both present and past, dwelling particularly on the contagious diseases. Information should be sought on a possible exposure to contagion.

The examination should be conducted carefully, having the patient stripped, and particular attention being given to the condition of the skin and the throat. The rash, if present, should be thoughtfully scrutinized. Having completed the examination, the points of difference of the contagious and other possible diseases should be considered, and deductions therefrom carefully made. The doctor should not allow himself to be influenced by the desire of the mother for an immediate diagnosis, unless he is sure of his ground. Cultures should be taken in doubtful sore throats without delay. In fact it is a wise policy to take cultures in all cases of sore throat in children.

If in spite of all these manoeuvres, no definite diagnosis can be arrived at, the patient should be held under observation until the development of additional signs and symptoms.

It stands to reason that no intelligent examination and interpretation is possible without a fair knowledge of the subject. It behooves the doctor, therefore, to acquire that knowledge from a practical and theoretical study of the subject. That is absolutely essential, for without that he is "like a house without a foundation."

417 EAST EIGHTY-THIRD STREET.

THE TREATMENT OF CANCER.

BY ROBERT BELL, M.D., F.R.F.P.S., ETC.,
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TWO interesting, but by no means conclusive articles, which appeared in the MEDICAL RECORD of March 8 (page 415) and of March 20 (page 503), prompt me to offer some remarks bearing upon the views expressed by Dr. Wm. Mayo of Rochester, Minn., on the one hand, and on the other hand by Dr. S. M. D. Clark of New Orleans, and Dr. James F. Percy of Galesburg, Ill., upon the treatment of cancer.

Now I don't wish to be hypercritical, but from 26 years' close study of the cancer "problem," or rather "enigma," as I have put it in an article in the MEDICAL RECORD of Feb. 20 last, I have been compelled to place surgical treatment, *ultra vires*, when cancer is concerned. Surgery has had too long an inning, without, as far as I can ascertain, and most markedly in my own experience of 15 years' treatment by the knife, obtaining a successful result. From my standpoint, therefore, I have been forced to the conclusion that the time has arrived when the physician should be called in, and show what he can do, as regards both preventive and curative measures. To quote one of Dr. Mayo's sentences: "We must spread more widely the *fact*"—italics are mine—"that chronic irritation was the cause of the disease." No doubt it may be the exciting cause of the disease by providing a nidus upon which to locate itself, yet this will only obtain when a toxic condition of the blood is in evidence, which latter is the predisposing cause of the malady. And I am convinced it is only by adopting, and continuing, those measures which will promote the continuance of a healthy blood stream, that we can ensure immunity from this scourge. There must be no means neglected—the aim of which should be to make autotoxemia an impossiblity, for in that lies the *fons et origo mali*.

In this connection I may state that a daily, complete—and I use this word advisedly—evacuation of the bowels should be insisted upon. The home should be thoroughly ventilated, more especially the bedrooms, the windows of which should always be kept sufficiently open to permit a free access of fresh air—for breathing a vitiated atmosphere is quite as much a toxic agent as absorption of noxious fluids from the unduly retained excreta in the colon. Then our dietary should not be so much restricted to devitalized material as the conventional custom of today indicates. Our blood requires for the satisfactory nourishment of our cells, the *living*

principle of plants and fruit, just as that of every other animal does. This unfortunately has had conferred upon it the erroneous term of "vitamines," which is a contradiction in terms; as whoever heard of a living amine—an ammoniacal substance? As the first who called attention to the necessity of these substances as being essential to a healthy blood condition, I have named "vitols." They, together with the contained organic vegetable salts, which are also deteriorated by cooking or frequently lost altogether, when the water in which vegetables are boiled is thrown down the sink, are essential to health.

Then we should bear in mind that the eating of butchers' meat is only taking food at second hand—moreover, we know it is the product of the lowest stratum of vegetable matter. We must also bear in mind that the decomposition of the effete matter derived from this, when it is received into the colon, gives rise to the most noxious form of toxins. It is also advisable to drink more water than is usually the custom, so as to flush the kidneys.

In the many hundreds of cases of cancer that I have met with, I am unable to remember one instance where constipation was not coincident; also, as coincident, a tendency to rheumatism; and, as a rule, flesh meat eating was prominently in evidence.

In the MEDICAL RECORD of June 5, 1915, a paper of mine appeared upon "The Natural History of Cancer," in which I think I proved that cancer is in reality a form of fungoid growth, and that, like vegetable fungi, it can grow only upon a soil pregnant with decomposing matter; and can thrive only upon a vitiated blood stream, which represents the soil in this instance.

My contention is that in the surgeon's mind concentration is too earnestly fixed upon the local outcrop—for the local manifestation is only an outcrop—of the disease, which, long before this has manifested itself, has been latent in the blood. Hence the fact that rheumatism is generally found to have been in existence prior to the cancer incidence, and it will be found that microphotographs of cancer blood, and those of the blood taken from rheumatic subjects, bear such a strong resemblance to each other that it is impossible to decide which is which. Therefore, if the prevention of cancer is to be assured, the integrity of the blood must of necessity be maintained. Moreover, if it is to be cured, and this has frequently been effected, we must adopt measures to cleanse the blood from the pernicious contents which have been responsible for the malign metamorphosis that has taken place in cells, which, otherwise, would never have been guilty of exchanging normal physiological control and consequently healthy metabolism, for that which develops cannibal instincts.

If ever cancer is to become a disease of the past, it must be looked upon and treated as a blood disease, primarily and essentially. But simultaneously hot air—I employ it up to a heat of 170° Fahr.—may be driven locally, under a pressure of at least three atmospheres, right into the heart of the tumor; by which means the death of the cancer cells will be accomplished long before those of the normal tissues have been endangered.

In the May 1st number of the MEDICAL RECORD appears an article upon "Magnesium in Cancer," which I welcome most heartily as, for some months past, I have found great benefit derived from the subcutaneous injections of 2 cc. Oscol Mg. (colloid magnesium) three times a week, but, of course, in conjunction with dietetic and hygienic treatment.

15 HALF MOON STREET, W.

X-RAY TREATMENT OF UNIVERSAL PSORIASIS.

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THE various methods used in the treatment of psoriasis previous to the advent of *x*-ray therapy are no doubt familiar to all. The treatment of a case of universal psoriasis with chrysarobin, salicylic acid, white precipitate, etc., was rather a complicated and disagreeable procedure for the patient as compared with present-day methods of *x*-ray therapy.

The *x*-ray exposures are preferably given three times a week, allowing a day between each exposure. For the first treatment the head and arms are exposed; the second, the trunk and buttocks; the third, the legs and thighs.

The head is divided into five areas, as in the Adamson-Kienbach method for ringworm of the scalp; the arms, forearms, and hands into four areas each, two flexor and two extensor; the trunk into eight areas, four ventral and four dorsal; the buttocks, one area for each buttock; the leg and thigh into six areas, three anterior and three posterior.

The dose given these cases is one-eighth of a skin unit to each area of the scalp each week until four treatments are given. Then scalp treatment is discontinued for four weeks, and if necessary a second series of four treatments is given. Then scalp treatment is discontinued for four weeks, when, if necessary, a third series of four treatments is given. To each of the areas of the body one-fourth skin unit is given each week until the lesions have disappeared. The treatment is concluded in from four to eight weeks, depending on the severity of the case.

If it is impossible to follow the above method, which we consider the ideal one, then the body is divided into two divisions, and each is treated once a week, using one-eighth of a skin unit for each area instead of one-fourth on body areas.

The dose of unfiltered ray in these cases may be obtained from any set of factors by the use of the formula published in the June, 1917, issue of the *American Journal of Roentgenology*,[1] or in a more recent article in the May, 1920, issue of the *Archives of Dermatology and Syphilology*.[2]

For example, take the factors given in a recent article on Plantar Warts: 7½ in. gap, 4 M.U., 9 in. distance—determine the time necessary to produce one-fourth of a skin unit.

$$\frac{7\frac{1}{2} \times 4 \times ?}{9 \times 9} = \frac{30}{81} = \frac{10}{27}$$

9/16, the standard for 1 skin unit divided by 10/27

$$= \frac{9}{16} \times \frac{27}{10} = \frac{243}{160} = 1 \text{ min. } 31\tfrac{1}{8} \text{ sec.} = 1 \text{ skin unit;}$$

¼ of 1 min. 31⅛ sec. = 23 sec. = ¼ skin unit;

$$\therefore \frac{7\tfrac{1}{2} \times 4 \times 23/60}{9 \times 9} = \tfrac{1}{4} \text{ of a skin unit;}$$

⅛th of a skin unit = ½ of 23 sec. = 11½ sec.;

$$\therefore \frac{7\tfrac{1}{2} \times 4 \times 11/60}{9 \times 9} = \tfrac{1}{8}\text{th of a skin unit.}$$

The factors above were used in the treatment of plantar warts,[2] and with 1 1/6 minutes time the dose is said to be 1 1/3 skin units. This we are unable to verify. Thus:

$$\frac{7\tfrac{1}{2} \times 4 \times 1\ 1/6}{9 \times 9} = \frac{35}{81} \text{ divided by 9/16 of the standard for 1 skin unit} = \frac{35}{81} = \frac{16}{9} = \frac{560}{729} = \frac{3}{4}+ \text{ skin}$$

units instead of 1 1/3 skin units.

The time necessary to produce 1 1/3 skin units with these factors would be:

$$\frac{7\tfrac{1}{2} \times 4 \times ?}{9 \times 9} = \frac{10}{27};$$

$$\frac{9}{16} \times \frac{27}{10} = \frac{243}{160} = 1 \text{ min. } 31 \text{ sec.} = 1 \text{ skin unit;}$$

1/3 of 1 min. 31 sec. = 30 1/3 sec.

30 1/3 sec. + 1 min. 31 sec. = 2 min. 1 sec. = 1 1/3 skin units.

It is evident from the foregoing that ¾+ skin units was given instead of 1 1/3 skin units, as indicated in the paper.

During the past year approximately 100 cases of universal psoriasis has been treated successfully by this method. While relapses do occur, they are in no way more frequent nor of greater severity than in other methods of treatment.

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Mammary Hypertrophy Cured by Injection of Milk.—Patel reports this example of autotherapy. Patient was a woman of twenty-four, nullipara, who had developed mammary hypertrophy as a sequel of influenza. The condition was becoming aggravated and Bier's cups could withdraw no milk nor otherwise benefit the condition. Months elapsed, during which the condition became progressively worse, the hypertrophy being great, with much pain and tension and a general inflammatory appearance. Mouriquand then suggested the injection of human milk, 5 cm. every second day. At the end of a fortnight the amelioration was considerable. Eventually the cure was complete and even during the menses there was no reaction. A biopsy showed that the hypertrophic mass consisted of mammary elements, fat and young connective tissue cells. The entire process was deemed of infectious origin. Mouriquand stated in discussion that he had only sought to test the reaction of the breast to milk, and that the sudden atrophy had come as a surprise.—*La Presse Médicale.*

Medicolegal Notes.

Expert Opinion as to Effect of Narcotic on Credibility of Witness Held Inadmissible.—Testimony was introduced tending to show that a witness in a criminal prosecution was addicted to the use of morphine and other narcotics. It was held that the trial court did not err in refusing to permit expert testimony to establish the fact that the use of such drugs tends to render a person unreliable in his statements and generally untruthful. The court quoted State v. King, 88 Minn. 172, 92 N. W. 965, where a like question was involved, to the effect that the witness was before the court and jury. His appearance, demeanor, and the manner in which he gave his testimony, whether straightforward and unequivocal, or in a manner indicating untruthfulness or an unbalanced mind, were sufficient from which his credibility could be determined. —Katleman v. State, Nebraska Supreme Court, 175 N. E. 671.

Failure to Diagnose Correctly Not Necessarily Malpractice.—In an action for the removal of plaintiff's appendix contrary to her wish that it should not be done if she were pregnant, it appeared that the operation disclosed that the plaintiff was about 2½ months pregnant, and that she had an inflamed appendix covered with a Jackson's membrane. The appendix was removed and she made a normal recovery, and in time gave birth to a living and healthy child. The medical testimony showed without dispute that the failure to accurately diagnose her condition was due neither to lack of care, skill, nor judgment; that under the conditions as they appeared an early operation was advisable; that the operation was skillfully performed; that she made a normal recovery, and was relieved from a menace that might have resulted very seriously during later pregnancy by having to have the inflamed appendix removed. In view of such testimony it was held that the trial court properly directed a verdict for the defendant. When a physician exercises that degree of care, diligence, judgment and skill which physicians in good standing of the same school of medicine usually exercise in the same or similar localities under like or similar circumstances, having due regard to the advanced state of medical or surgical science at the time, he has discharged his legal duty to his patient. Where due care, diligence, judgment and skill are exercised, a mere failure to diagnose correctly does not render a physician liable. Not omniscience, but due care, diligence, judgment and skill are required of physicians. When they meet such test they are not liable for results or errors in judgment.—Jaeger v. Stratton, Wisconsin Supreme Court, 176 N. W. 61.

Whether Fall or Disease Proximate Cause of Death.—In an action on a policy insuring against death from accidental injury, "independently of all other causes," there was evidence that the insured had cirrhosis of the liver, and that seventeen days before his death he had suffered a fall on a staircase, which was claimed to have caused his death. There was a conflict in the expert testimony over the theory of one of the plaintiff's medical witnesses that death resulted from a traumatic thrombus, or blood clot, in the portal vein, caused by the fall, "starting thrombosis" of that organ, of which defendant's three medical witnesses denied the possibility, and the length of time before the cirrhosis and admittedly infected condition of the bile ducts and gallbladder, which the insured's physician stated the insured had for years, would necessarily terminate fatally. It was held, by a divided court, that the question whether the insured's death was caused by an accidental injury, independent of all other causes, was for the jury.—Abbott v. Travelers' Ins. Co., Michigan Supreme Court, 176 N. W 473.

State Statute Making Medical Examiner's Report Conclusive Only Applies After Policy Is Issued.—The Iowa Supreme Court holds that Iowa Code, Section 1812, making the medical examiner's report conclusive on the insurer, unless procured by fraud, does not limit, prior to the issuance of a policy, the insurer's investigation as to the applicant's assurability to the examination of its local medical examiner, but applies only after a policy has been issued.—Reynolds v. Northwestern Mut. Life Ins. Co. (Iowa), 176 N. W. 207.

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PAPILLOMATA OF THE LARYNX IN CHILDREN.

IN general practice one not infrequently sees cases of hoarseness in children the cause of which is not easy to determine. Very often there is no history of "a cold" either in the head or chest. Sometimes the hoarseness is continuous. If one could inspect the larynx one would see in many of these cases, numerous cauliflower-like growths attached to the arytenoids and false cords, and sometimes filling up the larynx to a degree that interferes with free respiration. These little tumors are multiple benign papillomata, and are found in most instances before the age of fourteen—in other words they precede puberty, and if let alone tend to atrophy and disappear when the period of adolescence is well under way. They are important in general practice because they are not suspected as a cause of the hoarseness. A diagnosis of diseased tonsils and adenoids is made and the little patient is submitted to an operation which does nothing to relieve the condition. Since it is so very difficult to examine the larynx of a child by the laryngoscopic mirror, the diagnosis must be made by direct view, that is with the instruments of Killian, Brünings, or Jackson.

Papillomata of the larynx occur about equally in the two sexes. Many are undoubtedly congenital, but no one seems to have been able to establish any hereditary tendency to their formation. Syphilis has been accused as an underlying condition, yet the growths are found in many non-syphilitic children. Tuberculosis also has been suspected, but the microscope shows nothing in the removed masses to confirm this suspicion, and the various tests—von Pirquet and others—are commonly negative. Some observers have thought the neoplasms to be consequent upon various exanthemata, but there is no proof of this. One curious feature is that these growths never become malignant in children, but in adults they may become carcinomatous—in fact, they so much resemble cancer that the pathologist must be on his guard when sending in a report on the tissue section.

In 1881 Chiari removed the masses under direct vision in two cases without anesthesia. This was thought at the time to be an exhibition of great skill, as cocaine was not then in use and the peroral tubes carrying electric light were unknown. The laryngologists of that day favored thyrotomy, but the tumors recurred so promptly that it was very discouraging. Clubbe reports a case in which he did thyrotomy 17 times. The result was a fistula of the larynx, stenosis, and loss of voice. This procedure has been almost abandoned by the surgeon of to-day. Several writers (Mackenzie, Hodkinson, Massei, and others) have reported favorably on tracheotomy, leaving the growths to take care of themselves. It is said that upon giving the larynx a rest, the growths gradually disappear. After O'Dwyer had given his method of intubation to the world, various surgeons thought that by inducing continuous pressure upon the papillomata, the tendency to recurrence would no longer obtain. But prolonged wearing of the tube produced necrosis, spurs of new tissue, and vocal weakness. Arsenic and potassium iodide have been administered with the idea of "building up the system" and thus reducing the growths. It is doubtful whether this is ever possible. Some writers have praised the galvanocautery, thinking that, if the base of the growth is burned, recurrence is minimized. Various acids, such as lactic, monochloracetic and trichloracetic, and chromic, have been used. Likewise alcohol and formalin have both had their day.

Of late radium and the *x*-ray have had a host of supporters, especially in the United States. Robert Abbe and Harmon Smith have advocated the former, applying about ten milligrams in a specially constructed container for several hours. It is yet too soon to say whether this should be recommended as routine treatment. There is still difficulty about the dosage, and radium burns on mucous surfaces are by no means uncommon, and they may lead to ulceration, necrosis and ultimately to stricture formation. Fulguration after the well-known method of De Keating Hart is recommended by several French authors. But unless special apparatus is developed for this purpose it can have limited value. The long spark is absolutely essential, as De Keating Hart pointed out in his original monograph; the short spark causes burns, necrosis, and sloughing. It should not be necessary to say that fulguration should never be performed under ether anesthesia because of the certainty of fire; but we have heard of two fatalities because the operator evidently forgot this important fact.

At this stage of our knowledge and experience, it is probably better to remove as much of the papillomatous mass as one can by direct peroral laryngoscopy and then cauterize the base of the growth with the actual or electrocautery. Anesthesia is quite unnecessary in young children, as the operation takes only a very few minutes at each sitting and the amount of pain engendered is negligible.

DE SENECTUTE.

MANKIND'S three greatest evils are said to be disease, old age, and death. Disease is certainly an evil which can, however, in very great degree, be

prevented by rational hygiene and sanitation. Senescence may be no evil at all; it was not so to Galton, who wrote, at eighty-six, "I find old age to be a very happy time on the condition of submitting frankly to its many limitations." And one may very well doubt death to be an evil who has read of the nonogenarian aunt of Brillat-Savarin, for whom he cherished a very warm and mutual affection. When, on a visit to her he found her abed and very feeble, he tenderly raised her head and induced her to take some of his "most excellent and restorative wine," whereupon she thanked him and, sinking back contentedly on her pillow, said: "My dear, should you come to my years you will understand that the aged need death just as the young need sleep."

Some observations may be offered to the end that the era of the lean and slippered pantaloon may be comfortably lived. The aged digest more slowly than the young. Their bodies, indeed do everything more slowly. They should therefore not eat more than three times a day and if they hunger for it, something light at bedtime. Cheyne wrote early in the Eighteenth Century: "Every wise man after fifty ought to begin to lessen at least the quantity of his aliment; and, if he would continue free of great and dangerous distempers and preserve his senses and faculties clear to the last he ought every seven years to go on abating gradually and sensibly, and to the last descend out of life as he ascended into it, even into the child's diet. If men have been moderate smokers they should not have to give up a moderate indulgence in this habit in old age. Exercise should be moderate but gentle. Walks should be taken on the level or up easily graded slopes. Games should be such, croquet or golf and the like, as keep both the mind and the body pleasantly but not violently occupied. Thus may be avoided, or at least mitigated the autotoxemias to which those of advanced years are prone. And the venerable should rest often—taking naps whenever and as often as the disposition to sleep asserts itself. There must ever be warmth; for the elderly life is largely a question of that; the extremities especially should be kept warm and dry.

Those of the aged who are of independent means are fortunate indeed; money sufficient for their essential needs and comforts is in many cases better than medicine. Those who are wise then will prepare in middle life for some kind of annuity. And it is most advisable that old people should have hobbies, which they should have begun to cultivate in their prime. Nothing so sets into the grave the feet of an elderly man who has relinquished his life's vocation, as to be lacking in some avocation. There are many and most congenial hobbies to ride: Gladstone, for instance, was a Homer scholar; also a special student of the Scriptures in which capacity he occasionally had a "run in" with Huxley, and with results not always happy for himself. Disraeli wrote novels, which were above the average. Salisbury was an adept in electricity. Joseph Chamberlain was a cultivator of orchids. Billroth was a delightful pianist. In Boston, they have, or had up to a few years ago, a club of physicians who went in for chorus singing. Of all hobbies the most satisfying surely is the cultivation of music, "one of humankind's most inestimable blessings"; with perhaps, though not necessarily so, some little skill on a musical instrument.

The human mind and body should endure to the century mark rather than only to three score and ten. Especially should the mind remain sound by reason of our peculiarly generous cerebral blood supply. Haller, computing that human maturity is attained by the twentieth year, declared that the natural span of the genus *Homo*, after the manner of most other creation, should extend to five times twenty years. Buffon also held that the human span should be about the hundredth year. Metchnikoff was convinced, and in his book *The Prolongation of Life* went far toward convincing others, that it is very possible for human life to be lengthened a decade or two, at least, though he himself barely exceeded the Psalmist's three score and ten.

CHILD HEALTH CENTERS.

More than a quarter of a century ago Herbert Spencer asked: "Seriously, is it not an astonishing fact, that though on the treatment of offspring depend their lives or deaths, and their moral welfare or ruin, yet not one word of instruction on the treatment of offspring is ever given to those who will hereafter be parents? Is it not monstrous that the fate of a new generation should be left to the chances of unreasoning custom, impulse, fancy—joined with the suggestions of ignorant nurses and the prejudiced counsel of grandmothers?" To-day we are told that the average young mother has had no opportunity to learn how to care for her baby in a correct manner. The little knowledge possessed by her has been "handed down by word of mouth and retold with variations" and "is filled with superstitions and, at its best, is woefully inadequate." If the great philosopher were alive today he would doubtless be grieved to see that his plea for preparation, through proper education, for the important business of parenthood, has met with so little response; he would take some compensatory satisfaction, however, in the thought that at last well-directed effort is being made in many quarters to offset this lack of opportunity on the part of young mothers to acquire such important and far-reaching knowledge.

The Missouri State Board of Health, through its Division of Child Hygiene, calls attention in the *Public Health Reports* for July 30 (issued by the United States Public Health Service) to the fact that one of the most efficient plans for reducing infant mortality and promoting the health of babies and children of pre-school age is the establishment of baby health centers where the young mothers of the community may learn to care for their babies, and thus help to prevent the unnecessary deaths of 250,000 infant citizens of the United States every year. To this end the Division of Child Hygiene has issued instructions for the establishment and conduct of such centers, and has appealed

to local boards of health and organizations interested in community and health improvement to cooperate with each other and with State boards of health in promoting child health work. Such cooperation generally practised and wisely directed would certainly go far toward a material lessening of infant mortality and an elevation of health standards for children throughout the country. Incidently, the average of adult physical, mental, and moral fitness would undergo a commensurate evolution.

THE THERAPEUTIC VALUE OF RADIUM.

AT the recent meeting of the British Medical Association at Cambridge in the combined sections of gynecology and electrotherapeutics, Dr. Robert Knox of London presented a paper on the treatment of uterine fibroids by radiotherapy. In his opinion the following were the contraindications to treatment by *x*-rays or radium: (1) Calcareous degeneration; (2) Other forms of degeneration, if at all advanced; (3) Coexisting malignant disease unless considered inoperable; (4) Infection of the uterus; (5) Pelvic inflammation; (6) Inflammation of organs in the vicinity, *e.g.* cystitis, appendicitis, etc.; (7) Submucous pedunculated fibroids. It was pointed out that there were several disadvantages in this line of treatment, such as the long time taken to effect a result, treatment being given at intervals of several months. Moreover, treatment was not always successful; the tumor was often reduced in size, but did not disappear. The dangers which existed, such as burns, etc., were easily avoided if the treatment were carried out by an expert. There were, however, great advantages. The treatment was quite painless, there was no interference with the patient's routine of life, no operative shock, and rapid return to health when the hemorrhage had been arrested.

At the annual meeting of the American Radium Society, held in New Orleans in the early summer of this year, a paper was read on radium in toxic goiter, by W. H. B. Aikins of Toronto. The author said that he had had an experience of this form of treatment of goiter of about 100 cases and was fully convinced of its value. He pointed out that in applying radium over the thyroid gland, the effect required was one of deep penetration with a minimum skin reaction. In order to attain this result the radium must be so screened as to prevent the action of the short but powerful beta rays, and to obtain the benefit of the more penetrating gamma rays. Aikins laid especial stress on the remarkable results frequently obtained by treating the toxic goiter of adolescence by radium, and quoted Dawson Turner as to the superiority of radium over *x*-rays in the treatment of this disease when occurring in youth. He held that as compared with *x*-rays in the treatment of this condition, radium had the following advantages: (*a*) Absolutely constant emission of rays, and therefore exact dosage possible; (*b*) Far greater penetration so that the deeper parts of the gland are reached; (*c*) No noisy, exciting apparatus, so that the treatment can be applied at the bedside without in any way disturbing the patient. The words, "cito, tuto et jucunde," could fairly be applied, he said, to the radium treatment of exophthalmic goiter.

The views of the medical profession as to the therapeutic value of radium are becoming steadily more optimistic. In certain cases it can be employed by itself with most satisfactory results, that is, when the cases selected are suitable and the dosage efficient. In a large number of cases it is a valuable adjunct to operation. Radium would seem to be peculiarly well adapted for the treatment of toxic goiter, when combined with rest in bed, dietetic treatment, and drug treatment.

TREATMENT OF WHOOPING COUGH WITH ETHER INJECTIONS.

INTRAMUSCULAR injections of ether in pertussis were first recommended by Audrain in 1919 and Weill and Dufourt endorsed the resource as a marked addition to our armamentarium. Deherridon contributes an article on the subject in the *Journal des sciences médicales de Lille* for May 30, 1920, xxxviii, 22, in which he reports 30 cases of the disease treated by Dufourt's technique. This consists in the administration of one c.c. in 24 hours in children under 1 year and 2 c.c. in the same period for older children, injected three days in succession followed by a day's omission and then one final injection. Injections are made in the buttocks and have never done any harm and they are not painful if made deeply. A study of the 30 cases shows 5 failures. The number of paroxysms after each injection is used as a measure of the benefit, while the duration of the disease at the time of the treatment is an important factor. Thus in one case a boy aged 5 years had had the whoop for 15 days at the rate of about 13 paroxysms in 24 hours. He received 6 injections of 2 c.c. each and in 8 days was free from all paroxysms. A child aged 3 years who had whooped for 9 days at a rate of 10 paroxysms a day received 4 injections of 2 c.c. each. In 6 days the paroxysms ceased, but there was a relapse 7 days later of a milder type which yielded in 4 days to 3 injections. In one child who failed to benefit, the number of paroxysms remained constant at about 20 in 24 hours. In one patient who had developed bronchopneumonia the ether was well borne and served incidentally as a cardiac stimulant. The paroxysms of cough which had reached 35 in 24 hours improved notably under the treatment, and after the third injection were reduced in frequency to 15.

ROLE OF VITAMINES IN NUTRITION.

LUMIÈRE who has done considerable original work in this field sums up the subject briefly in *La Presse Médicale* for May 8, 1920, xxviii, 29. Eykmann initiated the study by the production of artificial beriberi in fowls nearly thirty years ago. Funk was the first to isolate a substance from the cuticle of rice grains which he designated as a vitamine. Since then an entire series of substances has been imagined which are as essential to nutrition as calories of fuel food, inorganic salts, protein, etc.

The exact nature of the vitamines remains undetected. It has been claimed that they are akin to the diastases but the author shows numerous important differences. They cannot act directly upon the food substances like enzymes—that is they cannot break up the molecules of the food and render them more absorbable and we have to ask if they could be of service in synthesis of these products of enzyme action into assimilable substances. In experiments on animals with decorticated grains the author found that loss of appetite is essential for the production of emaciation. Moreover there is a stagnation of the ingesta in the upper part of the digestive tube. Experiment appears to show that artificial vitamines overcome this stasis and that the stasis causes the anorexia and not the opposite, as might be assumed. The stasis appears in turn to be the result of lack of secretion and the latter is associated naturally with absence of appetite. In experiment, loss of weight often precedes loss of appetite, which shows that loss of secretion of the gastric and other juices manifests itself very quickly on the assimilation of food. The author has further learned that the cerebellar troubles which cause incoordination in a pigeon fed on decorticated rice are the result of cerebellar anemia, for inhalation of amyl nitrite temporarily restores the coordination. The author's results do not simplify the subject of vitamines, but rather tend to show the increasing complexity of the entire problem, for it is hardly likely that the main function of these substances is merely secretory.

Etiopathogenesis of Endocrine Syndromes.

Pentagna considers this subject in *La Pediatria* for May 15, xxviii, 10. His summary is as follows: An examination of 115 cases of endocrine dysfunction treated in the out-patient department of the Children's Clinic in the University of Naples since 1914, the patients coming from within the 20 mile radius, showed that in 46 per cent. there was a positive Wassermann which was supported by other evidence of syphilis. In nearly 30 per cent. syphilis was probable although not demonstrable, while in 23.4 per cent. the disease could be regarded as absent. The causal factors in these latter cases were narrowed down to alcoholism in the parents, endocrinic inheritance, and accidents in utero or during labor. Hence lues seems to be the most potent factor in endocrine pathology because of the action of its toxins during the developmental period upon the endocrine organs. The endocrine disorders present in the 115 chlidren comprised the following: myxidiocy, 52; Mongolian idiocy, 41; pluriglandular syndromes, 13; myxedema, 8; hyperadrenalism, 1. This classification seems strange to the American viewpoint. But myxidiocy is simply cretinism, or myxedema plus idiocy, and if to the 52 cases we add the 8 of simple myxedema we have the total of 60 cases of hypothyroidism. Mongolian idiocy is much more difficult to reconcile with the endocrine affections and the author does not seek to associate it with anomalies of any one gland or set of glands. Some cases showed hypothyroidism while in numerous others there was syphilis in the parents. Other conditions in evidence were rickets, muscular hypotonia, various developmental defects, etc.

The Toxic Coefficient of Alcoholic Beverages.

Duchesĉhi discusses in the *Annali d'Igiene* for February, 1920, xxx, 2, the action of ethyl alcohol with especial reference to various blood constituents, including cholesterine. In men who abuse spirits there is hypercholesterinemia which is seen in neither the abstainer nor the moderate drinker. Other results published appear to concern the experimental dog and need not be cited here. The author adds to his paper interesting data about the toxic coefficient of alcoholic beverages as obtained in Argentine, but these figures are calculated only for guinea pigs, and hence are of little significance in the case of man. The figures are for kilograms of animal weight. Concentration appears to be a factor, as the coefficient for rum of 70 proof is double that of 48 proof. The latter is much less toxic than 100 proof whiskey, being as 40 to 10. Brandy and gin of the same proof are less toxic than whiskey. The latter in fact has the same toxicity as absolute alcohol. Ordinary red and white wine have a low toxicity—60 to 85—while that of ale and beer is 150 to 200. There is a proportion between proof and toxic coefficient, but it is subject to much variation. The highest proof rum (110) is more toxic than absolute alcohol, while as already stated rum of 48 proof has remarkably low toxicity. Kümmel has a low toxicity, while anise spirit of the same proof has a high one. These differences in toxicity can be explained only by the presence of some other deleterious substance than alcohol.

Gas Gangrene in Civil Practice.

Duret considers this subject in the *Journal des sciences médicales de Lille,* May 16, 1920, xxxviii, 20. The modern history of this condition begins at about 1872 it having been experimentally produced by the injection of putrid matter. The association of virulent sepsis with gas gangrene was a puzzle for many years. Just before the war it had been accepted that several closely related conditions caused confusion—acute sepsis with gangrene at the wound focus, gaseous sepsis, nad gangrene septicemia. The nature of the wound was regarded as a factor and contusions, burns, and freezes caused a predisposition. The author cites old cases from civil practice in which the muscular system was quite exempt from trauma. The patient in one case was saved by amputation of a limb and the involvement of the muscle was found to be purely secondary. Other cases followed compound fracture, burn, etc. This series of cases was seen at Lille between 1889 and 1901 and no bacteriogical finds are mentioned. In summing them up the author states that in civil practice extensive osseous and muscular attritions with soiling of the wounds from without may cause gas gangrene in young vigorous subjects, so that cachexia is not a determining factor. Further in the absence of osseous and muscular attritions extensive compound fractures may cause gas gangrene or gangrenous sepsis of rapid course. Other wounds which may develop gas gangrene are deep burns and freezes. The author apparently includes gas phlegmon under gas gangrene. He believes he has shown that in civil practice we may see, although rarely, all of the forms of gas gangrene encountered in military practice.

News of the Week.

Drug Increase Attributed to Prohibition.—The Chief Inspector of the Vancouver Police Department is credited with the statement that the smuggling of forbidden drugs has doubled in Western Canada since the introduction of prohibition. During the last twelve months drugs valued at more than $300,000 have been seized and destroyed in the City of Vancouver. Figures compiled by the Board of Health of that city show the following increases in drug users in the last three years:

Drug.	1917.	1920.
Morphine	105	272
Opium	98	204
Heroine	134	416
Cocaine	92	308
Strychnine	0	69
Poisons in foods	10	16
Other identifications	11	118

Red Cross Magazine Suspended.—In consequence of the high price of white paper the American Red Cross has discontinued the publication of the Red Cross Magazine.

Hospitals Affected by Housing Crisis.—The United Hospital Fund has issued a statement to the effect that the shortage of apartments in New York City and the consequent increased congestion in living quarters are proving a menace to the health of thousands of persons who are unable to find suitable homes. Many families are unable to take care of their sick in their cramped quarters, and consequently the hospitals are overcrowded. In several of the leading hospitals twenty-five per cent. more private rooms are in use at present than at the corresponding time a year ago.

Profiteering in Rice in China.—On account of the high cost of rice in China millions of the inhabitants of the Celestial Kingdom are said to be on the verge of starvation.

Bubonic Plague in Paris.—Four cases of bubonic plague, with one death, have been reported in Paris.

Rat-Proof New York Urged.—In a lecture delivered recently at the Post-Graduate Medical School and Hospital Dr. Victor G. Heiser, who has just returned from an expedition to South and Central America, where he has been investigating bubonic plague under the auspices of the Rockefeller Foundation, emphasized the urgency of taking steps immediately to make New York safe from this disease. The beginning should be made at quarantine by the thorough fumigation of ships and the testing of rats every day. The city should be divided into zones and a well-organized rat campaign begun. The building laws should be amended to provide for a new method of construction which would render all new buildings ratproof. The same thing should apply to docks, so that the city would eventually become rat free.

Yellow Fever in Guatemala.—The appearance of yellow fever in two towns of Guatemala recently caused the suspension of passenger traffic and the institution of quarantine measures.

Straus Milk Stations Taken by New York City.—Eight Straus milk stations and the Straus Pasteurization Laboratory have been given to the city by Nathan Straus.

Insane Aliens Deported.—The annual reports of the Ellis Island Immigration Station and the New York State Hospital Commission for the year ending June 30, 1920, show that 290 insane aliens were sent from New York institutions to the countries from which they came. Of this number 147 were deported by the immigration authorities and 143 at the suggestion of Dr. Spencer L. Dawes, medical examiner of the State Hospital Commission.

Yellow Fever Increasing at Vera Cruz.—An average of five new cases of yellow fever a day was reported from Vera Cruz last week. All the patients are said to be young Spaniards who worked in commercial institutions. A force of five hundred workers has been given the task of covering all stagnant water near the city with petroleum in the effort to rid the community of the yellow fever mosquito.

Another Shaving Brush Anthrax Case.—A seventeen-year-old youth was taken to Bellevue Hospital a few days ago suffering from anthrax infection on the side of the face, believed to have been contracted from a shaving brush. He was given two injections of anthrax serum and it is thought that he will recover.

Alcoholic Wards Busy Once More.—According to Bird S. Coler, Commissioner of Public Charities, New York City, the number of persons treated in the alcoholic wards of Bellevue Hospital and Kings County Hospital, institutions to which all the city's alcoholic cases are sent, is fast approaching pre-prohibition size. The number treated at Bellevue Hospital will exceed 200 a month, it is said.

Medical Officers Wanted.—The United States Civil Service Commission announces competitive examinations for District Medical Officer, salary $1,800 to $3,000, and Assistant Medical Officer, salary $1,800 to $2,750. Applicants should apply for Form 2118, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C., or to the secretary of the local Civil Service Board.

Dr. Otto V. Huffman has resigned as member of the Faculty and as Dean and Acting Provost of the Long Island College Hospital Medical School. At its meeting held Aug. 10, the Board of Regents of the institution accepted the resignation. Dr. Huffman will move back to New York City where he will resume his private practice. He has been appointed a member of the Faculty of the New York Post-Graduate Medical School and Hospital and Chief of the Medical Clinic. The Deanship of the Faculty and the Provostship of The Long Island College Hospital are vacant pending the selection of Dr. Huffman's successor.

An International First Aid Congress.—According to Col. C. H. Connor, U. S. A., Assistant Director General of the Department of Military Relief of the American Red Cross, sixty-three First Aid teams, representing 17 States in which mining is numbered among the chief industries, have already sent their entry for the International First Aid contest to be held in Denver, September 9, 10 and 11. An international flavor is given the meet by the entrance of teams from the mining regions of Canada and Mexico, and additional entries from many States are awaiting the results of State elimination contests. The meet is being held under the auspices of the United States Bureau of Mines in cooperation with

the Bureau of First Aid of the American Red Cross. The American Red Cross will have charge of all judging of events and awarding of prizes. Dr. E. R. Hunter, of the Red Cross, has been selected as chief of judges with Dr. J. W. Amesse, of Denver, and R. Z. Virgin, of the *Coal Trade Bulletin*, of Pittsburgh, as his assistants. In addition to the bronze medal awards to members of winning teams in the First Aid events by the American Red Cross, prizes from mine owners and operators and hundreds of others interested in the advancement of First Aid work in mines will be given.

Obituary Notes.—Dr. CHRISTIAN F. J. LAASÉ of New York City was found dead in his study August 21. He was fifty-one years of age, and was graduated from New York University Medical College in 1894, specializing in surgery. He was attending surgeon at St. Mark's Hospital, of which he was also registrar, and visiting surgeon at St. Joseph's Hospital. He was a member of the American Medical Association and of State and local bodies. Dr. Laasé was recently acquitted in the United States District Court of the charge of the illegal sale of drugs. He was a man of high principles but of great sensitiveness, and the notoriety connected with his indictment and trial so played upon his mind that it is believed to have precipitated the cardiac trouble which was the direct cause of his death.

Dr. EDWARD WAGNER of New York City died August 14, at the age of fifty-one. He was graduated from the College of Physicians and Surgeons in 1891.

Dr. DANIEL P. MURPHY of Elmira, N. Y., died August 17, at the age of forty-six. He was graduated from the University of Buffalo, Department of Medicine, in 1902, specializing in surgery. He was a trustee of St. Joseph's Hospital.

Dr. FRANK CHURCHILL, New York City, died August 20, at the age of sixty-six. He was graduated from New York University Medical College in 1887, and specialized in ophtalmology.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, July 30, 1920.

Work of the Cancer Research Fund.—The eighteenth annual meeting of the Imperial Cancer Research Fund was held on July 22 last in London. Sir William Church, in moving the adoption of the annual report, said that Dr. Murray, the director, had continued the autologous grafting experiments on which he had been long engaged. They furnished the most conclusive evidence which could be obtained easily of malignancy or innocence of new growths. By transplanting an animal's own tumor to a part of its body away from the site of the primary growth an artificial metastasis was established. These inoculations, unlike transference to normal animals, succeeded in a high percentage of cases. It was to be hoped, therefore, that this method would be more widely applied as a control in the experiments on the experimental production of cancer by chronic irritants which were being undertaken in so many laboratories throughout the world. Sir William Church went on to point out that Dr. Cramer had examined the action of a number of inorganic substances on cancer cells. Salts of cerium were found to be the most active of those tested. Manganese and uranium salts were less potent. None of these substances, however, had any influence on tumors growing in the living animal. This was probably due to the irregularity of the circulation in the tumors, which delayed the access of the reagents to the cells. This was one of the difficulties constantly met with. The cancer cell was so like the normal cells of the body that agencies which destroyed it were also dangerous to life. Before a rational method of treatment could be planned it would be necessary to know more of the vital processes in cancer cells and the nature of the very delicate differences between them and the normal. Dr. Drew had approached the problem by studying the rate of decolorization of dilute methylene blue solution by normal and cancer cells. With this method there is a wide difference between the two, decolorization being much more rapid with normal cells. Dr. Russell and Dr. Gye had suspended the tissue emulsions in fully oxygenated defibrinated blood and measured the rate at which oxygen was abstracted on incubation at body temperature. By this second method the differences were much less pronounced, and it was found that the more rapidly growing tumors absorbed more oxygen than those which grew slowly. The investigations were being continued and gave promise that interesting light would be thrown on this fundamental feature of the life of cancer cells.

Keeping Disease Out of the Country.—The Ministry of Health has issued regulations recently extending and strengthening the powers of port and riparian sanitary authorities in connection with the prevention of the introduciton of infectious diseases into Great Britain. It is pointed out that conditions resulting from the war have given rise to increased prevalence of acute infectious diseases, such as smallpox and typhus fever, in certain foreign countries, and that the risk of the importation of these and other diseases into the United Kingdom through the agency of shipping renders it necessary that all practical measures should be taken to avert the danger. According to present plans it is not proposed to alter the cholera, yellow fever, and plague regulations of 1907. As for other infectious diseases, the minister is advised that the scope and character of the existing powers of the sanitary authorities are inadequate. The new regulations therefore confer further powers and impose additional duties upon such authorities and their medical officers of health, and require in certain circumstances, when the presence of infectious disease on a ship is suspected. A more extended medical examination of persons entering the country, than has been undertaken hitherto. Medical officers are empowered to board any ship for the purposes of the regulations, and to cause it, if necessary, to be moored or anchored in some safe and convenient place while it is visited and examined. They are also authorized to examine any person on board a ship who is suffering from infectious disease, or who is reasonably believed to be ver-

minous, or to hold the ship when there is reason to suspect that infection exists on board. For the purpose of the examination the medical officer may detain any person either upon the ship or at some appointed place on shore. In deciding whether he shall use his powers to board a particular ship and examine persons on board, the medical officer must to a large extent use discretion; but the Minister considers that the fact that a vessel during the period of three weeks before its arrival in port, has sailed from, or called during the voyage at, a foreign port or country in which dangerous infectious disease is known to be prevalent, will constitute reasonable ground for the necessary action being taken. Other provisions enable the medical officer to order the removal to hospital of any person suffering from infectious disease, and require the master of a vessel to notify the presence in his ship of mortality or sickness among rats. The necessary powers are conferred on port authorities to provide qualified assistance for the medical officer, and additional equipment in the shape of waiting rooms, disinfecting plant, hospital accommodation, and means of transport.

Quinine and Its Related Alkaloids in Pharmacology and Therapeutics.—At the meeting of the British Medical Association held recently at Cambridge there was an interesting discussion on quinine and its alkaloids and it was stated, what is already known, that the alkaloids of cinchona bark had been by no means superseded in treatment by quinine. Professor W. E. Dixon opened the discussion in question and drew attention to the relationships of hydroquinine, hydrocupreine, euquinine, cinchonine, and similar derivatives, to the mother substance. He went on to explain that the characteristic action of quinine on living tissues consisted in a reduction of general metabolism, and illustrated the relative strengths of the quinine derivatives in this respect by their action on protozoa and on bacteria and by their efficacy in producing paralysis of sensory nerve-endings in the cornea. The striking feature of the quinine derivatives was the relatively small concentration necessary to produce marked effects. **Major H. W. Acton told of the experience** he had had with cinchona alkaloids other than quinine in the treatment of malaria. Major Acton's experience showed that while quinine is useful in the treatment of malignant tertian malaria it exerts but little beneficial effect in eradicating benign malaria. On the other hand, the total alkaloids of cinchona act upon the latter form of malaria with excellent curative results. Professor J. A. Gunn said that he had experimented with the alkaloids harmaline and harmine, and had obtained encouraging results in cases of relapsing malaria. Dr. C. M. Wenyon said that very little new knowledge on the subject of quinine administration had been obtained during the war. The mode of action of quinine was very uncertain but useful light might be shed on the problem if the plasmodial infection in birds was further studied. It would be useful to know the reason why quinine produces so little effect in this case. As the Lancet of July 24 points out in an editorial the isolation of the active principles of drugs is not sufficient. In fact, with drugs as with foods, there may be a danger of over refinement. Taking from rice the vitamine element and possibly other elements by refinement of milling brings about beriberi in those living exclusively on rice. Scurvy also is due to the absence or inadequacy of a certain vitamine content of food. So it may be, and probably is, with drugs. In many instances the crude preparations yield better results in treatment than the active principles. Consequently, it is to jump at conclusions somewhat hastily to decide that it is always better to prescribe the active principles which give these drugs their properties than preparations of the raw drugs. The raw drugs may contain some properties of which we know not and which are appropriate for the treatment of certain conditions, or they may act in a manner best calculated to give the most satisfactory results.

Lister Memorial Fund.—It was mentioned in a previous letter that steps were being taken to raise a memorial to Lord Lister commensurate with the value of his medical scientific work. At a public meeting held at the Mansion House, London, in October, 1912, the following proposals for commemorating the work of Lord Lister were adopted: (1) The placing of a memorial in Westminster Abbey, to take the form of a tablet with a medallion and inscription. (2) The erection of a monument in a public place in London. (3) The establishment of an International Lister Memorial Fund for the advancement of surgery, from which either grants in aid of researches bearing on surgery or awards in recognition of distinguished contributions to surgical science should be made irrespective of nationality. A meeting of the General Committee of the Fund was held at the house of the Royal Society of Medicine on July 19 to receive and adopt the report of the Executive Committee appointed in 1912. The chairman, Sir Archibald Geike, stated that the sums received in respect of subscriptions from the British Empire and foreign countries amounted to £11,846.5.10. The report proceeded to state that delay had necessarily occurred in carrying out all the proposals adopted at the Mansion House meeting, but that a memorial tablet, executed by Sir Thomas Brock had been unveiled in Westminster Abbey on November 1, 1915, and steps were being taken for the erection of a monument in a public place in London. In order to carry out the scheme for the establishment of the International Lister Memorial Fund for the Advancement of Surgery the following proposals were adopted: (a) That out of the general fund a sum of £500, together with a bronze medal, be awarded every three years, irrespective of nationality, in recognition of distinguished contributions to surgical science, the recipient being required to give an address in London under the auspices of the Royal College of Surgeons of England. (b) That the award be made by a committee constituted as follows: Two members nominated by the Royal Society, two members nominated by the Royal College of Surgeons of England, one member nominated by the Royal College of Surgeons in Ireland, one member nominated by the University of Edinburgh, and one member nominated by the University of Glasgow. (c)

That any surplus income of the General Fund, after providing for the erection of a monument, and after defraying administrative expenses, either be devoted to the furtherance of surgical science by means of grants, or be invested to increase the capital of the fund. The continued carrying out of this scheme in future years will require the provision of some permanent and adequate machinery as the Lister Memorial Committee cannot, in view of its constitution, be itself permanent. The committee, having ascertained that the Royal College of Surgeons of England would be prepared to become the trustees and administrators of the Lister Fund and to carry out its objects, subject to the above provisions of the scheme, authorized the executive committee to take such steps as may be necessary to give effect to this arrangement. It may be mentioned that the subscription list is still open, and that the honorary treasurer of the fund is Sir W. Watson Cheyne, to whom donations may be addressed at the Royal Society, Burlington House, London, W.

SYNTHETIC SUPRARENINS AND THEIR DERIVATIVES.

(From Our Swiss Correspondent.)

GENEVA, Aug. 1, 1920.

Dr. F. Loup has completed a long and carefully conducted series of experiments with synthetic suprarenins and their derivatives and since his results have not appeared in the medical press an outline of his results may not be devoid of interest. He found that levogyrate, dextrogyrate and racemic suprarenins, as well as homorenon and arterenol—bodies very closely related chemically—have similar pharmacodymanic actions and hardly differ from each other except by the intensity of their action. When injected into the auricular vein of the rabbit in a 1 per cent solution they kill in doses of milligrams per kilogram of animal: left suprarenin 0.2 to 0.3; racenic suprarenin, 0.25 to 0.3; right suprarenin, 1.0; hormorenol, 6.0 to 7.0; arterenol, 0.25 to 0.3.

If we represent the toxic equivalent of left suprarenin by 1, that of racemic suprarenin will be about 1.25, right suprarenin 5, hormorenon 30, and arterenol 1.25.

It is interesting to note that only very little difference exists between left suprarenin and racemic suprarenin. Theoretically the activity of the latter should be represented by the arithmetical average of the activities of the dextrogyrate and levogyrate suprarenins, since the racemic bodies are regarded as the result of the combination—molecule with molecule—of two inverse optics.

Abderhalden and his coworkers admit that racemic suprarenin acts rather less strongly than its tenor in left suprarenin might lead one to suspect. These writers suppose that dextrogyrate suprarenin exercises an impeding action on the effects of levogyrate suprarenin and they reinforced the resistance of mice to left suprarenin by preventive injections of right suprarenin.

Loup's experiments carried out with rabbits, did not allow him to come to any like conclusions. He found that right suprarenin did not reinforce the animals' resistance while racemic suprarenin appeared to act as if it contained about 75 per cent. of left suprarenin. This fact may lead one to suppose that between the two isomers there exists not only quantitative differences, but qualitative differences as well that Loup's technique, likewise that of his predecessors, has been incapable of placing in evidence. Dr. Loup intends to repeat experiments on this point at a later date and in this respect it may be well to recall that Prof. Mayor of Geneva has shown that the two isomeric nicotines differ from each other, not only by the intensity of their action, but also by the modality of the action.

From the viewpoint of the therapeutic use of these various bodies, Loup's experiments permit of conclusions on only two points which are, firstly, the local action and secondly, the action of intravenous or intramuscular injections on the circulatory system. As to the local action it was found that left and racemic suprarenins—very strongly vasoconstrictive when in concentration which does not provoke any irritation—are far superior to other substances of the same group and that none of the latter can be employed with advantage over the former.

As to the cardiovascular action, Loup has shown that all these bodies are—activity being equal—quite as toxic as left suprarenin, so that they do not appear to merit any place in therapeutics. Perhaps an exception should be made in favor of hormorenon which, thirty times less toxic than levogyrate suprarenin, has nevertheless a sufficient action. We do not know, however, that the latter product has ever been used in man for raising the blood-pressure.

Progress of Medical Science.

Boston Medical and Surgical Journal.

August 12, 1920, clxxxiii, 7.

1. Florence Nightingale. Alfred Worcester.
2. Muscles and Ligaments of Lumbar and Pelvic Regions: Their Mechanical Arrangement and the Treatment of Their Weaknesses. Herman W. Marshall.
3. The Effect Upon the Blood Pressure of the Injection of Adrenalin in Dementia Præcox. Lawson G. Lowrey and W. W. Wright.
4. Report on Dermatology. John T. Bowen.

3. The Effect Upon the Blood Pressure of the Injection of Adrenalin in Dementia Præcox.—Lowrey and Wright, from an analysis of the blood pressure reactions to the injection of adrenalin in 78 psychopathic cases, consider it clear that it does not have the value in differential diagnosis which has been claimed for it, at least in early cases, since cases of precox show a rise and other cases show a fall. In 54 of 60 cases of dementia precox there was an increase in blood pressure, 40 of these showing rise of more than 5 mm. Hg. In 18 cases of other types taken for comparison there was a depressor reaction in four. The cases were carefully selected in order that these observers might be as certain as is clinically possible that the patients belonged to the groups stated.

New York Medical Journal.

August 14, 1920, cxii, 7.

1. Diagnosis and Treatment of Hyperthyroidism. M. H. Fussell.
2. Industrial Medicine. S. Dana Hubbard.
3. The Condition of the Chest in Influenza. L. J. Hammond
4. Abdominal Symptoms in Influenza Simulating an Acute Surgical Lesion. Thomas Hubbard Russell.
5. The Treatment of Drug Addiction. Thomas F. Joyce.
6. A New Method for Detecting Drug Habitués. Harold O. Lane.
7. A Bacteriological Study of Ripe Olives. Randle C. Rosenberger.

1. Diagnosis and Treatment of Hyperthyroidism — M. H. Fussell describes briefly the laboratory methods

which help in the differentiation of hyperthyroidism and other conditions due to disturbance of the thyroid gland, referring to these as: 1, increased metabolic rate; 2, thyroid feeding; 3, adrenalin test, Goetsch test; 4, decreased sugar tolerance. He discusses the differentiation of hyperthyroidism in the presence of neurasthenia, irritable heart, tuberculosis, interstitial nephritis, gastrointestinal conditions, arthritis, local conditions of the eye giving rise to exophthalmos, and hypertrophic atoxic goiter. After discussing briefly the treatment of the different forms of goiter, including operative treatment, the writer gives the following succinct plan which may be followed in treating hyperthyroidism with the minimum of fatality: (1) An early diagnosis is imperative by the methods detailed. (2) Every patient should be put to rest in order to reduce the metabolism rate. Many patients will be cured by this means. (3) Patients who cannot give the time to a thorough trial of rest should be operated upon early, after a partial rest. (4) Patients who are very toxic must always be put at rest and given other appropriate treatment before any form of surgery is attempted. (5) If patients fail to improve under rest, ligation should be done, or the röntgen ray should be used tentatively to reduce the metabolism rate, until a resection can be done. (6) In very severe cases in which the patients appear to be approaching death, and the x-ray cannot be used, a ligation after the method of Wood may be done. In the writer's opinion patients who do not promptly respond to rest should be treated surgically.

4. Abdominal Symptoms in Influenza Simulating an Acute Surgical Lesion.—Thomas Hubbard Russell became interested in this subject through the personal observation of five cases of influenza presenting pronounced abdominal symptoms, sufficient in every case to have caused the possibility of an acute surgical lesion in the abdomen to have been entertained. Among the lesions known to occur in the abdomen secondarily to influenza are peritonitis; rupture of the rectus abdominis muscle; multiple abscesses of the kidney, and perinephritic abscesses; thrombophlebitis of the large abdominal vessels; general congestion of the intestines, with submucous hemorrhages; rupture of the colon. Some observers believe that there is a close relationship between appendicitis and influenza, but the writer does not consider the statistics convincing. From his study Russell concludes that abdominal symptoms which would ordinarily indicate the need of an urgent surgical operation are commonly present during influenza, and their frequency is not sufficiently brought out in the textbooks. Conditions requiring an abdominal operation during influenza or its convalescence are exceedingly rare. While in some cases a differential diagnosis is extremely difficult, the safest procedure in doubtful cases is to adopt an expectant treatment. In case an exploratory operation is decided upon, a local anesthetic is advisable. A surgical abdominal lesion and influenza may occasionally coexist. Many unnecessary and harmful operations have been performed during the course of influenza, due to the lack of appreciation of the frequency with which abdominal symptoms occur in influenza. The great majority of cases showing abdominal symptoms have no surgical basis, but are either reflex, or due to some condition which would not be benefited, but rather harmed by a laparotomy. The chest should always be carefully examined before operating for a supposed acute surgical lesion of the abdomen.

Journal of the American Medical Association.

August 14, 1920, lxxv, 7.

1. The Role of Deep Alcohol Injections in the Treatment of Trigeminal Neuralgia. Harvey Cushing.
2. The Treatment of Combined Diabetes and Nephritis. Frederick M. Allen, J. West Mitchell and James W Sherrell.
3. A Consideration of the Gastric Test Meal from Experimental Data. Martin E. Rehfuss and Philip B. Hawk
4. The Coagulation Time of Blood in the New-Born, with Especial Reference to Cerebral Hemorrhage. F. C Rodda.
5. The Temporary Teeth. J. Ross Snyder.
6. Some Observations on the Pharmacology of a Digitalis Body. Robert A. Hatcher.
7. The Absorption of a Digitalis Body: Preliminary Observations. Cary Eggleston.
8. Objective Symptomatology of Foot Strain. Albert H. Freiberg.
9. Intracranial Lesions Involving the Auditory-Vestibular Apparatus. E. R. Carpenter.
10. The Personality of the Patient: A Neglected Factor in Treatment. Louis Casamajor.

1. The Rôle of Deep Alcohol Injections in the Treatment of Trigeminal Neuralgia.—Harvey Cushing draws the following conclusions from his consideration of this subject: (1) Deep extracranial injections of alcohol into the maxillary and mandibular nerve trunks near their foramina of exit from the skull have completely superseded peripheral neurectomies. (2) In neuralgias limited to one or two lower divisions, and which may possibly not extend into the other trigeminal areas, alcohol injections represent unquestionably the treatment of choice. (3) When the neuralgia has spread beyond its original area and come to involve that supplied by the adjacent division, a trigeminal neurectomy must be contemplated; but if no preceding deep injection has been given it may be useful not only in insuring the type of the neuralgia but in giving the patient some warning as to what the numbness resulting from the neurectomy may amount to. (4) They are sometimes useful, furthermore, in determining in doubtful cases whether the syndrome is a true neuralgia of the tic douloureux type or one of the peculiar and rare psueudoneuralgias not amenable to relief either by injections or neurectomies. (5) Even the extracranial injections are not entirely free from risk, and in no cases should they be purposefully pushed to the point of attempting an injection of the gasserian sheath itself. (6) With such perfect and permanent results as may be secured to-day by a trigeminal sensory root avulsion, the prolonged and repeated use of injections in refractory cases which involve more than one division should be deplored.

4. The Coagulation Time of the Blood in the Newborn.—F. C. Rodda. (See MEDICAL RECORD, May 15, p. 854.)

5. The Temporary Teeth.—J. Ross Snyder. (See MEDICAL RECORD, May 15. p. 854.)

The Lancet.

July 24, 1920, cxcix, 4.

1. The Croonian Lectures on the Psychology of the Special Senses and Their Functional Disorders. Arthur F. Hurst.
2. Diagnostic Significance of Nerve Symptoms in Acute Infections. Being the Harvelan Society's Oration. Sir Thomas Horder.
3. The Intravenous Use of Acetyl-Aminophenyl Salt of Antimony (Stibenyl) in the Treatment of Human Trypanosomiasis and Kala-Azar. Philip Manson-Bahr.
4. Sudden Deaths on Active Service. T. H. G. Shore.
5. Intrinsic Cancer of the Larynx. Impaired Mobility of the Affected Cord in Diagnosis and Prognosis. Observations Based on 44 Cases Treated by Laryngo Fissue. Sir St. Clair Thomson.
6. The Psychological Aspect of the Effort Syndrome. Millais Culpin.
7. Symbiotic Growth of B. Proteus and B. Tuberculosis. Appearance of an Acne-like Organism. E. T. Thompson.
8. The Incidence of Fatal Rheumatic Heart Disease in Bristol, 1876-1913. Carey F. Coombs.

2. Diagnostic Significance of Nerve Symptoms in Acute Infections.—Sir Thomas Horder deals with the subject from two points of view: (1) The general, or synthetical aspect, and (2) the particular analytical aspect. Under the first heading he considers briefly the mechanisms, physiological and histological, by which nerve symptoms in acute infections are produced; under the second he considers these symptoms themselves and their diagnostic significance.

5. Intrinsic Cancer of the Larynx.—Sir St. Clair Thomson holds that impaired motility of a cord is not a necessary or frequent symptom of intrinsic cancer of the larynx. It is, in fact, only met with in a minority of cases presenting themselves for diagnosis. It is more apt to be met with in an early case when the growth is embedded in the cord or growing into it in a distinctly sessile or even pedunculated tumor. It is also more usual with growths situated on the inner surface or the subglottic area than with those seated on the upper surface of the cord. Otherwise, fixation indicates an advanced case. When fixation is present it is a very valuable symptom in distinguishing a malignant from an innocent tumor. It is of little value,

and may even be misleading, in diagnosing a malignant growth from a tuberculous or syphilitic deposit. While in some cases it may be necessary to postpone a diagnosis in the absence of this symptom, yet, as it is desirable to avoid any delay, one may have to rely on inspection, the age, sex, history, and progress of the case, and the exclusion of other possibilities. The help of microscopic examination of a removed portion is available in only a small number of cases. This was the case in only ten out of the writer's forty-four cases. As regards prognosis, impaired mobility is an unfavorable symptom.

British Medical Journal.

July 24, 1920, i, 3108.

1. Discussion on Surgical Treatment of Gastric Ulcer. Opening Papers by Sir Berkeley G. A. Moynihan and Charles H. Mayo.
2. The Diagnosis of Glaucoma. Robert H. Elliot.
3. A Demonstration of Blood Transfusion. Arthur Cooke and J. W. McNee.
4. Discussion on Quinine and Its Related Alkaloids in Pharmacology and Therapeutics. Opening Papers by Prof. W. E. Dixon, W. Ramsden and H. W. Acton.
5. Blackwater Fever in Macedonia. J. F. Gaskell.
6. On the Treatment of Lupus Vulgaris by the Liquid Acid Nitrate of Mercury. H. G. Adamson.
7. Healing of Trophic Ulcer of the Great Toe in an Aged Glycosuric. H. Cecil Barlow.
8. A Note on a Method of Treating Hay Fever and Paroxysmal Rhinorrhœa. Morley Agar.

1. Surgical Treatment of Gastric Ulcer.—Sir Berkeley Moynihan, in this opening paper before the Eighty-Eighth Annual Meeting of the British Medical Association, considers the surgical treatment of chronic gastric ulcer as offering the possibilities of gastro-enterostomy; excision; gastroenterostomy combined with excision by knife or by cautery (Balfour's operation); gastroenterostomy combined with jejunostomy; resection of a part of the body of the stomach—"sleeve resection"; partial gastrectomy. The different methods are discussed. For the purpose of illustrating his practice in connection with operations upon the stomach and duodenum Sir Berkeley has collected all the records of cases operated upon by him since 1909, including the years of the war. Every case of simple disease of the stomach or duodenum (excluding acute perforation) is included: cases of gastric ulcer, hour-glass stomach, duodenal ulcer, and jejunal or gastro-jejunal ulcer following upon gastroenterostomy. There were in all 835 operations upon 834 patients, with 12 deaths—a total mortality of 1.43 per cent. Excluding the cases of jejunal ulcer there were 808 operations on cases of gastric and duodenal ulcers, with 10 deaths—a mortality of 1.23 per cent.

Dr. Charles H. Mayo summarized his part of the discussion as follows: If it is true that the majority of the cases of duodenal and gastric ulcer have an average duration of a number of years, many extending from twenty to thirty years, it is probable that there is an exaggerated idea of their danger to life. Few persons die from perforation, and few from hemorrhage—more, however, than die from surgical procedures. It is true that they suffer, are disabled, and should be relieved; and it is also probable that but a small percentage of the total number of ulcers are recognized or treated for the true condition. Gastric ulcers may give greater discomfort than duodenal ulcers, and, because of the danger of malignant degeneration, should be destroyed at the time of the operation unless this procedure would add unwarranted immediate risk. He believes that patients who suffer from gastric ulcer should be told of this danger. In fact, the surgical treatment of ulcer is the best recognition of the value of medical treatment by permanently overcoming delay or obstruction and lowering the acidity with the patient's own alkalis.

2. The Diagnosis of Glaucoma.—Robert H. Elliot, after discussing the ophthalmoscopic evidence of an increase in intraocular pressure, mechanical tonometry, perimetry, examination of light sense, and measurement of the diameter of the cornea, made the following remarks of a practical nature: (1) In the observation of a case of glaucoma one must take into account the evidence obtained from scotometry, perimetry, tonometry, ophthalmoscopic appearances, and other physical signs, and from diminution in the visual acuity. A diagnosis should never be made on the strength of one feature of the case alone, if any shadow of doubt exists in the surgeon's mind. (2) If there is clear evidence that the disease is progressing, and that progress is due to an increase in tension, it is one's duty unhesitatingly to recommend an operation for the production of a filtering cicatrix, and to urge that this be undertaken at the earliest possible moment. If there is one point on which all the greatest authorities, from von Graefe onward, are agreed, it is that the earlier the operation is undertaken the better is the prospect of success. Not only will more sight be saved thereby, but the procedure itself is easier for the surgeon and safer and more certain for the patient. 3. It is idle to pretend that any operation for so serious a condition as glaucoma is devoid of anxiety, and both sides of the question should be set squarely before the patient. The risks of failure increase progressively in proportion to the delay, but against this is ever to be placed the fact that progressive glaucoma is a relentless disease, which ends in the majority of cases in total blindness. Even when central vision is lost at the time of operation—an ever-present danger in late cases—peripheral vision is often retained indefinitely, to the great advantage of the patient.

Southern Medical Journal.

August, 1920, xiii, 8.

1. Bright's Disease with Special Reference to Treatment. Henry A. Christian.
2. The Signs and Symptoms of Hypopituitarism. Stewart R. Roberts.
3. The Treatment of Visceroptosis. F. W. Wilkerson.
4. Comparative Study of Gastric Motility as Determined by the Ordinary Test Meal and Six-hour Barium Retention. Harvey G. Beck and John Evans.
5. The Present Limitations of the Roentgen Ray in the Diagnosis of Gastrointestinal Diseases. George M. Niles.
6. The Intestinal Protozoa: Methods of Diagnosis and Treatment. Sidney K. Simon.
7. Tuberculosis Infection and Tuberculosis. B. L. Tallaferro.
8. The Malaria Problem of the Rice Field of the United States. J. C. Geiger and W. C. Purdy.
9. Ununited Fractures of the Neck of the Femur. Willis Campbell.
10. Aneurisms. Edward B. Anderson.
11. Ovarian Function Following Hysterectomy. Edward H. Richardson.
12. Diverticulum of the Posterior Urethra. G. T. Tyler.
13. Common Skin Lesions Rarely Recognized. C. Augustus Simpson.
14. The Relation of the Fifth Cranial Nerve to Auditory-Vestibular Disease. E. R. Carpenter.
15. The Medical Teacher. Kenneth M. Lynch.

11. Ovarian Function Following Hysterectomy.—Edw. H. Richardson submits certain facts in support of two propositions: (1) that the uterus is not essential to a continuation of normal ovarian function, except as regards menstruation and reproduction, and (2) that the ovary possesses extragenital functions of paramount importance in the body economy, which are capable of operating quite independent of the uterus and which alone should suffice to insure its conservation whenever this is practicable. He summarizes briefly the scope and complexity of ovarian influence outside the genital domain, and then considers to what extent, if any, this influence is discounted through surgical removal of the uterus. From this study the writer is led to state, with emphasis, his uncompromising opposition to the teaching that ovarian function *in toto* is disrupted through surgical removal of the uterus, and to say that he believes such teaching, from whatever source, is dangerous and without scientific justification. He condemns the removal of one or both ovaries at any age simply because hysterectomy is required.

Schweizerische medizinische Wochenschrift.

May 13, 1920, i, 20.

Influence of Diet on the Water Content of the Body.—Isenschmid states that the three months' fetus is 94 per cent. water, the newborn infant about 67 per cent., and the adult at least 60 per cent. If the body were boneless the per cent. would be 75. This water content in its composition represents the original water of the primeval ocean, which, however, is a somewhat more concentrated solution of the salts than is human

serum. The water content of the body is fluctuating in amount. As already implied, it is less in the adult than in the child and continues to decrease in old age. The initial loss in intrauterine life is rapid, while the older the subject the slower the rate of decrease. When we ingest a large quantity of water it is rapidly eliminated, while conversely the loss by transpiration is quickly made good. Sodium chloride in the diet favors water retention, and if a subject has lost much weight through training he regains it much more slowly on a salt poor diet. In subjects who have been deprived of water the first water drank is retained even in the absence of salt in the diet; but after the proper balance is struck it is reasonable to believe that increased salt in the diet makes for increased water retention and weight. This is due to the tendency of the organism to maintain a fixed ratio between water and chloride. Any amount of chloride over and above the concentration ratio is excreted. Salt poor diet is valuable in edematous affections, while foods rich in potash cause elimination of sodium and are also indicated in the same class of affections. The water intake in edema diseases must, of course, be restricted, while readily digested and ash poor food also unburdens the circulatory and eliminatory organs. Restriction of protein has the same result. The calory requirement should be sufficient, for inanition is a special cause of edema—the hunger edema so common in the late war. The two forms have been confused heretofore. Thus after typhoid and dysentery the edema which is sometimes seen is better explained by inanition than by cardiac weakness.

Il Policlinico.

May 3, 1920, xxvii, 18.

The Casoni Cutireaction in Echinococcus Disease.—Luridiana refers to the original attempt by Ghedini to diagnosticate this condition by the method of complement deviation. Weinberg is entitled to the credit of independent discovery, so that we may term this method the Ghedini-Weinberg. By using the Weinberg modification the percentage of positive results has been over 80. Other reactions were then introduced, including the intradermic method of Casoni, in which the antigen is the clear hydatid fluid obtained aseptically by puncture, filtered several times through close filters and preserved by adding a little phenol. Of this fluid half a cubic cm. is infiltrated into the skin with separate control injection of physiological serum. In about twelve hours one sees develop in positive cases an oval area of erythema which may reach the size of the palm. The trustworthiness is somewhat greater than in the complement deviation test, being 87.5, as against 83. Naturally the two may be used advantageously in the same case or rather should the cutireaction prove negative the complement deviation test may be added. But in the six cases cited by the author from his own practice the one negative result was not checked up in this way. Of the other five diagnoses there were confirmed by operation, while the other two were not subjected to operation. The fifth cases ended in death, and autopsy could not be obtained. In twenty cases of negative cutireaction in which diagnosis could be made by operation or autopsy echinococcus disease was absent.

Il Policlinico.

May 17, 1920, xxvii, 20.

Abortive Treatment of Boils and Carbuncles.—Pacieri states that when the cause of these affections was unknown it was necessary to treat them symptomatically by incision, etc. We know now that they are due to the action of certain microorganisms and there appears to be no reason why the latter may not be attacked directly and their activity inhibited to a greater or less extent. The idea of injecting deeply about the infiltration some antiseptic is by no means new, but thus far has led to nothing definite in practice. Since 1913 the author, perhaps influenced by the work of Grossich on the antiseptic powers of iodine tincture, has been experimenting with deep injections of this substance. In his official capacity as prison physician opportunities have not been lacking. In 1911 the author had attempted this treatment with carbolic acid, with unfortunate result, so that much care was advisable in the use of iodine. It was evidently necessary to make the injections as early as possible. A total of 2 c.c. was injected about the mass of a beginning carbuncle and on the next day this mass was somewhat more mobile and no larger. In another twenty-four hours the tumor had become distinctly smaller, and by the fourth day a complete cure was evident without a drop of pus having formed. This cure was a most brilliant one, but offered no guarantee that a great discovery had been made. No second opportunity was furnished until 1914, when the result was duplicated in a somewhat longer time—six days. In a third case the same result was obtained and in a fourth the result was slightly inferior to the preceding through the escape of a little pus. This case was a furuncle on the back of the hand. In the next case a furuncle appears to have been aborted and cured by the fifth day, while another boil was aborted and healed by the fourth day. The total number of cases given is eleven. The description of the technique is defective and it is not obvious by what means or how large an area of tissue the author infiltrates with the tincture. Half or two-third of an ordinary hypodermic syringeful of ten per cent. iodine is used for an injection. It is not stated whether the needle is fixed or moves during the injection.

Revue médicale de la Suisse romande.

May, 1920, xl, 5.

Lethargic Encephalitis.—This number is devoted largely to various aspects of epidemic encephalitis. Cramer reports nine cases of the lethargic and thirteen of the insomnic form. The lethargic cases are divided into deliriant and nondeliriant forms, while the insomnic cases were all of the myoclonic type, and the majority were deliriant as well. Tutrettini and Piotrowski write on the effects of lumbar puncture, which they carried out in twenty-two of the twenty-five cases treated. They find a characteristic picture which is of value in diagnosis—albumin normal or slightly augmented, chlorides and tension normal, early lymphocytosis most marked in the oculo-lethargic cases and moderate and even absent at the début of cases of other types, diminution of lymphocytosis with regression of the disease, early augmentation of glucose. Puncture has no therapeutic value. Roch writes of the electric chorea of Dubini. He calls attention to the fact that there prevailed in Lombardy at the time of Dubini's paper another malady known as convulsivo-cerebral typhus, which was of the epidemo-sporadic type. This affection was recognized and named by Frua, who was one of the first to report cases of Dubini's disease. Whether Frua recognized the identity of these two affections does not appear from the author's text, but the name is preferable to electric chorea, which does not connote an acute febrile disease. Roch now gives in detail a case of myoclonic encephalitis which conforms very closely to the disease as seen by Dubini. The terms "electric" and "chorea" are especially well adapted to visualize the disease. Gautier writes on epidemic hiccough, which is lethargic encephalitis complicated by persistent diaphragmatic contractions. He narrates five cases of this type. Strange to relate, these spasms of the diaphragm were quite isolated and none of the cases were of the myoclonic type. Whether the hiccough is to be conceived as a monoclonus is uncertain. Dufour, who saw epidemic hiccough in Paris cases of encephalitis, records that one at least was of the myoclonic type, while Beclard saw cases with and without myoclonus. Fatal encephalitis with hiccough was seen in Berlin, and it is possible that fatal cases of hiccough known to have happened at intervals in the past may have been sporadic encephalitis.

Hospitals Are Supported by Lotteries.—In the Dominican Republic all the hospitals are supported by lotteries. Evidently the lottery business has not been overflourishing, for some of the hospitals are running at one-third of their capacity, according to the medical survey of that country recently made by the American Red Cross.

Book Reviews.

PRINCIPLES OF HUMAN PHYSIOLOGY. By ERNEST H. STARLING, C.M.G., F.R. S., M.D., Hon. Sc.D. (Cambridge and Dublin), F.R.C.P. Jodrell, Professor of Physiology in University College, London. The chapter on the Sense Organs Revised and Largely Rewritten by H. HARTRIDGE, M.A., M.B. Cantab. Third Edition. With 579 illustrations, 10 in color. Philadelphia: Lea and Febiger, 1920.

THIS work, since the appearance of the first edition in 1912, has become so well known to students and practitioners of medicine that little need be said of the present edition more than to call attention to the fact that it has been thoroughly revised in accordance with the advances made in physiology during the five years which have elapsed since the second edition was published. The principal changes involve the section on the Sense Organs, which has been revised and largely rewritten by Dr. H. Hartridge. The text, which embraces fifty pages more than the last edition, is arranged under four major divisions or books. The first, General Physiology, includes the structural basis of the body; the material basis of the body; the energetic basis of the body. The second, the Mechanisms of Movement and Sensation, covers the contractile tissues; nerve fibers (conducting tissues); the central nervous system; the sense organs. The third, the Mechanism of Nutrition, deals with the exchanges of matter and energy in the body (general metabolism); the physiology of digestion; the history of the foodstuffs; the blood; the physiology of the circulation; lymph and tissue fluids; the defence of the organism against infection; respiration; renal excretion; the skin and the skin glands; the temperature of the body and its regulation; the ductless glands. The fourth deals with the physiology of reproduction.

PRACTICAL DIETETICS, with Reference to Diet in Health and Disease. By ALIDA FRANCES PATTEE, Graduate Department of Household Arts, State Normal School, Framingham, Mass.; Former Instructor in Dietetics, Bellevue Training School for Nurses, Bellevue Hospital, New York City; Former Instructor at Mount Sinai, Hahnemann and The Flower Hospital Training School for Nurses, New York City; Lakeside, St. Mary's Trinity and Wisconsin Training School for Nurses, Milwaukee, Wis.; St. Joseph's Hospital, Chicago, Ill.; St. Vincent de Paul Hospital, Brockville, Ontario, Canada. Thirteenth Edition, Revised. Mount Vernon, New York: A. F. Pattee, 1920.

THIS is one of the best known works on Dietetics, it is also one of the simplest and least pretentious. It now appears in its thirteenth edition; so it has evidently met with the approval of physicians and nurses. The book has been revised so as to meet the requirements of the various State Boards of Examiners for Nurses; the author has also incorporated the latest researches in dietetics. Accompanying the volume is a pamphlet containing the requirements of the State Boards, and also examination questions from the various States.

MASS PHYSICAL TRAINING. For use in the Army and the Reserve Officers' Training Corps. By JOSEPH E. RAYCROFT, A.B., M.D., Professor of Hygiene and Physical Education, Princeton University; Member of War Department Commission on Training Camp Activities, and Chairman Athletic Division; Member of American Physical Education Association; Member of Society of College Directors Physical Education; Member of Athletic Research Society; Member of National Institute Social Science, etc. Foreword by W. G. HAAN, Major General, General Staff, Chief, War Plans Division. Washington: United States Infantry Association, 1920.

IN this volume of 282 pages the author has condensed into readable and available form the results of his unique experience in directing the physical and athletic training of millions of men to whom such matters were virtually unknown. With a corps of expert assistants familiar with every phase of physical culture and physical development, Dr. Raycroft spent months in experimenting with and testing out systems and schemes of training and instruction along the lines covered. The book, therefore, is a valuable addition to the literature of physical training. There are 147 figures and numerous diagrammatic illustrations of strategy and tactics.

PATHOGENIC MICROÖRGANISMS. A Practical Manual for Students, Physicians and Health Officers. By WILLIAM HALLOCK PARK, M.D., Professor of Bacteriology and Hygiene, University and Bellevue Hospital Medical College and Director of the Bureau of Laboratories of the Department of Health, New York City, and ANNA WESSELS WILLIAMS, M.D., Assistant Director of the Bureau of Laboratories of the Department of Health. Assisted by CHARLES KRUMWIEDE, JR., M.D., Assistant Director of the Bureau of Laboratories. Seventh Edition, Enlarged and Thoroughly Revised. Philadelphia and New York: Lea & Febiger, 1920.

THIS work began its existence as a small and unpretentious volume intended chiefly for the use of practitioners. It has grown through its seven editions to be what is practically the most complete and satisfactory one-volume bacteriology that is available to-day. The present edition has been revised in many respects, notably in the discussion of the subject of the hydrogen-ion concentration of media and of the bacteriology of the respiratory tract during the influenza epidemics. The bacteriology of war wounds and the recent work on the streptococci are among the topics that have been greatly elaborated in this edition. It is impossible to enumerate them all and it must suffice to say that the book appears to be "up to date" in every respect. The illustrations are numerous and very excellent. The text is clearly and attractively written and condensed as much as is possible with regard to clarity. In all it is the best work on bacteriology that is offered to-day to the student and practitioner and to the bacteriologist also who with it at hand will need only occasionally to refer to the encyclopedic works on the subject.

LABORATORY MANUAL OF PHARMACOLOGY. Including Materia Medica, Pharmacopœdics, and Pharmacodynamics. By A. D. BUSH, B.Sc., M.D., Professor of Pharmacology, University of North Dakota. Illustrated with full-page plates, many in colors. Philadelphia: F. A. Davis Company, 1919.

IN spite of its ungainly size, this book looks as if it might be very useful to medical students. It outlines the necessary Materia Medica, with the required laboratory work; and the student has his laboratory guide and his own note-book combined in one volume. One of the reasons why Materia Medica has always been unpopular with medical students is that the textbooks seem to have vied with each other in making the book as "comprehensive" as possible. As a result, every preparation of the pharmacopœia and several non-pharmacopœial preparations were included, with little or no indication as to the relative importance of the drugs. In the present volume this fundamental error is avoided, and a judicious selection has been made. There are a number of good illustrations showing the chief actions of the drugs; and the book is well arranged, and well printed.

NORMAL HISTOLOGY. with Special Reference to the Structure of the Human Body. By GEORGE A. PIERSOL, M.D., Sc.D., Professor of Anatomy in the University of Pennsylvania. Twelfth Edition. Philadelphia and London: J. B. Lippincott Co., 1920.

To those who are familiar with Piersol's work, no word of commendation is necessary. The present edition retains all of the desirable features of its predecessors and in addition has incorporated in it the advances that have been made in the subject since the appearance of the last previous edition. The section devoted to the consideration of each organ is headed with a paragraph upon the gross anatomy of the organ. This may be called superfluous by the critical but is nevertheless apt to be of much service. The illustrations are many and are exceedingly well drawn. Some of them are in solid color and it perhaps may be asked what advantage is possessed by such drawings over those in black and white. It would seem that they simply add to the expense of the work without improving it appreciably. But this is a minor detail and does not affect the value of the book. It can be recommended unreservedly.

Society Reports.

THE AMERICAN PEDIATRIC SOCIETY.

Thirty-second Annual Meeting, Held in Highland Falls, Ill., May 31, and June 1 and 2, 1920.

THE PRESIDENT, DR. THOMAS W. SOUTHWORTH OF NEW YORK, IN THE CHAIR.

(*Continued from page* 333.)

Dyspituitarism Socalled: Absorption of the Membranous Bones, Exophthalmos and Polyuria.—Dr. ALFRED HAND of Philadelphia presented this paper, in which he recalled a case which he had reported in the Transaction of the Pathological Society of Philadelphia, Vol. xvi, 1891-1893, under the heading "General Tuberculosis" and also in the *Archives of Pediatrics*, vol. x, 1893, under the title of "Polyuria and Tuberculosis." The patient was a boy, 3 years old, seen December 1, 1892, with a history of great thirst and polyuria of sudden onset eight weeks earlier. He had had enterocolitis at eight months and croup and measles at the age of two years. The family history was negative. The boy was undersized, with a dry, bronzed skin exophthalmos, corneal opacities in each eye and anterior synechiæ in the right. The thyroid was not enlarged. There had been rachitis. The urine had a specific gravity of 1.000 and the maximum quantity in twenty-four hours was 150 ounces, containing neither sugar nor albumin. After two months the boy died of bronchopneumonia, the main feature of the autopsy being a yellow area of softening in the right parietal bone involving both tables of the skull, with other areas affecting only the outer table. The kidneys were enlarged and the left had three small cysts, and in the pelvis of each was a hard, tuberculous mass; the lungs showed bronchopneumonia and there was small-round-celled infiltration of the liver, spleen and kidneys with degeneration of the epithelium of the uriniferous tubules. Dr. Hand quoted the notes of a case shown before the Medical Society of the State of Pennsylvania, in 1906, by Dr. T. W. Kay and reported by him as a case of acquired hydrocephalus, with atrophic bone changes, exophthalmos and polyuria. In the Osler Memorial Volume there was an article, "Defects of Membranous Bones Exophthalmos and Polyuria an Unusual Syndrome of Dyspituitarism," by Dr. Henry A. Christian, who reported such a case and had found two similar ones described by a German writer, Schueller. The latter said, "We can therefore make a presumptive diagnosis of anomaly of the skeleton as a result of disease of the hypophysis." Dr. Christian treated his patient with pituitrin which, when given under the skin and into a vein, caused great diminution in the amount of fluid ingested and excreted, but given by mouth or rectum it had no effect. Dr. Christian also concluded that the condition was due to disturbed pituitary function. To the above group Dr. Hand added a sixth case seen recently. The patient was a boy, four years of age, from whom there was removed at the age of two years a tumor-like swelling from the left parietal region; there was absence of bone beneath the tumor down to the dura. Section showed a slight degree of inflammation, but mainly a myxomatous change. Since then other swellings had appeared, and exophthalmos which was greater on the right, but as yet there has been no polyuria. Analysis of these six cases seemed to render the theory of dyspituitarism insufficient to explain the syndrome, although the polyuria undoubtedly depended on a disturbance of the hypophysis; the bone-changes seemed to be the primary condition, causing the exophthalmos mechanically by changes in the orbital plates, and the polyuria by changes in the sella turcica. The cause of the bone-changes was not clear and further observations were needed before this interesting and curious group of symptoms could be satisfactorily explained.

Use of Fresh Vaccines in Whooping Cough.—Dr. ROWLAND G. FREEMAN of New York presented this communication. He stated that two years ago he saw Dr. Hueneken's paper on the application of the complement fixation test for the detection of antibodies after injection of whooping cough vaccines, in which he showed that antibodies were not present unless the vaccines were freshly prepared and that after the vaccines were stored for a week but little antibody production resulted from their injection even in large doses. It seemed to him that this fact might explain the contradictory reports from the use of whooping cough vaccines in the course of their work, and he felt that it should be tried out. As he was unable to report any institution work he had brought together all the cases in which he had used the whooping cough vaccines in private practice, with the hope of stimulating interest in these fresh vaccines and thus rendering it easier to obtain them. This series of cases included 16 children with whooping cough in which the vaccines were used at various periods of the disease. In five no results were obtained, and of these three were early in the disease and the other two very late. In nine of the eleven remaining cases a very material improvement took place, and in four of these a practical cure was obtained. The quite remarkable results obtained in some beginning cases convinced him that these vaccines should have an extended use, particularly in institutions, where controls might be used to demonstrate whether we might not have in these vaccines a very valuable method of reducing the large mortality from whooping cough.

Dr. EDWARD J. HUENEKENS of Minneapolis, in response to an invitation to speak on this subject, stated that with the fresh pertussis vaccines one obtained from 90 to 100 per cent. positive complement fixation reactions; when the vaccines were four months old one obtained practically no positive reactions. The positive complement fixation reaction showed that the body was producing antibodies, but whether enough were produced to affect the pertussis was another question. If vaccines were used at all in whooping cough they should be fresh. Of the cases treated by vaccines, about 10 per cent. gave dramatic results; in another 10 per cent. there were practically no results whatever, while in about 80 per cent. there seemed to be a decided improvement, not dramatic, but sufficient to warrant their use. In St. Paul and Minneapolis it was now possible to obtain fresh pertussis vaccines on twenty-four hours notice.

Some Observations on Rickets.—Drs. JOHN HOWLAND and EDWARDS A. PARK of Baltimore made this contribution, which consisted in a lantern slide demonstration showing the alterations at the junction of the shaft and cartilage of the long bones in rickets as determined by the *x*-ray. A definite correlation between the *x*-ray signs and the pathological conditions was demonstrated. The proof was adduced that the calcium deposits in the cartilage cast well-defined shadows. The effectiveness of cod liver oil as a therapeutic agent in rickets was brought out by serial *x*-ray pictures taken during the period of its ingestion. In certain experimental animals a beginning calcium deposit could be demonstrated after the animals had been receiving cod liver oil for a few days. In human beings the calcium deposit in the cartilage was definitely demonstrable at the end of three weeks after beginning the administration of cod liver oil. Dr. Howland discussed the probable relation of cod liver oil to the process of repair.

Dr. GERSTENBERG of Cleveland said Dr. Howland made the eradication of rickets seem possible. They had fed 1,200 babies or more on a synthetic milk, containing 10 per cent. fat in the form of cod liver oil, and they had yet to see the first case of spasmophilia or rickets among the children so fed. Their idea had been to incorporate the cod liver oil in the food and thus prevent rickets.

Dr. CLIFFORD C. GRULEE of Chicago said that Dr. Femster had been making observations on normal children, feeding phosphorus, and by this means he had been able to produce a thickening of the ends of the bones very much the same as that produced by the cod liver oil. They had noted that with a longer feeding of phosphorus there was a greater thickening at the epiphyseal line. In these children the phosphorus was used alone and not in combination with cod liver oil.

Dr. HOWLAND said he and one of his associates had done work in which they had studied the phosphate content of blood after feeding cod liver oil and had

found it greatly increased. What brought that about he could not say. In one case in which they had found 1½ mgs. inorganic phosphorus per 100 c.c. of blood, after feeding cod liver oil they had found 16 mgs. of inorganic phosphorus. That result had been duplicated in other instances. This was a subject that needed further investigation. It seemed that cod liver oil had something to do with the utilization of phosphorus.

The Argonne Association.—Dr. ROYAL STORRS HAYNES of New York gave a lantern slide exhibit illustrating the work of the Argonne Association in France and described the method they were using in caring for dependent children. The work, he said, was divided into three sections, the first section being devoted to the care of children under four years of age, the second to those between the ages of four and fourteen years, and the third to vocational training for those over fourteen years of age. Children under four years of age were cared for in foster homes under the supervision of a visiting nurse and a medical director. The principle upon which the work was being conducted was that the proper care of the dependent child should carry him under one control until he was able to merge a self-sufficient citizen. In carrying out this plan an endeavor had been made to provide for every need of the growing child, physical, mental and moral, and in choosing a vocation the individual aptitudes of the children were studied and that occupation selected in which each would be happiest and most useful. The plan had been found most valuable in France and was described in the hope that it would be adopted for the care of dependent children in America.

Sarcoma of the Kidney.—Dr. ROWLAND G. FREEMAN of New York reported the case of a child 2½ years old, weighing 26½ pounds, who when she came under observation had been failing for two months. The diagnosis of tumor of the kidney was made and confirmed by *x*-ray. The tumor, a sarcoma, was removed and six weeks later the child was brought back to the hospital in a desperate condition. The *x*-ray showed numerous metastases in the lungs.

Focal Infections in Children.—Dr. OSCAR M. SCHLOSS of New York presented this report which concerned cases of focal infection of the tonsils which were responsible for two types of disturbances. In one group of cases the disturbances were cyclic in character, accompanied by fever and persistent vomiting with a large elimination of acetone bodies in the urine and an accumulation of acetone bodies in the blood. The other group presented a type of disturbance evidenced by milk nephritis. The urine contained albumin in moderate amounts, red blood cells, hyaline and granular casts and some leucocytes. These children were not especially ill. The symptoms were traced to tonsillar infection and subsided promptly when the infected tonsils were removed. Two such cases were observed. In the majority of cases in both groups, the tonsils were not large and in several instances had been removed leaving only a small amount of tonsillar tissue between the faucial pillars.

Hypertrophic Stenosis; Failure of Gruel Feeding; Operation; Slight Improvement.—Dr. H. M. MCCLANAHAN of Omaha presented this paper, in which he described his experience with six cases of hypertrophic stenosis coming under his care since June, 1919. Four of the six cases recovered under thick gruel feeding by the method described by Sauer and later by Dr. Langley Porter. The rate of gain varied; all, however, made slow but steady improvement. A fifth baby made fair progress for two weeks, but the parents, seeing the results in another case, demanded operation. He believed this baby would have recovered without operation. The sixth patient was in a serious condition at the time of operation, the walls of the stomach being dark in color. The infant had in addition to congenital hypertrophic stenosis, a general staphylococcus infection, and acute gastritis. This case would undoubtedly have terminated fatally without operation.

A Case of Portal Thrombosis.—Dr. RICHARD M. SMITH of Boston reported this case because of the rarity of this condition in children. He stated that the striking points in the case were the persistent fever, the enlarged liver and spleen, engorgement of the superficial abdominal veins, severe anemia, and intestinal hemorrhage. No diagnosis was reached during life. At autopsy thrombosis of the portal vein and its great radicles was found, with passive congestion of the spleen, hypertrophy and dilatation of the heart, edema of the lungs and anemia. Undoubtedly the thrombosis was of infectious origin arising in connection with an infection of the respiratory tract of which the child gave a history at the time of admission to the hospital.

A Case of Paralysis of the Respiratory Muscles.—Dr. W. MCKIM MARRIOTT of St. Louis reported this case, which was interesting because of the treatment applied. The patient was a girl, 10 years of age, who six weeks after a severe attack of diphtheria developed paralysis of the palate, ocular muscles, legs, back and neck muscles, and partial paralysis of the arms. Ultimately the diaphragm became involved, so that it failed to move at all during inspiration. Later the intercostals began to lose their power and the child became cyanotic and semi-comatose. She was obviously dying of suffocation. It was thought that if the respirations could be maintained for a sufficient length of time to allow for restoration of function of the respiratory muscles, recovery might be possible. Artificial respiration was given by means of the Erlanger-Gessel air current interrupter connected with a nitrous oxide mask. The child failed to co-operate at first, but later it was possible to get her to open the glottis at the right time so that air could be forced into the lungs at a regular rate. The effect was immediate. The cyanosis was relieved and after ten minutes the child fell asleep and the mask was removed. When cyanosis again developed artificial respiration was again resumed. This was kept up more or less continuously for five days, at the end of which time the function of the respiratory muscles began to return. The child was soon able to breathe without an apparatus and made a good recovery.

Congenital Atresia of the Esophagus.—Dr. HENRY L. K. SHAW of Albany reported this case, his object being to call attention to the historical side rather than to the clinical. He said the infant gave a history of the food coming out of its nose An attempt to pass the stomach tube failed. After giving barium, the *x*-ray showed the esophagus filling, but the barium did not pass into the stomach. The lungs were found filled with fine râles. The child died and at autopsy it was found that the esophagus ended in a cul-de-sac. The lower end of the esophagus had no relation to the upper end but terminated in a small opening into the trachea. There had been some 150 cases reported in the literature in 80 per cent. of which the anomaly was similar to the case described. A similar case had been described in 1682 and another in 1703 by a Dr. Gibson, Physician General to the British Army, and a grandson of Oliver Cromwell. Dr. Shaw read this description which was so accurate that it would be difficult to improve upon it to-day.

Dr. CLIFFORD G. GRULEE of Chicago said he had had the rather unusual experience of seeing four of these cases. Three of them were operated upon and died; not so much because of inanition as from hemorrhage. The tendency to hemorrhage in these cases seemed to be very great. Whether this was merely the increased tendency to bleed that seemed natural to the new-born or whether there was some other reason for it he could not say. The anomaly in each of these cases was different; one case, however, was very similar to the case reported by Dr. Shaw.

Dr. WALTER R. RAMSEY of St. Paul showed an *x*-ray picture which illustrated the exact condition Dr. Shaw had described.

Primary Sarcoma of the Thymus.—Dr. L. EMMETT HOLT of New York reported this case, occurring in a six months old child. This child's family history was negative. She had gained weight slowly, weighing 9½ pounds at the age of six months. The only symptoms exhibited were increased pallor and slight fever. There were minute hemorrhages over the neck and extremities. The case was looked upon as one of extreme secondary anemia. Hemorrhages continued to appear and blood transfusion was given without permanent benefit. At autopsy a thymus weighing 36 grams was found; the upper limit of weight for the normal thy-

mus was 10 grams. Sarcomatous changes were also found in a lymp node and in the spleen and lungs. The case was interesting because of the fact that the child exhibited none of the symptoms associated with enlarged thymus, and because of the rarity of sarcoma of the thymus in children.

A Case of Cardiospasm.—Dr. GODFREY R. PISEK of New York reported this case for the reason that the condition was still rare in early life. This patient, he said, was a girl, 12 years of age, whose family and past history were negative with the exception of the fact that the child was wilful and "temperamental." She gave a history of having had a choking sensation at times for a year. Moderate dilatation was done but no anatomical basis could be found for the trouble. She was finally sent away from home and improved for a time, but then contracted "malaria," lost weight rapidly, and the original symptoms of cardiospasm returned. She then returned home, was again given a thorough physical examination. Bougies were passed every four days, and she was given atropine and a measured diet. Under this treatment she was improving and it was still a question whether the duodenal tube would have to be passed and the stomach given a complete rest. The case showed that it was not so easy to treat the condition as one might be led to suppose from the literature.

A Case of Lymphosarcoma.—Dr. CHARLES A. FIFE of Philadelphia reported this case. He stated that the patient, a boy 9 years of age, gave a negative history until his seventh year when a slowly enlarging right cervical lymph node was detected. Notwithstanding the removal of tonsils and adenoids, the gland in ten months attained the size of a large egg. Supposing that the lesion was tuberculous, though the child gave no other evidence of tuberculosis, the gland was treated by the *x*-ray and radium. After twenty treatments, covering fifteen months, the disease was thought to be eradicated. The boy was in apparently perfect health for a third of a year, and then for five months before coming under observation had attacks of fever with remission. When he again came under observation he had a marked anemia; his heart was completely displaced to the right; liver and spleen enlarged, and a a mediastinal mass displaced to the right. A quart of amber fluid was removed from the left pleura after which the heart returned to its normal position. Within forty-eight hours the chest refilled. *X*-ray treatment and blood transfusion failed to stop the course of the disease. The child died about six months after coming under observation. The post mortem diagnosis was small and large celled lymphosarcoma. The structures involved were the cervical, tracheobronchial and retroperitoneal lymph nodes, the spleen and the liver. The chief histological interest lay in the fact that the nodes low down in the abdomen, where they were unaffected by the *x*-ray and radium treatment, were full of typical, active tumor cells, while the lymph nodes in regions treated by radiation showed retrograde changes in the tumor cells and many tumor cells were replaced by dense connective tissue.

Heart Displacement Apparently Due to Mediastinal Emphysema Following Aspiration Pneumonia.—Dr. E. C. FLEISCHNER of San Francisco reported this case. The patient was a boy, 3½ years of age, who following a fall in a sand pile became wheezy. Four hours later when brought to the hospital he had sibilant râles over the lungs both anteriorly and posteriorly. The *x*-ray showed no foreign body and no condition calling for surgical interference. The boy developed a definite pneumonia involving the middle lobe on the left side, and at the end of forty-eight hours a subcutaneous emphysema appeared above the clavicle and extended down to the pelvic bone. The heart was completely displaced to the right. The pneumonia subsided to be followed by a bronchiectasis in the left lung. A prolonged illness ensued from which the boy had finally made a good recovery. *X*-ray plates taken six months after the injury showed an apparently normal condition of the chest. It seemed reasonable to believe that at the time of the accident the boy had received an injury which had permitted air to escape through the lung into the mediastinum, to push the heart to the right, and then to work its way out into the subcutaneous tissues.

Streptococcic Angina with Purpura Hemorrhagica and Multiple Infarcts of the Skin and Subcutaneous Tissue in a Child Two Years Old, Healing Under Dakin's Solution.—Dr. WALTER R. RAMSEY reported this case which occurred in a child 2½ years old, whose present illness began with a sore throat two weeks before he came under observation. At this time he was practically moribund. The skin and mucous membranes were extremely pale; there was marked edema of the fact, feet and legs; numerous petechial areas were scattered over the body; the fauces and tonsils were covered with a foul gray membrane, and the entire mucous membranes of the mouth, including those of the lips, were gangrenous. The temperature was 104° F., and the pulse was rapid and weak. As the condition was suspicious of diphtheria, 20,000 units of diphtheria antitoxin were given immediately. The culture, however, proved negative. Under this treatment the purpura cleared up, but deep sloughs developed within a few days on the right wrist, on both ears, both elbows and the perineum. The palate sloughed off, and the middle phalanx of the middle finger on the right hand sloughed out. An area in the occipital region sloughed out and part of the bone also. All of these areas healed under Dakin's solution applied at hour intervals.

Report of a Case of Anaphylaxis Following an Intradermal Protein Sensitization Test.—Dr. HENRY J. GERSTENBERGER of Cleveland reported this case which presented the following points of interest: A boy 17 months old who had never received egg in any form developed an extreme anaphylactic shock after an intracutaneous administration of egg yolk allergen and egg albumin in doses of 1 and 2 mg. This child had received cows' milk from the third week of life and had suffered from eczema and asthma. He gave a negative intracutaneous test to cows' milk casein and cows' milk albumin. The intracutaneous injection of cows' milk allergen responded within twenty-four hours with an indurated and red area of infiltration not unlike that of an ordinary positive von Pirquet reaction, but entirely different from an urticarial wheal. The boy was not sensitive to other proteins. A first severe anaphylactic shock did not prevent a second five days later following the injection of egg yolk allergen. The *x*-ray photographs made at different intervals on the same day showed a definite wide abnormal thymic shadow and again a perfectly normal picture. The former, as found by fluoroscopic examination, occurred during extreme expiration, the latter during extreme inspiration. The thymus gland if it really were large in an abnormal sense did not produce the respiratory difficulty in a mechanical way. Dr. Gerstenberger suggested that this might be a case of status lymphaticus and that this condition might be responsible for the congenital pathological sensitiveness to egg proteins and the anaphylactic reaction. If, however, the child was found not to be sensitive to other proteins, especially horse serum and horse-hair protein, the status lymphaticus could hardly be accepted as a causative factor in his condition, for it would be difficult to imagine how a status lymphaticus could make a child sensitive solely to egg protein and not to oats, milk, horse serum, or horse-hair proteins. The anaphylactic shock after the injection of the egg albumin was so severe that had not adrenalin been administered immediately and artificial respiration employed the child would probably have died. Three c.c. of adrenalin was administered subcutaneously in divided doses—1 c.c. and then 2 c.c. These tests should never be made without having adrenalin at hand. If this precaution was always exercised he felt that fatalities due to anaphylaxis might be avoided.

Blood Findings Five Years After Splenectomy.—Dr. HOWARD CHILDS CARPENTER of Philadelphia presented this report. The patient was a boy, 10 years of age, who had had his spleen removed five years before for familial hemolytic icterus of the Chauffard-Minowski type. The result was satisfactory and the case was reported in the literature a few months later. During the past six weeks thirteen complete blood examinations were made, the average result of which showed hemoglobin 82 per cent.; red cells 4,288,000, and white cells 15,000. Prior to the operation the hemoglobin was as low as 23 per cent. and the red cells were down to

2,020,000. No Howell-Jolly bodies were found. Evidence of marrow regeneration was still present as shown by the high color index, the continued leucocytosis, moderate chromophilia and poikilocytosis, high transitional and eosinophile counts, and reticulation of the erythrocytes. There was an unusually quick coagulation time in spite of a rather low platelet count, indicating in this case either a rapid availability of the platelets for the purposes of coagulation or an increased amount of prothrombin in the platelets, or a large percentage of macroplatelets. The low platelet count was simply the continuation of the condition which existed before the splenectomy, as it was well known that cases of hemolytic icterus showed low normal values, sometimes even less than 200,000. An absolute lymphocytosis was found which was evidence of lymphatic activity, and this activity was also shown by the enlargement of the external lymph glands and the very large tonsils revealed on physical examination of the patient.

Dr. J. P. CROZER GRIFFITH of Philadelphia emphasized the fact that this paper was exceedingly valuable at the present time in view of the recent statement in the literature that in spite of splenectomy fragility of the cells continued. The paper showed that fragility did *not* continue and that was a very valuable point.

The Duct Sign in Mumps.—Dr. DAVID MURRAY COWIE of Ann Arbor read this paper, in which he recorded that 96 per cent. of 57 hospital cases of parotid mumps revealed the presence of a red spot at the orifice of Steno's duct, which developed and disappeared under the influence of the disease. The duct itself became teatulated. A number of cases were cited illustrating the way in which this sign developed and disappeared. It was observed that the sign appeared early in the disease, sometimes ahead of the swelling of the parotid and disappeared when the gland returned to normal. The degree of fever seemed to have no effect upon the degree of swelling and redness of the duct. The submaxillary ducts showed no redness when the submaxillary glands were involved. Whether the duct sign was pathognomonic of specific parotiditis or was present in other inflammatory conditions had not been determined. Owing to the fact that teatulation and redness of the orifice of Steno's duct occurred in a certain percentage of normal persons, careful differentiation must be made. The sign should be regarded merely as corroborative evidence of parotid gland involvement.

Dr. FRITZ B. TALBOT of Boston said he had observed the same sign but it required a very good light in order to detect it.

Dr. HEHRY HEIMAN of New York recalled having seen this sign described years ago in the old textbooks.

Dr. LANGLEY PORTER of San Francisco said this sign had been used by clinicians before. It enabled one to differentiate between suppurative parotiditis and ordinary infectious parotiditis. The color of the everted mucous membrane in infectious parotiditis was bright red, while in suppurative parotiditis it was a grayish-pink.

Dr. FREDERIC W. SCHULTZ of Minneapolis recalled having observed the duct sign among negro troops. He thought it was present in about 50 per cent. of the cases. In this connection he mentioned that the contagious period of mumps was longer than was usually given in the textbooks. It was fully twenty-one days, though the books did not give it as this long.

A Case of Priapism Resulting from Rapidly Spreading Malignant Myxosarcoma with Generalized Metastases.—Dr. DAVID MURRAY COWIE of Ann Arbor reported this case. The unusual feature of the case was the early age of the boy, nine years.

Further Development of Infants' Hospital.—Dr. HENRY I BOWDITCH of Boston made this contribution, in which he stated that the present-day tendency was to bring the scientific and laboratory side of the hospital into closer connection with the clinical side. This idea was being exemplified in the "On Shore" Department of the Boston Floating Hospital, a small hospital worked out on the basis of a ten-bed clinic. Three small adjoining apartment houses had been purchased and remodeled at a cost of $45,000. The scientific laboratories, chemical and bacteriological, were brought into close proximity, making consultation easy. The clinic was held in two wards and an isolation room, under the expert care of three nurses. The wards were so divided as to secure quiet, so that the children were able to have perfect naps morning and afternoon. As a result of this arrangement symptoms dependent upon restlessness, vomiting, etc., were markedly decreased. The clinic was so manipulated as to give five new patients monthly, or 60 a year. The plan was to have the patients return at definite periods for chemical and bacteriological tests, and physical and mental examination, for a period of ten years. In this way they would be able to follow the development of body and mind. On Tuesday afternoon of each week a health clinic, composed of 150 families, was held under the direction of an assistant visiting physician. This allowed the personal touch to impress the parents with the importance of physical care, proper dietetics, and discipline. On Wednesday a return "family control" clinic was held in charge of a visiting physician. Two clinics were also held for weighing the children, getting clinical histories, and giving treatment. Since the opening of the hospital on December 15, 1919, 30 patients had been treated, 23 of which were diagnosed as regulation of feeding and malnutrition in different degrees. It was the plan to admit only nutritional cases, infection being carefuly guarded against. The study so far had been to organize methods of attacking the question of the different food elements in growth and lack of growth. It was hoped that this beginning might lead others to establish similar "small enough" institutions, where each case could be completely examined clinically, chemically and bacteriologically, and carefully followed up, and which would serve as an educational center for parents leading them to a better understanding of the needs of child life.

The Effort Syndrome in Children and Young Adults.—Dr. CHARLES GILMORE KERLEY of New York read this paper, in which he reviewed the characteristics of the condition to which Dr. Thomas Lewis had applied the term "effort syndrome" and which was described by Friedlander and Freyhof as "constitutional neurocirculatory asthenia." The boy or girl who might qualify for this group came to the physician with the typical story, which condensed to its briefest terms, meant that there was an absence of capacity for sustained effort, both mental and physical. Wherever endurance was required this type of individual failed. In girls these constitutional peculiarities might attract less attention and be more readily excused when present. Among animals those of defective capacity for economic reasons soon perished. The defective functioning human, however, especially if well-born was urged and forced and stimulated to accomplish what was not in him. Millions of dollars were wasted on youths who were physically and mentally unable to meet the standard set up by ambitious parents and friends in an effort toward their so-called higher education. At the same time the highly trained teaching talent of our preparatory schools and universities was wasted in part on poor student material, 25 to 50 per cent. of which should be scrapped and put to productive occupation. Before a boy was permitted to avail himself of unusual educational advantages, it should be determined whether he was worth it. In addition to mental attainments required for college entrance, it should be required that a candidate submit testimonials as to physical fitness and mental capabilities from the head-master or high school principal. Expert diagnosticians were needed who would aid in placing boys at work for which they were fitted. The boy who belonged to the class under discussion should leave school at the age of fifteen or sixteen and take up business. The occupation should be one that was not strenuous if the boy was to make a reasonable success. It was unusual to find persons of this type the offspring of young vigorous parents. In the majority of instances they were the offspring of the weakly woman of little resistance and of lessened endurance capacity. A strong, vigorous mother would do much to offset the influence on progeny of a weakly male. The progeny of vigorous males was greatly impaired by inferior mothers. In some instances frequent child-bearing had apparently been a factor. These facts pointed to the necessity of paying a great deal of attention to the phy-

sical development of those who would some day be mothers.

Food Requirements of Children After the First Year.—Dr. L. EMMETT HOLT of New York presented this communication, which gave the results of an attempt to estimate the total caloric needs of healthy children over one year of age. This total was determined by an estimation of the four factors which made it up, namely: Basal requirements; needs for growth; needs for activity; loss by excreta. The per kilo requirement diminished steadily from one year to the completion of growth. Growth needs were calculated from the rate of increase in height and weight for the different years; these were naturally greatest at periods when growth was most rapid. The loss in excreta at all ages was practically 10 per cent. of the calories taken. Though subject to individual variation in different children, these three factors were as averages uniform and irreducible. The only factor which differed greatly in different children was the need for activity. A child of average activity used up nearly one-half his caloric intake in this way, while the very active child used up a much larger proportion of his caloric intake. The total caloric needs for the average child were greatest during the period of most active growth. This period for boys was between 15 and 17 years; for girls between 13 and 15 years. In this period the caloric needs exceeded those of adults with moderate activity of both sexes. The average adolescent boy required 4,000 calories daily. For boys the average per kilo need was 100 calories at one year; this gradually fell to 80 at six years. It then remained practically constant until 16 years, when it gradually fell until 19 years when it reached the adult average. In general, a little more fat, a little more protein and a little less carbohydrate was required by the child than by the adult.

The Misuse of Milk in the Diets of Infants and Young Children.—Dr. B. RAYMOND HOOBLER of Detroit read this paper, in which he asserted that there was much propaganda by popular writers urging the increased use of milk as a food for the young. He believed this was being overdone and that mothers were forcing milk in such quantities on their children that it became positively a menace to health. The dietetic errors made in this way might be classified under the headings: 1. Prolonged use of milk as an exclusive article of diet. 2. Increased quantities of milk given along with other foods. In addition to these errors the nutritional value of milk might be impaired by boiling. For various reasons the use of boiled milk was becoming more prevalent than formerly, and many injuries to nutrition occurred such as tetany, rickets, and scurvy, together with marked constipation. Charts were exhibited showing the diets usually fed between the ages of nine and twelve months, between one and two years, and between three and five years, and the relative proportion of the day's calories supplied by milk when one quart was fed. This showed that between the ages of nine and twelve months 80 per cent. of the calories were supplied by milk; between the ages of one and two years 58 per cent., and between two and five years 50 per cent. It was shown that when one quart of milk was fed in addition to other foods, the fat proportion was relatively high and the carbohydrate relatively low. The degree of overfeeding above the basal metabolism that took place under these conditions was also shown. When so much milk was fed the child frequently refused other food, and this habit robbed him of the minerals which should come to him in fresh fruits, vegetables, and cereals, not to mention the vitamine and antiscorbutic properties which these foods possessed. In contrast to this a second chart showed the caloric value and proportion of the food elements that were fed at the different ages when one pint of milk was given in addition to other foods. This demonstrated that by this kind of a diet the calories were reduced to within normal requirements, and the proportion of fat and carbohydrate were nearly interchangeable, thus giving the child ample calories to use in his activities. By giving only one pint of milk daily in addition to other food the protein intake was cut down to the maximum for growth, wear and tear. Children fed a well balanced diet of this kind were free from vomiting, stupor and acetonuria so prevalent in children who were receiving a quart of milk in addition to a full diet. The probaganda advising the feeding of a quart of milk daily was fallacious. If followed it led to over-feeding, an unbalanced diet, unhealthy nutrition and frequent attacks of vomiting accompanied by acetonuria.

Dr. CHARLES GILMORE KERLEY congratulated Dr. Hoobler upon having the courage to come forward and place the capacity of the child in its true light. He gave milk to the amount of only one pint daily after the child reached the age of fifteen months. The child fed entirely on cows' milk was likely to be flabby, and in the second, third and fourth year to have secondary anemia. The children which Dr. Hoobler mentioned as showing recurrent vomiting, and acidosis, were showing an incapacity for fat metabolism, or an inability to take care of a large amount of fat in addition to other foods.

Dr. THOMAS S. SOUTHWORTH of New York took exception to the statement that feeding boiled milk caused rickets, scurvy, and tetany. He thought the impression should not be given that the causation of these conditions could be so easily explained. Many of them believed that another factor was concerned in the production of these diseases. In the agitation for the larger use of milk, the fact that the kind of milk used was important had often been forgotten; it should be milk free from pathogenic bacteria.

Dr. E. W. SAUNDERS of St. Louis, put himself on record as agreeing with Dr. Hoobler in every respect. He recalled a paper on the ill effects of milk read four years ago, and said he wished to reaffirm the statements then made with additional emphasis. It was a mistake to raise the temperature of milk above 140° F., since that temperature served to destroy all pathogenic bacteria. If milk was raised to the temperature of 165 or 170° F. it would then be boiled.

Dr. L. EMMETT HOLT expressed the opinion that it was a mistake to go from one extreme to the other. In New York, he said, children as a class had been suffering from too little milk rather than from too much, due to the increasing price. He hoped the impression would not go out that they were feeding too much milk. He agreed, however, that a child who had eaten a hearty meal and then drank a glass of milk was being overfed; this glass of milk might be the last straw that acted as a factor in the production of a digestive disturbance. It did not follow that because milk was not a perfect food for a child two years of age it should be done away with altogether.

Precipitins for Egg Albumin in Stools.—Dr. CLIFFORD G. GRULEE of Chicago presented this study. He said that the preparation of the stools in this series of cases was the same as that reported in a previous article. The first series tabulated consisted of 100 stools from 21 cases which showed three positive reactions; in each instance the child had received egg-white in the diet. In a second series of 242 stools from 33 patients, there were five positive reactions. In this group some of the cases giving positive reactions had no egg albumin in the diet. It would seem from these results that egg albumin was in nearly every instance completely broken down by the digestive processes in infants and children. This held good not only for older infants and children but also where egg albumin was used in small quantities for the new-born as well. There was only one other possibility and that was that the egg albumin instead of being broken down in the process of digestion was absorbed unchanged. He did not feel that the specificity of the precipitin reaction for egg albumin was to any degree disproved by the fact that it was found to be positive in stools in which no egg had been present in the diet. He was inclined to attribute such reactions to the complexity of the stool.

Some Observations on the Rôle of Certain Anaerobes in the Intestinal Flora of Infants.—Dr. LANGLEY PORTER of San Francisco presented this communication, which he said related entirely to that group of intestinal toxemias in which the abnormal stool bacteria were resistant to dietetic measures usually adequate to produce a change of flora. Very rarely in the course of this study certain specialized forms of colon bacilli had been encountered. These were highly facultative and extremely acid resistant. Thus far no effective

method had been devised for overcoming their interference when they were present in the stool. Investigation of the evacuations of the majority of patients whose stools showed a similar resistance to change in the floral balance revealed the presence of an unusual number of spore-bearing organisms, most often anaerobes, usually *B. welchii*, which interfered by virtue of their facultative powers. This facultative function enabled them to utilize any pabulum present. Because of their power in the active stage to use carbohydrate they were especially apt to interfere when any attempt was made to shift a proteolytic flora by feeding a high sugar diet. A diet limited in proteins and rich in carbohydrates would be effective in overcoming these facultative anaerobes and causing the disappearance of these spore-bearing anaerobes from the stools.

Some Experiments to Determine the Persistence of Extraneous Bacteria in the Gastrointestinal Tract of Guinea Pigs as Influenced by Diet.—Dr. A. GRAEME MITCHELL of Philadelphia presented this paper, in which he described the attempt at implantation of the *Bacillus pyocyaneus* in the digestive tract of the guinea-pig. He said that thus far the proof of the implantation of organisms in the intestinal tract rested upon very incomplete evidence. The *B. pyocyaneus* had several advantageous characteristics, which made it suitable for a study of this kind. The guinea-pigs were fed various diets containing the *B. pyocyaneus* for a period of three days, and were then killed at variable lengths of time afterward. Cultures were made from the heart blood, the stomach, the duodenum, the ileum, the cecum, and the colon. It was found that when guinea-pigs were fed on a diet of oats, hay, bread, and green stuff, *B. pyocyaneus* when fed disappeared from the gastrointestinal tract in three days. When oatmeal was given as a sole article of diet the *B. pyocyaneus* was found at seven and nine days after the last administration. The addition to the oatmeal of a small amount of green stuff or a certain amount of butter had apparently prolonged the period of persistence of the bacterium. On these slightly amplified diets pyocyaneus had been found to persist about two weeks with considerable regularity. There were reasons for believing that this persistence was probably apparent only. The animals on a strict oatmeal diet did not live long enough to enable a complete experiment to be carried beyond eight or ten days. Judged by the amount of green color produced in the culture the number of surviving organisms became progressively less the longer the interval following the cessation of their administration. On the basis of these experiments it seemed quite probable, the speaker said, that there was an effect of dietary deficiency which consisted in the depression of a normal mechanism controlling the implantation of extraneous bacteria in the gastrointestinal tract.

A Brief Report on Lactic Acid Milk.—Dr. DEWITT H. SHERMAN of Buffalo presented this report, based on original work performed by his associate, Dr. Harry R. Lohnes, and himself. Lactic acid milk, he said, was a therapeutic food of many years' standing, the beneficial effects of which were explained in various ways. At first the good results were supposed to be due to the Bulgarian bacillus. This idea had been stated to be incorrect. A second explanation offered was that the increased acidity of the gastric contents, as it passed into the duodenum, stimulated the intestinal secretions. This had been put aside. The third reason, which at present seemed most rational, was that lactic acid was efficient through Meltzer's law of "contrary innervation"; and it was productive of good results through the increased amplifications of the peristaltic wave, and by this increased motility function was increased. In the infant Meltzer's law was especially applicable because lactic acid milk seemed to act best in those cases that were undertone, with weakened or dilated gastric musculature. Dr. Sherman compared the relative value of protein milk with lactic acid milk and showed some of their differences. He questioned the extolled value of protein milk because its soluble salts were removed and its insoluble salts, those of calcium and magnesium, were in excess. He appreciated the value of protein milk in those infants whose tolerance for sugar was broken. Stress was laid on the acidity of the lactic acid milks as a reason for the infant refusing or rejecting it. The desired acidity was at 70 to 90 as measured by a decinormal sodium solution. To keep this acidity he gave two original methods for making lactic acid milk. The first was to culture the boiled, and hence sterile, milk, and put it away, at a temperature of 85° Fahr., in an ordinary child's icebox so commonly found in the household. It was to remain there over night and in the morning would be found of approximately the correct acidity. It was then boiled again to destroy the activity of the Bulgarian bacillus, and put away on the ice. The second method was even simpler. The boiled milk was cultured and allowed to stand in a warm place, and in twenty-four hours the acidity would reach 180 to 190, possibly 200, and acid reaction of sufficient degree to destroy the Bulgarian bacillus. This very acid lactic acid milk was then diluted with an equal amount of sweet milk and the correct acidity was secured. Upon adding the sweet milk a fine clotting occurred and, when boiling a second time, active stirring with a Dover egg beater was essential in order to obtain a homogeneous mixture. In order to make the formula flexible in reference to fat, Dr. Sherman said, a skimmed lactic acid milk was first used, and, as indications permitted, whole lactic acid milk was gradually substituted for it.

The Urgent Need of Dietetic Reform and the Duty of the Medical Profession Toward All the Young of the Nation.—Dr. W. E. SAUNDERS of St. Louis read this paper, in which he asserted that there was alarming degeneracy in the rural and urban population. Apparently brown bread and bean-eating Harvard recruits were the only exception. One-third of the youth of the nation had been found unfit for military service. Immigrants from the Ghettos of Europe, in spite of better wages and more abundant food, were rapidly degenerating in America. Negroes of the South were physically unfit because of a diet of commercial corn meal. Italians were failing because of a diet of macaroni made of white flour. White rice was utterly unfit for food. The first measure to combat H. C. L. was to stop the denaturing of all foods by Federal law. The Government investigation of 1907 was farcical. Existing pure food laws were aimed against sophistication only. When these laws were passed no one knew the deprivation of the essential elements contained in staple foods was more deadly than sophistication or substitution; nor did any one suspect that a diet of maintenance for the adult might fail to sustain growth in the young. The teeth of the children were in far worse condition than that of their parents, according to the verdict of the dentist. The young suffered most from the fundamental dietetic errors of the nation. Imperfect and early diseased teeth, fragile bones, weak muscles, exhausted nervous system, recurrent infections, visceroptosis, stunted growth, inordinate appetite for sweets and meat, craving for stimulants and for excitement, and inability for sustained effort might be traced to dietetic errors. Tendency to acidosis from a diet of pure sweets and of denatured cereal foods, almost destitute of the necessary mineral constituents, and vomiting of pregnancy were greatly aggravated by the same vicious diet. The common saying was that a woman must lose some teeth after every pregnancy need not prove true if only natural foods were used. Fractures sometimes remained ununited for months until the proper diet was instituted. Various causes had been assigned for the failure of the modern woman to suckle her child, but the most potent was, without doubt, the use of denatured cereal foods. Perhaps imperfect development of the endocrine glands, almost certainly a predisposition to cancer—all this train of evils that afflict the young and the future worker could be laid to the insane diet of the American people of the present day. The young of the nation had hardly as yet tasted the benefits of the newer knowledge of nutrition except those fortunate individuals who might chance to be under the care of a pediatrician. The remedy for this deplorable condition was two-fold: (*a*) diffusion of knowledge, (*b*) Federal and State legislation initiated by the American Pediatric Society and all other medical societies.

(*To be concluded.*)

State Medical Licensing Boards.

STATE BOAD EXAMINATION QUESTIONS.

FLORIDA STATE BOARD OF MEDICAL EXAMINERS.

Jacksonville, June 14, 1920.

(*Continued from page* 294.)

OBSTETRICS.

1. (*a*) What is the umbilical cord, and how formed? (*b*) Describe the placenta.
2. Give signs of pregnancy and their relative value.
3. State the significance of the albuminuria of pregnancy, and give an outline of its treatment.
4. Give cause, diagnosis, and treatment of uterine inertia.
5. Give technique of intrauterine irrigation and state when its employment is justifiable.
6. What is placenta prævia? Name its causes, varieties, symptoms, dangers, and management.
7. Give etiology, prognosis, and symptoms of puerperal fever.
8. Describe the proper measures for the care of the new-born child.
9. What diseases of the mother are apt to interfere with the fetus in utero?
10. Define and give the treatment and prophylaxis of ophthalmia neonatorum.

GYNÆCOLOGY.

1. Give the gross anatomy of uterus and ovaries.
2. Describe the course of the ureters in the pelvis.
3. Should you normally feel a hard body in any of the four fornices of the vagina? If so, which one, and what is it?
4. Mention the principal new growths occurring on the vulva.
5. What are the frequent complications and results of gonorrheal vaginitis?
6. How would you differentiate pelvic haematocele from impacted feces?
7. Describe the factors which influence the onset of menstruation. What is the average frequency and duration of each period?
8. How would you differentiate an anteflexed uterus from a fibroid tumor in the anterior wall?
9. Give the technique for repair of lacerated perineum.
10. Give the symptoms and treatment of carcinoma of uterus.

ANSWERS.

OBSTETRICS.

1. The *umbilical cord.*—"At term the cord has been compared to a 'twisted rope of tissues,' extending from the placenta to the child. The cord is of a glistening grayish-white color, of varying thickness, and is usually about 22 inches long, but may be either much longer or shorter. In structure the cord consists of a covering of epithelium continuous with that of the amnion, which surrounds a jelly-like matrix called Wharton's jelly. This consists of mucin, branched corpuscles, and embryonic connective-tissue cells. Within this substance the two arteries and one vein run in a spiral course, usually from left to right; it is to the fact that the growth in length of the vessels exceeds that of the rest of the cord that the twisted appearance of the latter is probably due."—(Jewett's *Practice of Obstetrics.*)

At full term the *placenta* is a soft, spongy mass, roughly saucer-shaped, from six to nine inches in diameter, about three-quarters of an inch in thickness at the central point, and weighs about one pound. It is *formed*, partly from the mucous membrane of the uterus, and partly from the chorionic villi. Its *functions* are: (1) To supply nourishment to the fetus; (2) to act as a respiratory organ for the fetus; (3) to act as an excretory organ for the fetus; (4) it is also supposed to provide an internal secretion. Its *usual location* is on the anterior or posterior wall of the uterus, near the fundus.

2. *Positive signs of pregnancy:* (1) Hearing the fetal heart sound; (2) active movement of the fetus; (3) ballottement; (4) outlining the fetus in whole or part by palpation; and (5) the umbilical or funic souffle. *Doubtful signs of pregnancy:* (1) Progressive enlargement of the uterus; (2) Hegar's sign; (3) Braxton Hick's sign; (4) uterine murmur; (5) cessation of menstruation; (6) changes in the breasts; (7) discoloration of the vagina and cervix; (8) pigmentation and striæ; (9) morning sickness. *Subjective signs of pregnancy*, in the order of their appearance, are: Cessation of menstruation, morning sickness, increased frequency of urination, active fetal movements. *Objective signs of pregnancy*, in the order of their appearance, are: Softening of the cervix, changes in the mammary glands, discoloration of the vulva and vagina; pulsation in the vaginal vault, Hegar's sign, active fetal movements, ballottement, palpation of the fetus, intermittent uterine contractions, hearing the fetal heartbeat, rate of growth of the uterine tumor.

3. *Albuminuria of pregnancy:*—"This is the most common manifestation of the toxemia of pregnancy, occurring once in every twenty to thirty patients. It is more frequent in primigravid women, and usually first shows itself about the fifth month, though sometimes earlier. The term covers a very wide range of symptoms, from the mildest right up to the most severe, just short of the convulsions and coma that characterise eclampsia itself. To cases only exhibiting the mildest symptoms, slight albuminuria, lassitude, slight headache, and perhaps a little swelling of the ankles, the term 'the kidney of pregnancy' has been given. Rest, laxatives, and a less nitrogenous diet will put matters right, and the importance of the condition lies merely in the fact that it is the earliest sign that the kidneys are suffering from the strain put upon them, and are liable to give way further if not watched, and, if need be, relieved.

"Apart from these very mild cases pre-eclamptic toxæmia may show itself in symptoms of varying severity—general malaise, headache, either frontal or occipital, lassitude or irritability, disturbance of vision varying from slight dimness to complete blindness, edema of ankles, lower limbs and vulva, and possibly of other parts as well, somnolence, dizziness, sickness, and severe pain in the epigastrium. . . . The condition of the urine in pre-eclamptic toxemia is of the greatest importance. In the slighter cases the quantity is not greatly affected, but it contains albumen, and hyaline and granular casts. In more marked cases the quantity is always diminished, and it contains a considerable quantity of albumen, casts, and some blood corpuscles. The total quantity of nitrogen is diminished; the proportion of urea is lowered, while the ammonia, and undetermined or 'rest' nitrogen is proportionately increased. A marked drop in the urea output, along with a large amount of albumen, indicates a severe case liable to go on to eclampsia, if not treated at once. . . . Another feature of great significance is the arterial pressure. It is usually raised, and in severe cases it becomes markedly high—a point of importance in making a prognosis."

Treatment.—"The urine should be examined every month in the first six months of every pregnancy, no matter how normal it may seem, and every fortnight in the last three months. If albumin is present, the amount should be estimated in an Esbach tube, and the urea in a Doremus ureometer. The total quantity of urine per diem should also be ascertained. The principles of treatment are to relieve the kidneys by free elimination by the bowels and skin, and by diminishing the nitrogenous part of the dietary; and at the same time to prevent any further interference with the renal functions by guarding against cold. In mild cases where the albuminuria is the sole symptom, the patient should be warned to rest and guard against cold. The diet should be restricted to milk food, with bread and butter, and a little fish or chicken once a day, and the bowels should be made to act freely once every day."—(Johnstone's *Textbook of Midwifery.*)

4. *Ulterine inertia* may be *caused* by: Debilitated constitution, exhausting disease; uterus weakened because of congenital malformation, inflammation, or too frequent child-bearing; adhesions to neighboring struc-

tures; tumors of the uterus or neighboring tissues; distention of the bladder or intestine; displacement of the uterus; premature escape of the liquor amnii; pregnancy in an old primipara; hydramnios; twin pregnancy; fright or mental emotion.

The cervix dilates slowly or not at all; if the membranes are ruptured the fetus makes little or no advance; the woman shows evidence of fatigue and may be anxious or restless; the skin gets dry, the pulse small and rapid, the temperature elevated, the tongue dry and furred, nausea and vomiting may supervene, and delirium and coma may follow.—(From Webster's *Obstetrics.*)

Treatment consists in removing the cause if possible; the bladder and bowel should be emptied; opium, morphine and chloral may be given so that the patient may get a little sleep, at the same time food may be administered; the uterus may be massaged through the abdominal walls; hot vaginal douches are sometimes helpful; the vagina may be distended with a rubber bag; if the membranes are ruptured, a Champetier de Ribes bag may be placed in the lower part of the uterus; an anesthetic may be necessary; quinine, strychnine, and ergot have been recommended by some, and condemned by others; the newest remedy is pituitrin, which may be injected into the muscles in doses of from 1 to 1½ c.c., provided that the cervix is dilated and that there is no obstruction to delivery.

5. *Intrauterine irrigation is indicated* when there is any indication of infection during labor or in the puerperium, also after post-partum hemorrhage.

"The best composition for an intrauterine douche is one of the following: (1) Tincture of iodine 4 drams, alcohol (ethyl 95 per cent., *never* methyl or wood alcohol) 8 ounces, sterile water up to four pints; or (2) formalin (40 per cent.) 30 drops, glycerin 2 ounces, water 1 pint; or (3) lysol solution 1 dram to 2 pints. The temperature of the douche should be 110° to 115° F. The patient is placed in the dorsal position, cleansed, the cervix exposed through a bivalve speculum, the intrauterine catheter (best the *large* Bozemann) inserted by sight, and the solution allowed to flow by gravity, with not more than two feet head. The douche bag or can and catheter are boiled and the solutions made up with sterile water."—(Hirst's *Manual of Obstetrics.*) Particular attention must be paid to asepsis.

6. *Placenta Prævia* is the condition in which the placenta is attached in the lower uterine segment and may be near or over (partially or completely) the internal os. The *causes* are unknown; multiparity, frequent pregnancies with subinvolution, and abnormalities of uterus, placenta or cord are said to predispose to this condition. *Varieties:* (1) *Central,* when the placenta completely covers the os. (2) *Partial,* when the placenta overlaps the os. (3) *Marginal or lateral,* when the placenta reaches the margin of the os but does not overlap it. *Symptoms:* Sudden hemorrhage, accompanied by syncope, vertigo, restlessness, and feeble pulse. *Dangers:* Hemorrhage, sepsis, death of the mother, death of the fetus.

Treatment before term: Rest in bed, with or without a *tampon,* will arrest hemorrhage for the time; the sinuses are closed by thrombi, and the case may go on to term or another hemorrhage. The patient should be allowed cold drinks; opium may be used where pain is present. If the hemorrhage is great, it is safer to induce labor at once than to wait. Occasionally no hemorrhage occurs during pregnancy, not even in labor.

Treatment at term: (1) Introduce one or two fingers within the os (the hand being in the vagina) and dissect the placenta from the uterine wall for about three inches from the os uteri in all directions, pushing it to one side if necessary. (2) Rupture the membranes, and if there is an unfavorable presentation, turn the child and make the breech engage in the os; or, if the head presents, the forceps may be used, if speedy delivery is necessary. Stop the hemorrhage by a tampon; this must be tight and thorough. *Accouchement forcé* is indicated; this consists of dilatation of cervix. version and immediate extraction of the child.

7. *The bacteria which causes puerperal fever* are: Streptococcus pyogenes, staphyloccoccus pyogenes aureus, gonoccoccus, bacillus coli communis, bacillus diphtheriæ, bacillus typhosus. They are generally introduced by the fingers of the physician or nurse, or by instruments, or general lack of cleanliness. The results are shown by chill; rapid rise in temperature, to about 103° or 104°, higher in the evening than in the morning; sweats; rapid pulse; depression; dry tongue; anorexia; carphologia; scanty, high-colored, albuminous urine; restlessness; sometimes delirium or coma. The uterus is large and tender; the lochia are diminished or suppressed; the milk secretion is often suppressed; pain in the abdomen; peritonitis may develop. The prognosis is grave, and depends on the promptness and thoroughness with which the septic condition can be removed.

8. *Care of infant:* After the cord has been ligated and cut, the eyes should be cleansed with a saturated solution of boric acid, after which, if there is any vaginal discharge from the mother, 1 or 2 drops of a 1 per cent. solution of silver nitrate should be instilled in each eye. The mouth should also be gently cleansed, for which may be used a soft cloth and boiled water. The vernix caseosa should be removed by means of some oily substance. The baby should be bathed in water at 100° F., carefully dried, and the cord dusted with some antiseptic powder. Sponging should be practised for 10 days, after which a full tub-bath at 98° F. should be given daily for 6 months. The temperature may then be reduced to 95° F., and at the end of a year to 90° F. The binder and clothing should be woolen. If the infant's extremities are blue or cold, external heat should be applied. The diapers should be made of flannel, and dusting powders should be used to prevent chafing."—(*Pocket Cyclopedia.*)

9. *Diseases of the mother which are apt to interfere with the fetus in utero.*—Nephritis, syphilis, diabetes, tuberculosis, toxemia, anemia, endometritis, metritis, lead and other poisons, smallpox and other infections.

10. *Ophthalmia neonatorum* is an infectious, purulent inflammation of the conjunctiva in the new-born. It is due to the gonococcus or some other pyogenic germ; and is produced by contact of the eye with the vaginal secretion of the mother during labor, or infected fingers, or instruments, etc. *Prophylaxis.* Immediately after birth the eyelids of the new-born child should be washed with clean warm water and onto the cornea of each eye should be dropped one or two drops of a 1 or 2 per cent. solution of nitrate of silver. This procedure will prevent ophthalmia neonatorum in doubtful cases; it will do no harm in innocent cases; and it is the first stage in treatment if gonorrheal infection is present. *Treatment.*—Wash the eyes carefully every half hour with a saturated solution of boric acid; pus must not be allowed to accumulate. Two drops of a 2 per cent. solution of nitrate of silver must be dropped on to the cornea every night and morning. The eyes must be covered with a light, cold, wet compress. The patient must be isolated, and all cloths and compresses used must be burnt.

GYNECOLOGY.

1. In the nulliparous adult the uterus is about three inches long, about two inches wide at the upper part, and about one inch thick. The uterus lies between the rectum behind and the bladder in front; it is below the abdominal cavity, and above the vagina. Its position is one of slight anteflexion, with its long axis at right angles to the long axis of the vagina. The anterior surface of its body rests on the bladder, and the cervix points backward toward the coccyx. The uterus is not fixed, but moves freely within certain limits. It is held in place by ligaments. (1) *Broad ligaments,* which extend outward on each side from the side of the uterus to the side of pelvis. (2) *Rectouterine ligaments,* which extend backward from the intraperitoneal portion of the cervix uteri to the peritoneal investment of the rectum. (3) *Round ligaments,* which extend from the uterus just below the Fallopian tubes, through the inguinal canal to the labia majora. (4) The *ovarian ligaments,* which extend from the superior part of the uterus, behind the Fallopian tubes, to the inner end of the ovary. (5) The *uterosacral ligaments,* which extend from the highest part of the cervix uteri to the sides of the sacrum opposite the lower border of the sacroiliac synchondrosis.

The *ovaries* are two in number, and correspond to

the testes in the male; they are of a flattened ovoid form, vertically placed in the posterior part of the broad ligament. By its anterior border the ovary is connected to the broad ligament, and by its lower pole to the uterus by a proper ligament, extending to the superior angle of the uterus, and called the *ligament of the ovary*. The lateral surfaces and posterior borders are free. The superior pole and posterior border are embraced by the Fallopian tube; on its inner surface it is in relation with small intestine in Douglas' pouch, and externally lies in a peritoneal fossa between the external and internal iliac vessels as they diverge. The vessels enter the hilum at the attached anterior border.—(*Aids to Anatomy.*)

2. *Course of the ureters in the pelvis (in the female).*—The ureter runs from the sacro-iliac articulation down and backwards to near the floor of the lateral pelvic wall, whence it enters the broad ligament. This portion is 3 inches long, and lies first in front of, or to the inner side of, the internal iliac vessels; then forms the posterior boundary of the obturator fossa, and lies immediately behind the ovary. The second portion, 2 inches long, traverses the parametrium between the layers of the broad ligament, ½ inch above the lateral vaginal fornix, and separated from the supravaginal cervix by ¾ inch. Here it is closely enveloped in the venous plexuses, and is crossed above by the uterine artery. Thence it converges towards its neighbor of the other side, so that it is even nearer the cervix in front than laterally (and may be detected by palpation from the vagina), to enter the bladder at the basal angle of the trigone 1 inch below the level of the external os, and just above the roof of the vagina, its course through the bladder wall being very oblique, and measuring ¾ inch in length."—Macewen's *Surgical Anatomy.*)

3. If the uterus is anteflexed, the fundus may be felt in the anterior fornices; if the uterus is retroflexed the fundus may be felt in the posterior fornices.

4. *New growths occurring on the vulva* are:—Lipoma, fibroma, angioma, papilloma, sarcoma, carcinoma, and cysts.

5. *Complications and results of gonorrheal vaginitis* include:—Cystitis, urethritis, vulvitis, endometritis, salpingitis, septic peritonitis, sterility, condylomata of vulva, abscess of Bartholin's glands. It often leads to chronic invalidism, and may be the cause of death.

6. *Pelvic hematocele* is an accumulation of blood in the pelvis, due to rupture of a blood-vessel; it is generally due to rupture of a tubal pregnancy, or to a tubal abortion, or disease of the ovary, or perimetritis. *Symptoms:* Pain, which is sudden and severe, over abdomen and pelvis; nausea, cold perspiration, cold extremities, pulse rapid and weak, pinched features, and shock. It is most likely to be mistaken for an ectopic gestation; but in the latter there will have been the subjective symptoms of pregnancy.

In *fecal impaction*, there will be none of the above symptoms, with the possible exception of pain.

7. *Factors which influence the onset of menstruation.*—"Circumstances modify the age at which the first menstruation takes place; thus, the menses appear earlier *in hot climates*, but the difference between the hottest and coldest climates is only about three years; the influence of *race*, which remains potent in spite of climatic changes; *occupation and mode of life;* luxury, stimulants, indolence, hot rooms, pruriency of thought, etc., render the woman precocious, while opposite conditions retard the menses; general robustness of constitution and vigorous health promote the development of menstruation, and it is delayed by feebleness and debility. On the other hand, a very tall woman with large bones and muscles will require more time to complete her growth, and hence the reproductive functions will be belated."—(King's *Manual of Obstetrics.*)

Menstruation lasts from five to six days, and the average amount of blood is about five ounces. It begins at puberty and occurs periodically at about 28 days interval, until the menopause; it is absent during pregnancy and early lactation.

8. An anteflexed uterus may be differentiated from a fibroid tumor in the anterior wall by a conjoined examination and the uterine sound.

9. *Operation for recent laceration of the perineum.*—"The parts are cleansed and a pledget of sterile cotton or gauze pushed up the vagina to stop any flow from the uterus obscuring the wound. The sutures (preferably of aseptic silk) are passed with a moderately curved needle about 2 inches long as follows: Beginning at the posterior end of the laceration (that nearer the anus), the needle enters the skin near the edge of the wound and follows a circular course until its point appears at the very bottom of the laceration (a finger of the other hand in the rectum guarding against its penetrating that canal); it then enters the opposite side of the laceration at the bottom of the wound and comes out of the skin opposite its point of entrance, having followed a similar circular course to that pursued on the other side where it first went in. The ends are *loosely* tied or secured by catch-forceps, until the requisite number of sutures are passed in a similar manner (half an inch apart), when the wound is again cleansed, the vaginal plug removed, and the sutures tied tightly enough to coapt the parts without injurious constriction, the order of succession in tying being that in which the sutures were passed.

"In 'complete' lacerations—those of the third degree—through the sphincter ani to the rectum, the operation is more difficult. The rectal tear is first stitched with *catgut* sutures (a short, curved needle being used) and going through the rectal wall only. The sutures are tied on the inside, so that the knots are on the mucous membrane of the bowel. They begin from above and come down to the sphincter ani, the cut ends of which are drawn out with a tenaculum while the sutures penetrate them. These *catgut* sutures need not be removed; they will digest in the tissues and disappear of themselves. The posterior wall of the vagina is next sutured with fine silk, from above downward toward the hymen. Finally, skin sutures through the perineum itself, including muscles of the pelvic floor (as just described for lacerations of the first and second degrees) complete the operation. The silk sutures may be removed in about a week. Antiseptic dressings are applied as after an ordinary labor, extra care being taken to keep the wound aseptically clean by daily irrigation with the creolin solution."—(King's *Obstetrics.*)

Operation for old laceration of the perineum.—"Lateral tears are best repaired by the Emmett operation. With the patient in the lithotomy position, guide sutures or tenacula are passed through the apex of the rectocele and through each labium majus at the lowest carunculæ myrtiformes. By drawing on the lateral suture and pulling the central suture downward and to the opposite side, the lateral sulcus appears as a triangle with the apex up in the vagina. This triangle is denuded of mucous membrane by cutting off long strips by means of forceps and scissors, or by dissecting the mucous membrane off in one piece. The triangle on the opposite side is treated in the same manner, and the denudation completed by removing the mucous membrane between the bases of the triangles and below the central suture. Each lateral triangle is closed by interrupted sutures of chromicized catgut or silkworm gut, the latter being shotted. The needle, which should be curved, is entered near the margin of the wound on the outer side. passed deeply to catch the fibers of the levator ani, and brought out at the bottom of the sulcus, at a point nearer the operator; it is then reinserted at the bottom of the sulcus, and passed upward and backward in the rectocele, to emerge opposite the point of the original insertion. The opposite triangle is treated in the same manner, which leaves a small raw area externally to be closed. The upper or 'crown stitch' passes through the skin of the perineum below the lateral guide suture. then through the rectocele below the central guide suture, and finally through the tissues below the opposite guide stitch. As many sutures as may be necessary are inserted below this. If silkworm gut is used, the stitches should be removed on the tenth day. The external genitals are irrigated with weak bichloride of mercury solution after each urination; catheterization should, if possible, be avoided. The bowels are moved on the second day. Internal douches are not needed unless there be infection. The patient should be kept in bed two weeks, and heavy work and sexual intercourse forbidden for three months."—(Stewart's *Surgery.*)

10. *Carcinoma of the uterus is diagnosed* by the his-

tory, symptoms, physical signs, and microscopic examination. It is a disease of advancing years, and generally occurs after the menopause; nulliparæ and multiparæ are equally liable. The chief symptoms are hemorrhage and discharge with an offensive odor, pain, and cachexia. The cervix is soft, the uterus enlarged, and tender. The uterus must be curetted, and the scrapings examined by the microscope.—*Treatment* consists in thorough removal at the earliest possible moment. This is often impracticable, because of the delay in seeking advice.

Therapeutic Hints.

Mild Diabetes Mellitus.—Woodyatt, in a brief discussion of mild cases of diabetes mellitus, says when the patient comes in it is a good plan to give him a talk somewhat as follows: "Your body is a gasoline motor. The gasoline is represented by the sugar. It contains power, and when burned gives energy. You have in your body a certain organ which plays the part of the spark plug, viz., the pancreas. It provides something which is necessary for the ignition of sugar. When sugar appears in the urine, it is like black smoke from the exhaust of an automobile. The motor is flooded. Good fuel is going to waste." It is important to have the patient understand the rationality of what one is trying to do for him, inasmuch as he will have to carry out the treatment at home. The first object of the treatment is to put the pancreas at rest. When the body is flooded with sugar it may be assumed that the sugar constantly stimulates the pancreas until it is driven into a state of fatigue so that it does not "spark" as it should. After a rest the pancreas may show a marked degree of recovery. The tolerance improves. To put it at rest the excess of sugar must be got out of the blood. The patient must be desugarized, and he must be told why and how this is to be accomplished. To an ordinary mild diabetic Woodyatt commonly gives a diet consisting of 400 gm. of vegetables containing not over 5 per cent. of carbohydrate; that is, lettuce, tomatoes, cucumbers, string beans, cauliflower, etc. In addition to the 400 gm. of greens, the patient may take water, clear soups, tea or coffee, salt and pepper, as desired, since these things have no food value worth considering in this connection. A salad dressing composed of mineral oil as described by Joslin adds to the patient's comfort, and the bran-agar muffins introduced by Allen may also be used if desired. On the first day of the diet the patient should keep warm and quiet, in order not to expend too much energy while he is not receiving any from his diet. This low diet contains only 12 gm. of carbohydrate and some 4 gm. of protein. He must stay on this diet until he becomes sugar-free (mild case), at which time he is through with it. In order that he may know when he is sugar-free the patient must be taught, unless there is some psychological reason for doing otherwise, how to make a sugar test. When he is sugar-free he is kept on this diet at least one day, to make sure, and then he is started on the second objective. Let the pancreas rest for ten days. During that time, however, since there has been protein starvation, give the preference to additions of protein. A practical rule is to build up the protein until there is 1 gm. of protein for every kilogram of body weight, with only such fat as can not be separated conveniently from the eggs and meat given. If at the end of a week, in a mild case of diabetes weighing 60 kg. one has succeeded in introducing 18 gm. of starch and in adding 60 gm. of protein and 40 gm. of fat, one is in position to begin to build up the calories, which is the third objective. Frequently at this stage Woodyatt prefers to put in first more carbohydrate, then more protein, then more fat. The total caloric allowance should be on a basis commensurate with the individual's physical activity. Having the patient in a protein equilibrium, caloric equilibrium, and still consistently sugar-free, the fourth objective is to ascertain his tolerance. For that purpose Woodyatt usually relies on straight white bread, because its composition is fairly uniform. Of that he administers 25 gm. additional every day or every other day until he finds an amount which is just sufficient to produce a recurrence of glycosuria. Having obtained that, he is again desugarized, making a total subtraction of the bread so as not to delay desugarization. The patient is then systematically taught how to vary his diet at home and still maintain the same balance. Patients do well and refrain from breaking their dietaries when they know what they are trying to accomplish and have been thoroughly taught how to carry out their own treatment in their own homes with the implements and materials and under the conditions that they find there.—*Journal of the Missouri State Medical Association.*

Lupus Erythematosus.—Small has found the following method applicable to nearly every case of lupus erythematosus. It has been used for years at the Edinburgh Dispensary for Diseases of the Skin. After gently washing the part with ether and allowing it to dry, it is vigorously rubbed with a mixture of ac. carbolic. liq. 1 part, ac. lactic fort. 4 parts, by means of a glass rod. It is necessary to use only a few drops at the time. The rubbing is continued until the part is practically dry, which usually requires two or three minutes. If there is no discomfort the patient is to leave the part alone; if slight irritation develops, he is directed to apply vaseline constantly. A slight inflammatory reaction follows this treatment immediately, and in a few days desquammation takes place, leaving the area pinkish and relatively healthy. When exfoliation is complete the application is renewed, not oftener than once a week. The appearances and chronicity or acuteness of the disease govern the frequency of application. Too frequent application may give rise to ulceration, with unfortunate results. Improvement follows one or two treatments, and if these are persisted in the ultimate result is quite satisfactory.—*British Journal of Dermatology.*

Subcutaneous Injections of Camphor in Influenza.—A. D. Gorman reports that in a certain large stationary hospital in France during the severe influenza epidemics, he gave, almost as routine, intramuscular injections into the gluteal region of camphor in oil, gr. v. in *m* xv, every four hours, without untoward results in a single instance.—*British Medical Journal.*

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MOBILIZATIONS IN INJURED, INFECTED, AND FRACTURED JOINTS.

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NEW YORK.

THE most valuable acquisition that the surgery of the war has given us is the Willems method of treating joint lesions, whether aseptic or infected, by immediate, active, and continuous mobilizations. To accept this method in civil practice, as it must be, will mean the complete revolution of the old, firmly established dogma of the necessity of immobilization in all joint injuries. This change can be effected only by the demonstrated superiority of this method over others in the successful treatment of the vast number of severe injuries of joints which occurred during the war. Willems gives the figures in regard to the final outcome of his treatment in 100 consecutive knee cases, eighteen of which were accompanied by a purulent synovitis of a virulent type, chiefly streptococcic. Among these 100 patients there were no deaths and no amputations. There was one resection, and there were two stiff joints. These are very striking and remarkable figures. In comparison, the results obtained in one evacuation hospital of the American Expeditionary Forces (which I know of) suffer markedly, due to the too early evacuation of patients, which necessarily resulted in immobilization, and the half-hearted attempts at mobilization. Of eighty-two patients with knee injuries, sixteen became infected, nine died, three had amputations, seven suffered complete ankylosis, while in one case resection was performed. The Willems method must become the rule in civil practice if we are to reap its benefits, and if we are to decrease the "bone setter's" clientele. The material on which the "bone setter" thrives should never exist. The formation of more than temporary adhesions in acute joints should be practically eliminated by the regular practitioner. The two great friends of the "bone setter" are fixation by splints and rest, while his greatest enemy is the treatment of recent injuries by mobilizations.

Pathology.—Let us examine the changes which take place in a joint, such as a knee, which has been immobilized for some time (Mennell[1], Alexander[2]). Adaptive shortening of the quadriceps takes place due to the wasting of its muscle fibers. An elastic, connective tissue sheath surrounds each muscle fiber and each group of fibers. The sheath loses its capacity of elasticity when its function of shortening and lengthening is in abeyance for any length of time. Restoration of function alone restores this lost elasticity. In addition, there is considerable shortening of individual muscle fibers which become partially degenerated. Cells in this state tend to be replaced by fibrous tissue which further shortens them. The individual fibers are surrounded by lymph spaces which drain into lymph capillaries and this lymph is coagulable because it contains fibrinogen and thrombin. Coagulation will, in consequence, result from those influences which cause clotting of the blood, such as trauma, septic foci and stasis. The fibers become glued together by these coagula, and intramuscular adhesions are formed. A certain degree of regeneration goes on, but these young muscle cells will survive only if function is maintained. If not, their failure to live will only increase the amount of fibrous tissue formed. Therefore the quadriceps, for example, after prolonged immobilization is a muscle which has become shortened, has practically lost its contractility and extensibility, and is pervaded throughout with fibrous tissue, gluing the fibers together, and, to a large extent, actually replacing the muscle cells. The lymph spaces are filled with coagula and detritus, due to stasis of the circulation. The ligaments, tendons and capsule about the joint suffer the same changes as the muscle, they lose their elasticity and become shortened. In addition, there may be the scars of healed sinuses reaching to the bone. This is a picture of a muscle which results from the atrophy of disuse. In the neighborhood of a fracture and about each sinus the muscle is glued fast to the bone by dense scar tissue. Consequently, after prolonged immobilization, there are periarticular, perimuscular, and intramuscular adhesions with contracted and imperfectly functioning muscle cells. To these may be added lesions within the joint leading to fibrous bands and to erosions of the cartilage, the results of trauma and sepsis. Most of these changes can be eliminated by proper mobilizing methods instituted at the earliest moment. Willems' mobilization treatment, it must be remembered, is applicable to *acute* conditions only, at their very inception. It is intended to prevent the shortening and inelasticity of the muscle fibers and sheath, to forestall the formation of fibrous tissue, to prevent the coagulation of the lymph through stasis, to maintain the nutrition, and, in the septic cases, to facilitate drainage. Because it is impossible to carry it out alone, Willems' treatment is of no value when there are firm adhesions in the joint, when shortening has taken place in the muscle and periarticular tissues, and when atrophy of the muscle has occurred. It is then too late to apply Willems' method, and other measures must be instituted. Some have condemned his method because they have applied it in the

chronic cases and have not obtained the results with it that they expected.

I shall divide the subject into the mobilizing treatment (1) of the acute cases (*a*) aseptic, (*b*) infected, and (2) of the chronic cases.

The Acute Cases.—In general the Willems treatment is the same, except for the preliminary procedures, whether a joint lesion is infected or aseptic. In the case of recent injury, one should excise the contused and infected soft parts, extract foreign substances, remove the rough and dirty edges of the bony wounds, extract detached bone fragments, wash out the cavity, and completely close the synovial membrane. In an infected joint one must perform an arthrotomy by appropriate incisions and leave the wounds open without any tubes or drains into the joint, and no splints are to be applied. Following these preliminary procedures, the technique in the two types of acute cases is the same. To obtain results one must absolutely follow the methods which Willems has so carefully and successfully worked out in a large number of cases.

Technique.—As soon as the patient has recovered from the effects of the anesthetic, he is made to move *actively* the affected joint as much as he will. No passive motions are ever employed in any stage of the treatment in the acute cases. The patient will only move the joint *actively* to the extent that no great amount of pain is thereby caused, hence no additional trauma will be produced. In the case of the knee, the hands of the patient grasp the thigh, and lift it from the bed, thus flexing the leg on the thigh. A useful, supplementary method is to place a small pillow under the thigh and to allow the leg to hang from this, very shortly gravity will overcome resistance to motion. Thereafter the patient is made to move the joint *actively every two hours*, day and night. The first two or three days are the most important time in which to carry on these movements, since they are then made before inflammatory reaction has taken place. Stasis with its coagulation of lymph has not occurred, and consequently the movements are almost painless. At first the range of movements is slight, largely from fear of pain, but as this is felt to be groundless, the range of motions is rapidly increased by the patient himself. The more nearly continuous the movements are made, without muscular exhaustion, the better for the patient. It cannot be too strongly insisted that the movements must be begun just as soon as possible after the effects of the anesthetic have worn off, for when stiffness has once set in, then the difficulty of mobilizing the joint is much increased and the pain is much greater, due to the inflammation set up around the ruptured and traumatized new fibrous tissue.

In an aseptic joint lesion, a complication will very frequently set in on the second or third day, which demands a thorough revision of the previous method of treatment. It is the collection of serum in a joint. This used to be treated by splints and immobilization; but this method is now obsolete, as it should be in any case of acute or chronic synovitis (hydrops) of a joint. The mechanical influence of the fluid alone, and not inflammation, causes the abolition of any possibility of motion of the joint. The fluid should be at once removed by aspiration, when motions will be found to have returned as before. The active mobilizations should immediately be continued as though there had been no collection of fluid in the joint. Aspiration may be required a number of times. Bacteriologic examination of the fluid will detect the onset of infection. This method of treating "acute or chronic water" in the knee, from any cause, is beyond comparison, superior to our old immobilization treatment in its results; and it shortens immeasurably the duration of the effusion. On the second or third day, following an operation on a joint, the patient should be made to walk without crutches. It will be noticed that nothing is said about massage. If active motions are carried out conscientiously from the start, there will be no absolute necessity for massage, though this is a very useful adjuvant. Electricity and baths have very little place in treating acute joint lesions. In infected joints, active motions are the best means of obtaining adequate drainage. With each muscular contraction the synovial surfaces are brought in contact and all the pus is thoroughly forced out of the joint. If adequate exit for it is provided, the pus may often be seen ejected through the incision openings in spurts coincident with the muscular contractions. No irrigations are to be used and no drains. The dressings are to be changed only when they are soaked. With such treatment from the start, the pus does not burrow along the soft parts, the cartilages remain uninfected, as do also the bones, and there is little absorption into the circulation of septic toxins because the drainage is efficient, hence the constitutional effects of the sepsis are almost nil. There is none of the profound exhaustion that we see in patients treated by the immobilization method. Amputations are most infrequent. There is no necessity for any complicated incisions, such as the U-shaped incision cutting the ligamentum patellae, because drainage through simple incisions is amply sufficient, provided active movements are frequent enough, early enough, and are thoroughly carried out. Pain is never severe enough to prevent active motions if the movements are begun *immediately* after the operation. Later patients soon learn that the surest way to overcome pain is by making the motions, since by this means the best evacuation of pus is accomplished. True pain is only present when the drainage is insufficient, whether the fluid is sterile (hydrops) or infected. In the case of hydrops, drainage is accomplished by aspirations, in suppurative arthritis through appropriate incisions aided by the compressive effects of the muscular contractions. A very great advantage of this treatment, in the septic cases, is the simplicity of the dressings. No drains and no irrigations are used, hence great comfort to the patient is thereby afforded.

If mobilizations have been demonstrated to be effective in the very severe joint injuries of war, surely that method of treatment will be even more effectual in the much less severe injuries of civil life. In comparison with joint war injuries, those seen in civil life are child's play.

There are but two contraindications to the mobilizing treatment, as outlined above. These are:

1. Primary destruction of the ligaments and of the articular capsule. Here there is too great mobility and muscular contractions will only produce

deformity or dislocations. When the destruction, however, is only partial, mobilizing methods may still be applied.

2. Intra-articular fractures in which the fragments will be displaced by the motions, thus causing a dislocation. One should be thoroughly convinced, however, that such displacement will be produced before depriving the patient of the great advantage of the active movements. It would be well to ascertain, under the fluoroscope, the effect of the active motions on the fragments before interdicting them. Without such control it is easy to assert that displacement will occur, as a consequence of the deep-rooted but usually groundless fear of mobilizations.

Summary.—The lessons learned in the war through the use of Willems' mobilizations must be carried over by the surgeons to the treatment of most of the acute lesions of joints in civil practice. Thus:

1. The best treatment of hydrarthrosis has been already outlined.

2. After the removal of semilunar cartilages, or joint mice, the active motions should be instituted at once, immediately after the effects of the anesthetic have worn off. There need be no fear of any deleterious influence on the incision if this is properly repaired after removal of the cartilage. A continuous catgut suture closes the synovial incision edges and the overlying tissues are brought together by interrupted silkworm gut sutures, which should not be removed for twelve days. I have used this technic in half a dozen patients, instituting the active motions at once without splinting. Half of my patients have had to be *aspirated.* One patient drained sterile fluid from the joint for a week through the incision which opened of itself. Careful sterile dressings prevented any infection of the joint and the active movements were gone through with as though the joint were not open. The good results were astonishing in all cases. From a two to four months' disability, as would be the case under the old immobilization treatment, the time was reduced to a month at most, when full motions were obtained.

3. The joint incisions, after foreign bodies have been extracted, should be completely closed, after thorough lavage of the cavity with physiologic sodium chlorid solution followed by pure ether. The edges of the bruised and infected wound of entrance should be first excised until healthy tissue is reached. No drainage of the joint should ever be used in operations for the extraction of foreign bodies performed immediately following the injury. Drainage simply invites infection. A closed joint will take care of infection much better than we had any idea of. The Willems' mobilizations as just outlined should be exercised immediately. Aspiration of hydrops into the joint will probably be required, possibly a number of times. Rising temperature and local inflammation will presage the onset of infection. Streptococcic infection will require immediate opening of the wound, but no drains should be inserted. Willems' mobilization from the start, and walking should be carefully carried out. After a few days, if the temperature does not subside, and there is great and continuous pain, the drainage is not sufficient and the original wound should be enlarged. If the infection is produced by less virulent organisms than streptococci, the joint may be aspirated by means of a trocar and cannula, every other day, and washed out. A fall in the temperature will indicate subsidence of the infection while its increase will require opening of the wound and drainage without tubes. The best drainage is accomplished through adequate incisions by means of active, faithful mobilizations combined with walking without crutches.

4. Septic joints arise as complications of pneumonia and various other acute infections, as well as trauma. Streptococcus infections also occur as a result of acute traumatisms, direct or indirect. Direct contusion is a frequent cause, while severe twisting of the knee is an indirect cause, an instance of which is a soldier's falling into a shell hole and giving the knee a bad twist. Cases occur in which there is no ascertainable trauma nor any demonstrable general infection.

Duval[7] says, "The defensive reaction of the synovial membrane to infection is much more efficacious than that of other tissues, seeming to possess a bactericidal power; for, when a penetrating joint wound is examined bacteriologically a few hours after the receipt, bacteria are found in the skin, muscles, aponeurosis, and torn synovial edges, but the synovial fluid and the blood remain sterile for from twenty-four to sixty hours before the septic arthritis begins. The cavity thus remains aseptic for a considerable period while the parasynovial wounds are contaminated. During this intermediate period operation should be performed without delay, excising the contaminated tissues, including the bone and synovial edges, and finishing by complete closure of the wound without drainage. With this treatment most wounds will remain aseptic." Should septic arthritis follow, the treatment by reopening the wound and active mobilizations, as already outlined, should immediately be instituted. In neglected cases additional incisions may be necessary. One of the most valuable incisions for draining the popliteal space has been worked out by Major Abbott.[3] It consists of about a 4-inch incision along the inner and posterior border at the upper end of the tibia. This is followed up through the space under the incision of the popliteus into the knee joint and drains one of the synovial spaces in the joint that is most dependent and most difficult of access. This incision may be extended upward over the back of the internal condyle. By keeping in close contact with the bone the entire popliteal space can be drained with much less risk to the vessels than through the posterior incision.

Major Everidge[4] has devised a counterpoised, simple suspension splint which allows easy bending of the knee for use in mobilizations of suppurative arthritis of knees.

6. Fractures of the olecranon and patella have been treated usually by prolonged immobilization. This has produced a long disability caused by subsequent stiffness in the joints. Willems has overcome this by his early mobilizations. He encircles the fragments by a buried suture of silk or silkworm gut and brings the edges of the tears in the lateral tissues together by sutures. No splints are applied subsequently. Active, gentle motions are soon begun, but walking, in the case of a fractured patella, is delayed for ten days.

In fractures, generally, we are happily getting away from the prolonged immobilization previously throught necessary. Dowden,[5] who was a surgeon in charge of a 300-bed hospital for three years during the war, goes so far as to assert that splints are not necessary in the treatment of any fractures of the scapula, clavicle, and humerus. After the first three or four days the extremity is suspended in a sling alone. He has been treating these fractures in this way for twelve years with astonishingly good, final results. The method deserves greater recognition in selected cases.

The old method of treating fractures, generally, was to immobilize the joints above and below the seat of fracture as long as splints were deemed necessary to hold the fracture point. This resulted in a long disability, due to stiffness in the joints, and prolonged discomfort, attendant on efforts to mobilize them. The new and far superior method of treating fractures is to endeavor to immobilize the fracture point, but to leave the joints above and below free so that motions can be maintained in them. In the lower extremity the hinged extension splint suspended in a Balkan frame allows this to be accomplished admirably. In the upper extremity suspension in slings from a frame with traction by weights to the required extent, and in the proper directions, gives far better results than any other form of treatment, and is more comfortable.

Chronic Joint Adhesions.—The "bone setters" offices are filled with patients with chronic joint adhesions. The "bone setters" flourish because of the treatment injured persons receive, not because the patients have suffered injuries. Properly taken care of from the start with appropriate active mobilizations, few injured joints will become more than temporarily stiff. Mennell[1] has written a very instructive article on "The Practice and Results of Forced Movements." I wish to quote freely from this monograph and to acknowledge my indebtedness to him. There are neglected cases, also there are other cases in which adhesions will develop, whatever we do, in the presence of sepsis. If these form, it is very necessary to know how subsequently to handle them successfully. We must learn this method by imitating the "bone setter" in his work, and become familiar with the rules for the administration of forced movements, usually under an anesthetic. As has been previously shown, adaptive shortening of the whole muscular mass, including the sheaths, tendons, and ligaments has taken place, abolishing elasticity. When adhesions are present with limit of motions, the range of movement is only that allowed by the adhesions, while beyond this limit elasticity is lost. Mennell says, "When the patient has been anesthetized and movement has been performed through sufficient amplitude to rupture the adhesions, all further attempts at movement will tend to place undue strain on the fibrous tissue which has suffered impairment of its extensible properties, owing to disuse. Forced movement through the full anatomical range may thus inflict severe injury on the fibrous tissue that has lost the elasticity which is essential for the natural performance of the movement." He attributes the failures in his early work to: (1) Lack of knowledge of what the natural movements of the joint are, and (2) to a tendency to do too much.

Rule in Forced Manipulation under Anesthesia (Mennell).—No further attempt at movement is to be made in any direction when once a definite adhesion has been felt to give way, because, if so performed, injury will be inflicted on the fibrous tissue which forms a large bulk of the muscles which oppose the movement. Movements in other directions should be continued. The rupture of a pathologic adhesion is practically painless, and the local reaction is mild, but if the motion is carried beyond the limit set by the adhesion there will occur a severe inflammatory reaction due to the stretched and torn fibrous tissue in the muscular masses. If the motion is not carried beyond that allowed by the ruptured adhesions there will be but little subsequent interference with function. With active and gentle passive motions afterward, the lost elasticity will be restored up to the limit allowed by the next adhesion. The criterion of success after the manipulation should be that the patient has increased function; loss of function indicates error in technic. After a week or two a second manipulation again under an anesthetic should be undertaken, when an adhesion higher up is felt to give way. The "bone setter" arranges, from the beginning, for a series of manipulations. His plan is sound and deserves imitation. "Festinate lente" should be the rule. The grip in making the manipulation should provide as short a leverage as possible. The aim is to rupture an offending adhesion and *no more*, and should be done by a single, sharp movement rather than by a slow, gradual tearing, and should be checked at once as soon as the rupture of a single adhesion has been accomplished. A great error in technic is to give a succession of ineffectual tugs on the offending bands. As soon as the effects of the anesthetic have worn off,[6] the patient actively performs the motions which have previously been limited. If the movement is accomplished with more freedom and with less pain, the forced manipulation may be regarded as successful. If motion is more limited, and if the pain lasts more than a few hours, the manipulation may be regarded as having been too strenuously carried out. No period of rest after the manipulation should be required on account of pain. If rest is necessary, the good result may be in doubt. Functional use of the limb will rapidly restore elasticity up to the limit allowed by other adhesions. These must be ruptured by successive manipulations under ether.

For the appropriate movements of individual joints, I would advise consulting the monograph of Mennell.

Robert Jones[6] says that certain symptoms, following manipulation and passive motions, indicating injurious strain, may thus be formulated:

1. If pain occurs after manipulation, and is of short duration, movements may be continued.
2. If pain persists for long periods after manipulation, *rest* is indicated.
3. If the increased range of movement is maintained after manipulation, further movements can be prescribed.
4. If in spite of movements, even in the absence of great pain, the range is continually diminishing, rest is indicated.
5. The duration of pain when tissues are relaxed,

rather than its intensity, should be our clinical guide.

6. In overcoming adhesions and in subsequent manipulations, the joint should be put through its movements only once.

7. Voluntary movements can be safely allowed and should be encouraged since they are not followed by obstructive reaction.

The writer wishes to acknowledge his indebtedness to the authors mentioned below in the reference list. He has taken the liberty of quoting freely from them and makes little claim to originality in the preparation of this article. It was thought well to bring to the attention of the profession the salient points necessary in the mobilizing treatment of injured joints, both acute and chronic.

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19 EAST SIXTY-FIFTH STREET.

DILATATION AND PLICATION OF THE CAPUT COLI.*

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IN an examination and comparison of urines that should be made a preliminary to any preparation for operative procedures upon colonic faults, or in the time of a prefatory survey of the conditions in a given patient, it is surprising to discover that there may be no relationship whatever between the extent of dilatation of the caput coli, the degree of displacement of either kidney or colon, and the amount of renal damage. Colonic traction upon the renocolic ligament will dislodge the kidney from its shelf in time, and one fairly constant accompaniment of colonic misbehavior is a faint trace of albumin in the urine, which trace may or may not prove to be introductory to additional signs of simple kidney irritation changing to a pathological state.

Should the colon be firmly adherent to the abdominal or to the pelvic wall or to both, then the colon bacillus is apt to manifest itself in the urine with the accompaniment of indican, etc. But even so the first contemplation of any supposed cognation between colonic condition and urinary evidence was most confusing. Some patients possessing a small relaxed colon would pass a urine that upon examination would reveal a most alarming renal condition. Which disclosure demonstrated only too clearly that the work of the kidney was being performed under a very considerable stress. On the contrary, aberration and abnormal activity of the caput were pictured by actinogram, fluoroscope, and photograph; but were not necessarily accompanied by anything in addition to a faint trace of albumin in the urinary verdict. Thus many cases of colonic stasis were not attended by the presence of the colon bacillus in the urine, while a fixed and more or less inflamed colon had a collateral urine that displayed that germ in more or less profusion together with the usual manifestations of intestinal toxemia.

Nor was it any less confusing to receive two detailed laboratory reports. One stated that the urine was normal save for its infinitessimal amount of albumin. The other report amplified the general statement that examination of the feces revealed "a highly acid, highly toxic stool." Both reports were made of the same patient's condition, both were made at about the same period of time, and both arrived in the same mail, though from different sources.

The aforesaid incident very naturally reminded the present writer of an interesting period in his medical life when the leaders of the profession indulged in much heated controversy as to a possibility or impossibility of rectal feeding. Learned colleagues stated that it could not be accomplished; but others equally learned asserted that the thing was an accomplished fact. Opponents of the method laid much stress upon the anatomy and physiology of the colon, upon the absence of Villi, upon its unbroken lining of columnar epithelium, and upon its complete lack of any sort of absorbent. The whole matter was finally adjusted because evidence was forthcoming by which it was shown that retained alimentary enemata passed through the ileocecal valve and thus gained access to the absorbents of the small intestine. The result, of experimentation that interests us here, is the unanimous conclusion that there must be some abnormal change in the colonic epithelium if intestinal contents could possibly pass through it; for under ordinary conditions of health that epithelium would stand like a barrier against the invasion or absorption of any intestinal contents whatever. Furthermore, the only way that guardian shield could be evaded was by a retrogressive flow through the ileocecal valve.

So far the reasoning of former days appears confirmed in every colonic case that has been studied in this connection. If the caput coli was to blame for the appearance of intestinal products or germ life in the urine, then there was to be found an origin or entrance located by a damage to the colon, or there was an incompetent ileocecal valve, or there were both conditions. Such lesions of the colon or faults of valve are discernable through careful palpation when an abdomen is explored. In Webster's "Diagnostic Methods," page 589, may be found these words of corroboration: "So long as the intestinal epithelium is unimpaired the colon bacilli do not

*Second paper.

pass into the organs or into the serous cavities of the body."

In the case of those patients from whose urine intestinal products have disappeared after colonic plication, either damaged epithelium was covered inadvertently through the manipulations of the operator; or else matters were restored to the normal so nearly that the epithelial lining of the colon was enabled to assume again its barricade function through a process of self-repair.

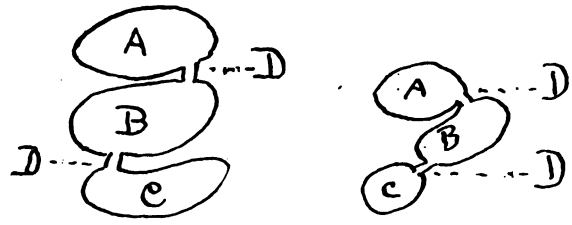
However, the point to be emphasized is that the urine is no dependable guide to the presence or absence of necessity for urgency in plicating the colon. Even with the most abnormal colonic conditions the urine may reveal but a 1 per cent. output of urea together with a more or less constant but trivial albuminuria. The urine, the fluroscope, the opaque enema, and the actinogram, when combined in examination, may corroborate the revelations of each other so as to warrant an assertion that colonic repairs should be instituted at once. Whereas the absence of urinary findings merely shows that absorption or penetration is perfectly arrested by an intact epithelial barrier; and this no matter how much the actual form, the capacity, or the activity of the caput coli itself may depart from what is considered its usual state.

Many patients who require plication to relieve pain or other physical handicap have already been operated upon for some abdominal trouble, the sequelæ of which condition may render the caput coli rather difficult to find. Possibly it may be on the left side of the abdomen. Fortunately the longitudinal tæniæ form what is known as the tænial loop, which is not unlike that made by looping a piece of rather thick string. This may be felt by taking hold of the extremity of any caput coli with a crooked forefinger. It makes small difference whether that finger hook is pushed into the loop from one side or from the other; but if there is a choice perhaps the best method is an introduction that shall carry the posterior colon wall forward (upward) upon the finger tip, while the adjacent palmar surface of the same finger gently lifts the loop. Recognition is easy, the loop feels to the touch just as might be supposed in advance, and it is as unlike any other abdominal structure as possible. In fact, it is quite credible that skill from practice might make one so certain in placing the colonic loop that visibility, light, or darkness might become secondary considerations.

One need not drag upon the loop nor do anything foolish with it; but if he once becomes so familiar with it that he can get his finger hooked into it quickly, then it is very easy to push aside the ileum or other structure with a finger or two of the opposite hand that may be made to approach and clear the way directly to the finger-held loop without loss of time through visual search; and this whether the caput is adherent, or non-deliverable or not, for the loop remains a true guide to the caput, to the appendix, or to the stump that is left by a previous appendectomy, while the rubber-covered finger represents a maximum of gentleness when instrumentation is under consideration. It follows that the whole procedure is devoid of danger while it makes for less trauma by rendering laparotomy pads, sponges, their friction and pressure unnecessary.

One complication that is often found in colonic difficulties is due to back pressure that arises from obstruction caused by sharp or acute angulations in the sigmoid. When such is the case the rest of the colon is more or less distended with its transverse portion hanging in a festoon or loop that is below its usual level, in the upright position. After this condition has endured for some months or years the patient often begins giving a history of retained enemata. Much as though the angulations allowed the enemata to flow inward, but after that they took upon themselves the action of a check-valve and prevented any outflow. The cases referred to show capitally on a photo enlargement of a radiogram; but the reproduction here is better given by a mere outline without confusing or unnecessary details.

It is to be understood that these show anterior surface with the bend anteroposterior but the one-sided contraction is a curious mechanical obstacle to efficiency. These pictures are both from the same patient who had a colonic atonia little short of paralysis or complete inertia. The patient was watched carefully until his weight increased by seven pounds and then a well-vaselined lampwick tampon was inserted into the rectum, was worked carefully through the angulations and was left in position as any drain might be left. The longest



1 2

Angulations of the sigmoid; 1, anterior view; 2, left lateral view; A. B. C. segments of sigmoid; D. a sharp angulation with its contraction.

time that it remained where placed was 40 hours, with 28 to 30 hours as the usual. It drained fecal matter down into the ampulla so that when it did come away there was an average loss of seven pounds in weight before the bowel movements ceased again.

With the help and advice of Dr. Frink and the staff the writer repaired this colon at the Knickerbocker Hospital. After an appendectomy the colon was plicated, the ileo cecal valve was made tight, and then the rectum was dilated to its maximum extent so far as safety would permit. At this time the bowels moved freely, copiously, and with what the staff and nurses termed "projectile force."

This was a decided contrast to what they all knew of the case, because the day before operation an enema had been given without result. This was followed after a time by a second enema; but both first and second remained invisible or where they were put. It was all much as though rectum and colon were absolutely inelastic. After the bowels had ceased moving upon the operating table, the rectum, etc., were carefully tamponed. The patient promptly started upon what was euphemistically referred to as a very ambitious scheme of house cleaning, with much changing of bed linen. The nurse marked the chart as one dejection; but "going on all the time," as for the tampon it was not found because "we did not dare look for it"; but the

patient's complexion changed in appearance for the better with an improvement from his previous toxic state that showed almost from the minute that the operative work was completed. His temperature never reached 100°, he was sitting up in a chair on the fifth day, and he went to his home in good condition on the eleventh day. Therefore his recovery was what might be called "uneventful."

The resident physician did marvel "who was ever going to get that tampon out?" However, there need be no substantial worry on that score. There was no doubt in the minds of those present as to what the sigmoid with its angulations and their curious contractions would do or what they had done when the opaque enema had been introduced and photographed, some months before. Dr. Frink had seen the patient once upon a time in one of the Navy Hospitals and according to his recollection it was a general opinion that operative measures were not so very promising of success in a case of such long standing and with so pronounced an atonia. But when the doctor saw the patient again at the Knickerbocker he was quite surprised at the general improvement in appearance and in condition that had resulted from a year or more of purgative tamponade which had been employed about once a week during the elapsed time.

This tamponade is an old expedient. Its technic is as follows: A rather large gauze packer is selected; it is dipped into yellow vaseline so as to fill the lumen of the tube and then the filled tube is carefully worked up as far into the bowel as it may safely go. Anyone who has seen what an immense amount of bowel length may be strung upon a glass rod will understand that the depths, attainable by the process known as packing, depend largely on familiarity and care in the employment of that process. The soft metal packer may be bent in any desired direction; but after it is properly placed a strip of gauze two inches wide and twenty-four inches long may be inserted into the tube and may be pushed through with the stylet in the usual manner so that the gauze strip shall travel clear of the tube and shall be left in the bowel after the tube is withdrawn. The operator's finger is then inserted beyond the sphincter area and adjusts the previously inserted strip so that none hangs down into that area and so that the whole strip is above the internal sphincter and outside of the grip of its contractions.

It will be found true upon observation that the patient often does not know when the aforesaid strip passes owing to the mushy, soppy condition that obtains. The patient usually insists that he has had a bowel movement, but he is equally positive in his assertion that the strip did not come away along with that movement. If the attendant has any doubt on the question an examination of the rectum will remove it, because the fact is that the strip and first stool after placement pass out together; as any patient on the lookout will find, just as any patient not on the outlook will miss finding.

The longer the gauze remains in situ the better will be the result. It will rarely remain 48 hours, no matter how much one may wish to keep it in the bowel. Though it must be understood that the purgative tamponade is not intended as a substitute for either enema or purgative, but is a means of procedure with indications of its own. Within its limitations it has often proved itself an exceedingly useful expedient.

Dilatation and impotence of the caput coli are not synonyms, for it would seem as though an incredible amount of stretching of the circular fiber and bands may take place in the presence of splendid, thick, glistening, pearly, and altogether healthy longitudinal tæniæ. For the latter, in spite of an appearance of flawless soundness, will permit bulging of the napkin ring structures to the stage that the writer has denominated semi-hernia. The state of colon to be most feared, however, is the non-struggling, indifferent, and inelastic one, where tæniæ have atrophied or almost disappeared so that colonic action has become very sluggish indeed. In other words, the distended, but active and fighting colon is not at all so difficult to remedy as the placid, flaccid, indifferent, but smaller or less distended one, so that the stretched rubber-band condition gives a much quicker convalescence than does the flabby or wet dish-rag state. The stretched elastic colon wall returns so quickly to its normal when its thinned bulge is repaired and reinforced that the quickness of result is incredible even to beholders. Take the patient referred to in this paper. His letter written two weeks (14th day) after operation states that he has a daily movement before breakfast. This was a man accustomed to a perfect orgy of purgatives, yet without medicine he has an "alarm-clock" movement. To quote: "I met my doctor on the street to-day and he was surprised at the success thus far and also at my freedom from pain." The atonic, atrophied colon may not bulge much, but its tæniæ are hard to find and its postoperative return to activity is slow indeed. So that three months may be allowed as a reasonable time. It follows that, when the evidence warrants a colonic plication, that operation should be performed at once lest the conditions pass into the passive state of exhaustion and inelasticity.

Retro- and intra-peritoneal bodies are akin to enteroliths and though not at all rare they do not show well upon the actinogram unless they contain considerable calcium. If they are free and can be easily removed then their removal is advisable. If, on the contrary, they are retroperitoneal in position it is good practice to leave them alone if they are not in a position to do damage. A good example among the writer's cases has this *x*-ray report: "Two shadows appear in the pelvis, in the median line at the level of the fifth lumbar body and upper sacrum. Due to calcific deposits in abscess, tumor, or cyst." These were retroperitoneal, were quite movable and appeared to have plenty of room. One was on one side of the spine, one on the other. An attempt at removal, in view of other extensive surgery in the case, was discussed and considered unwarranted. Therefore colon and inflamed appendix, which were both on the left side, were attended to, were restored to something like the conditions that were desirable; but the calcific masses were left in situ, while a good and uneventful recovery took place. After all, the great interest that attaches to the abdominal stones is the error of non-recognition by radioartists, so that these bodies are reported as renal calculi, or, in fact, as almost everything imaginable except what they truly are.

Finally, there appears to be no more constant

accompaniment to colonic urinary evidence than the presence of ova of the eutozoa in the feces. Whether the eutozoa will damage the colonic epithelial shield depends solely on the resisting power of that particular shield.

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SURGERY OF THE NECK.*

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Interest in surgery of the neck has been greatly stimulated in recent years by three major factors. These are: (1) A workable understanding of what structures may be attacked or sacrificed; (2) a more intelligent appreciation of the lymphatic anatomy and drainage; (3) the brilliant development of thyroid surgery.

We have gradually come to know that one or both sternomastoids will not be seriously missed by the patient. Other muscles like the omohyoid, sternohyoid, sternothyroid, and digastric, when sacrificed, have their functions so largely assumed by other muscles that the deprivation is soon not a great inconvenience. The internal jugular vein on one side may be removed with impunity. The opposite jugular also may be sacrificed after a reasonable interval for the enlargement of collateral vessels. No apparent embarrassment follows the simultaneous ligation of both external carotids, though it is to be remembered that if the ligature be applied too near the bifurcation the clot in the stump may be dislodged and carried to the brain via the internal carotid. The necessity permanently to ligate the internal or common carotid is regretable—and fortunately rare; the risk (cerebral softening or hemiplegia) is much greater in the second half of life. Total ablation of the cervical lymph nodes entails no obvious ill effects. Unilateral section of the vagus, phrenic or hypoglossal nerve is unfortunate but by no means necessarily fatal. Comparatively few neck operations, however, seriously expose these nerves to injury, assuming even ordinary caution on the part of the operator. Their bilateral injury is a surgical calamity.

Vagus irritation causes more disturbance than unilateral section, varying from no effect to tachycardia, slow respiration, unilateral laryngeal paralysis, nausea and vomiting, dyspnea, and rarely death from heart failure of pulmonary congestion. Bilateral vagus section causes death by paralysis of the glottis and laryngeal muscles, cardiac exhaustion, respiratory failure, pulmonary edema, or pneumonia. Section of one phrenic allows relaxation of one-half of the diaphragm with collapse of the related lower lobe of the lung; partial compensation through intercostal nerve supply follows. Keen observes that section of both phrenics would probably not be fatal in man. Section of both hypoglossals usually results in fatal aspiration pneumonia. Section of the spinal accessory causes some drooping of the shoulder from trapezius paralysis, but the patient accommodates himself to the deformity without much inconvenience. The branches of the cervical plexus which skirt the posterior border of the sterno-mastoid are sensory and can be destroyed without permanent abnormality.

It is apparent, therefore, that under necessity almost any or all, of the paired neck structures may be removed on one side, and that many of them may be removed on both sides. Indeed, there is now no neck structure which is beyond sensible surgical attack.

It is perhaps not too much to say that the profession—even the surgical profession—does not fully appreciate the fact that the lymphatics of the neck converge to form one large trunk on the right and one on the left. On the right no lymphatic drainage fails to enter the right lymphatic duct; none passes onward to the throax or axilla or elsewhere. Likewise on the left, all the drainage from the lymphatic vessels of this side meets to form a single trunk which enters the thoracic duct; none drains beyond in an accidental or purposeless way.*

However relentless nature may be in penalizing the cervical glands in the ordinary course of such affections as malignancy about the face or mouth, and tuberculous invasion by way of the tonsils, she nevertheless has provided the anatomical arrangement just mentioned for surgeons to see. When we have sensed the significance of the truth that, starting at the base of the neck, one *can* remove all the lymphatics *en masse*, very much as one would an offending breast; when we reflect that, having removed all the glands and gland bearing tissue, no fear need be entertained that the operation is still futile on account of probable mediastinal metastasis—then we are justified in taking courage and doing a really helpful, though extensive, operation instead of the half-hearted and haphazard surgery which assumes a recurrence and invites failure.

In case of malignancy if one has not misjudged the extent to which he ought to carry the dissection; and if he completely removes all the lymphatics in the area of necessity there will be no local recurrence; the recurrence, if such there be, will be from late dissemination by the blood vessels. On the other hand, intrathoracic neoplasms do not drain into the neck glands. Involvement of cervical tissues secondary to such growth is explained on the basis of (1) reversal of the lymph current incident to blocking, so that the infection backs up into the inferior deep cervical glands from the thoracic duct (or right lymphatic duct) through the trunk entering it in the neck, or (2) of embolic vascular transportation—both of which are a part of the general dissemination of advanced cancer. The occasional involvement, for example, of the left supraclavicular glands in the late history of gastric carcinoma is an apparent exception to this statement; but this phenomenon is like-

* Presented by invitation before the Medical Association of Alabama, Anniston, Ala., April, 1920.

* The right jugular trunk was found by Grossman to empty into the vein without being joined by the subclavian in twenty-four out of twenty-five subjects; junction with the broncho-mediastinal trunk was still less frequent. The left jugular trunk usually empties into the terminal thoracic duct, the subclavian and broncho-mediastinal trunks emptying directly into the vein.

wise taken as evidence of dissemination by one of the methods just mentioned*

Of course it is understood that there is normal drainage from the *chest wall* into the inferior deep cervical glands, as witness the frequent involvement of the supraclavicular glands in breast cancer,

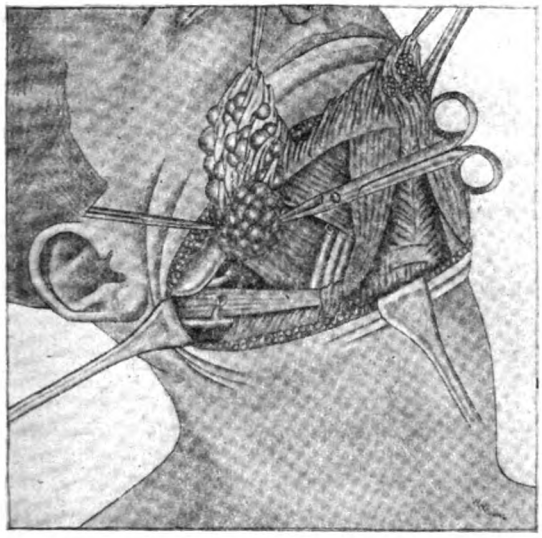

FIG. 1—Dissection of the submaxillary and submental regions.

either directly or indirectly through the axillary nodes.

Moreover, it is to be remembered that there is fairly free communication between the lymphatics of the two sides in the upper half of the neck, very little in the lower half. Likewise, while the lymphatics of one side of the tongue drain to the lymph nodes of that side they may drain also directly to those of the opposite side. This arrangement renders a unilateral resection of the upper cervical lymph glands in cancer always unsafe and always reprehensible.

Cancer of Lip.—The lymph vessels from the upper lip run to the submaxillary nodes. Those from the outer aspects of the lower lip run likewise to the submaxillary; but those from the center run to the submental modes. Now the ducts to the submaxillary glands do not asnastomose, those to the submental do (Morris.) This latter statement is significant. It renders unilateral submental resection futile; clinically unilateral submaxillary resection is extremely hazardous.

Secondary drainage from the submental and submaxillary nodes into the deep nodes is easy. In operating, if the submaxillary glands are plainly involved on both sides it must be assumed that all the deep glands are already cancerous. This, of course, at once raises the question of operability—not because the deep glands cannot be removed, but because of the probability that cancer cells have passed the last defensive line, entered the blood vesse.s, and so escaped beyond surgical reach. If operation is undertaken it should begin at the base of the neck, and unless everything is made subservient to thoroughness it need not be done. All the glands, deep and superficial, including also the sternomastoid muscle, must be removed *en masse.* The jugular vein may be resected or left. We feel that the dissection can be done a little more quickly by removing it. If it is left the utmost care must be exercised not to leave small glands lying close to it. Both jugulars should not be removed at the same time. The block dissection can usually be done more expeditiously than one would think, and in cancer cases more quickly than when we are hampered with the usually extensive inflammatory reaction about tuberculous glands.

The mere diagnosis of cancer of the lip condemns the submental and submaxillary glands on both sides. This is a rule of practice to which no exception ever is allowable. The dissection must include the submaxillary salivary glands because a few small lymph nodes are so closely associated with them that the sacrifice is necessary. The submental nodes not infrequently lie concealed by the anterior bellies of the digastrics and are too commonly overlooked (Fig. 1). Experience vindicates the leaving of the lymph vessels between the tumor and the lymph nodes. Recurrence in the tissues between the lip and the glands is extremely rare—a tribute to the view of embolic dissemination.

FIG. 2—Dissection showing removal of deep cervical lymphatics with sternomastoid.

If the removed submaxillary and submental glands are not plainly involved and do not show microscopic cancerous involvement (the frozen section being examined immediately) one may be satisfied to leave the deep glands. If the removed nodes of one side are found to be cancerous the

* However, there is about this explanation something that is far from satisfying. The natural metastasis of cancer is admitted to be embolic—not by thrombotic extension along the walls of the lymph vessels. But that cancer cells should be transported in the current of the thoracic duct (the natural course of metastasis from the mediastium or stomach) and enter the trunk draining into the thoracic duct from the supraclavicular glands *against the current,* and with no apparent reason for blockage beyond the junction, is strange. Likewise, it is incredible that *vascular* implantation should be here to the relative exclusion of other localities. Thrombotic growth along the walls of the duct is more probable.

operation must include the deep glands of that side.

Cancer of Tongue.—The lymph drainage from the tongue is treacherous.

The anterior drainage is into the submental glands by one set of vessels. There is another set which, passing the cornu of the hyoid bone, follows the posterior (upper) border of the omohyoid, and enters a node lying on the internal jugular at the point where it is crossed by the omohyoid.

The lateral drainage is into the submaxillary glands and into the upper deep glands about the internal jugular and common facial veins.

One of these latter, the "chief gland" of Cuneo, situated on the internal jugular beneath the posterior belly of the digastric, is the most important single gland to be considered in connection with cancer of the tongue, since it frequently, if not usually, receives drainage from the posterior as well as the lateral part of the organ.

The posterior drainage is into the deep nodes of the upper neck. Moreover, in the posterior half of the tongue the collecting lymph vessels frequently cross the midline so that infection from one side will drain not only to the nodes of the same side, but also to those of the opposite side.

It is evident, therefore, that in operations for cancer of the tongue we can never afford to stop with removal of the submaxillary and submental nodes, as we may sometimes do in cancer of the lip. Even when the lesion is at the tip of the tongue we must remove the deep glands as far down as the crossing of the omohyoid over the internal jugular vein. Moreover, it is never safe to leave the submaxillary or the deep superior glands on either side.

A surgical plan whose execution contemplates the removal of all the cervical glands with the gland bearing fascia and the removal of the floor of the mouth and tongue should be executed in more than one stage unless it be by an occasional surgeon of superlative skill. To attack the problem from below, so as to block lymph drainage as promptly as possible, and remove the tongue last is the better judgment.

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ANOMALOUS SIGMOID SINUS THROMBOSIS WITH REPORT OF CASES.*

By JOHN F. BARNHILL, M.D.,

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It often happens that the most difficult task of the surgeon in the conduct of an aural case is exact diagnosis. This is especially true of sinus thrombosis, which apparently may vary in its symptomatology, from the presence of all but one marked symptom to all the symptoms that occasionally feature the typical case of this serious disease. The family physician, and even the otologist, too often, no doubt, expects the full array of symptoms before strongly suspecting sinus thrombosis in a given patient. The accumulation of facts in the form of case reports and personal experiences leads to the positive belief that, should the development of even a majority of the classical symptoms of sinus thrombosis be awaited before arriving at a diagnosis of this disease, most cases would go on to fatal termination. It would seem, judging by the rather large accumulation of data on the subject, that few, if any, other serious diseases vary so much as does sinus thrombosis in its outward manifestation of clearly defined phenomena of its presence. From a partial review of the literature, and from my own experience in determining the presence of sinus thrombosis in atypical patients, it seems certain that many cases have been overlooked in the past. It probably would be helpful, therefore, to emphasize what is undoubtedly a fact, namely, that sinus thrombosis as manifested by clearly intelligible symptoms is perhaps more often atypical than classical.

Day, Friedenwald, Welty, and others have reported cases in which thrombosis was present without fever. It would seem incredible that infection of so large a blood vessel, or of its contents, could take place without high temperature, but statement of facts by these accurate observers cannot be disputed. Furthermore, a careful study of the methods of formation of the clot in the vein show the possibility of such an occurrence. Emerson has reported three cases in which there was fever, but in which the temperature was atypical because much lower than would be expected in this disease—101-102°.

Many case reports show atypical sinus thrombosis in that there is an almost complete absence of ear symptoms. The rather common belief that there must be present a discharging ear, mastoid tenderness and great pain should be revised. Especially should emphasis be given to the fact that swelling and tenderness of the neck along the course of the internal jugular vein are rarely present, and only in the late and fatal cases. In my own experience of 37 cases of sinus thrombosis mastoid tenderness has been absent in nearly 50 per cent., and in one only, a case that was septic generally, partially unconscious and near death, was there swelling of the neck along the vein. In only five of my cases have there been actual chills. Chilly sensations have usually been present, but this fact is ascertained only by carefully watching the patient, and by frequently quizzing the attendants concerning the point. Strabismus and other eye symptoms have likewise been rare. Only 16 of my patients were examined for optic neuritis, and but two of these had choked disc, a rather low percentage since Crockett reports that 25 per cent. of his cases had choked disc, while Jansen states 28 per cent. and Jobson records two-thirds of all cases.

The presence of aural discharge is not a necessary symptom, as shown by the case of Robert Lewis and others, and by the appended report of a few of my own atypical cases. Occasionally a case is met with in which the aural discharge is absent, or apparently absent, and no history of former discharge can be obtained. Numerous cases of this class are reported. I had one such case, a patient 62 years old who persistently denied ever having had a discharging ear. After long deliberation of the whole family it was finally recalled that there was a history of discharge from the ear 60 years previously, since which time hard pieces of "ear wax" were occasionally removed from the canal. A plug of material resembling ear wax was present

*Read before the American Otological Society, Boston, June 2, 1920.

at my first examination, which, on removal, was covered with pus at the distal end. The drum head and ossicles were gone, the patient was suffering from severe headache and fever, and at operation fluid pus filled the lateral sinus and jugular vein. Until my examination the condition of the patient's ear had never been connected in any way with his illness, although he had suffered many weeks.

There is another type of case in which there either has been no discharge at all, or in which the discharge has been trivial and has continued for only a few hours or days. Robert Lewis reports a case in which there was no discharge at all, and had been no discharge. The cases which I here report had each an acute and trivial otitis which lasted but a few hours or days, was then either forgotten or disregarded, and was later not connected with the serious illness which followed.

CASE I.—Female, age about thirty, while in a hospital awaiting confinement was attacked by earache which lasted a few hours and was followed by a slight serous aural discharge, which continued only one day. Childbirth followed very soon, after which the mother continued feverish and prostate for about six weeks, at which time I saw her for examination. Several physicians and one excellent general surgeon were in attendance, and from these and from the bedside chart I obtained a very complete history of the case. The patient apparently suffered from nothing except a septic temperature and the resulting prostration. It had been assumed by the physicians in attendance that the confinement had in some way caused the continued illness, but every effort to locate any pelvic or breast affection had been negative. Repeated blood count always showed a high leucocytosis, running as high as 20,000. No blood culture was made. Excellent *x*-ray plates of the head, sinuses and mastoid had been taken, which all agreed were normal. There had been no distinct chill, no unusual sweating, no headache, no eye-ground or other eye disturbance. Mentality and the reflexes were undisturbed. There was, indeed, no symptom, except fever, which ranged between 99° and 105°. After some quizzing concerning the ears I obtained the history of a slight earache six weeks previously and of a trivial aural discharge lasting for a few hours. On examination the drum-head was nearly normal and was free from inflammation. Hearing was slightly impaired. There was no evidence of any recent discharge. No tenderness was present over the mastoid or neck. All aural evidence was negative.

In view of the aural discharge six weeks previously, of the continuous septic temperature, and of the statements of trained physicians that on repeated examination no general body affection could be found, I expressed the opinion that sinus thrombosis was probably present and that exploration of the mastoid and sinus was justified.

At operation the mastoid antrum and cells were found but little if at all diseased. The sinus from behind the knee to near the jugular bulb was filled with liquid pus. The internal jugular vein was widely exposed, was ligated high up and low down, and was excised. It was blocked by a firm clot just above the entrance of the facial vein, and above the clot was creamy pus. The stumps of vein were dropped back into the wound, and, as is my plan always, the wound was closed, excepting the lower angle, where a small gutta percha drain was left for twenty-four hours. The patient made a speedy recovery.

CASE II.—Boy, aged nine, was seen first by me in a distant country home, March 12, 1916. The family physician stated that the boy had been ill about one month, and that his chief symptoms were a slightly discharging ear, a continued high temperature, and the resulting prostration. The temperature, which was recorded twice daily, ranged from normal to 105°. There was never any chill, pain, vomiting or other symptom indicative of intracranial complication. The discharge from the ear had been slight and differed in no way, as stated, from other harmless discharges which the doctor had often seen. The continued high temperature could not be accounted for. There was, the doctor was positive, no lung or other involvement that could produce the fever. The little patient had been dieted and the bowels had been cleared without effect. It was thought that the ear might be the cause, but the symptoms referred to this region were, he thought, so trivial as to make this unlikely.

At the time of my visit the appearance of the patient was septic and somewhat anxious. He was greatly wasted. He made no complaint whatever of pain. His eye and general reflexes were normal. There was no tenderness, redness or swelling in or around the ear, and no evidence whatever of mastoid or other aural complication, except the slight aural discharge. The fundus of the eye was not examined. Owing to the isolated situation of the patient no blood examinations had been made. The temperature curve indicated almost certainly a bacteriemia, and, since no other assignable reason for such infection could be found by repeated examination, my belief was that probably a sinus infection and thrombosis were present. The child was therefore taken to a small hospital, where further observations were made, and these more strongly pointed to sigmoid sinus infection.

At operation, March 13, 1916, the mastoid structure was found broken down, and after the removal of a thick cortex with gauges the interior was easily exenterated with the curette. The sinus was widely exposed, and, on slitting it open, creamy, yellow pus poured out under pressure. The mastoid wound was covered and isolated from the neck, preparatory to resection of the jugular vein. The vein was exposed from about the third tracheal ring to near the mastoid tip, and a portion resected, including the facial and superior thyroid branches. An organized clot filled the upper portion of the jugular. The septic symptoms, following the operation, speedily subsided, appetite returned, and the child soon returned to normal vigor and health.

CASE III.—Boy, aged nine, admitted to hospital March 23, 1918. He was referred for middle ear trouble, and had not been very well previous to this illness, having had German measles one month before. The mother said that he had scarlet spots over the breast at the onset. He now had a goood deal of desquamation of the skin of the hands and fingers, the skin coming off in rather large strips; and a rather dry skin over the rest of the body, which will probably desquamate in little fine scales. A typical raspberry tongue, which previously was thickly coated. Patient having been carried twenty miles in an ambulance during a raw day, complained of slight chilliness on admission. Temperature 101°, pulse 96. No complaint of any kind, no headache, no pain, no nausea. Fever, weakness and a slight discharging ear were the only subjective symptoms. On physical examination there was a septic appearance. The eyes were normal to superficial examination. No appearance of acute suffering. There was a moderate amount of thick pus in the external auditory meatus, but this was in no way different from the discharge found in any acute running ear. There was not the slightest mastoid swelling, redness or tenderness. Mentality was normal, considering the condition of fever. The temperature rose to 103.5° five hours after admission. Next day the highest point reached was 100.8°. The two succeeding days it rose to 103° and then for five days the highest point was 100.6°. The next day, the eighth after admission, 102° was reached, and then for two days remained almost normal. On the eleventh day a rapid rise took place, on the twelfth day reaching 104°. On the thirteenth day the mastoid was opened and the sigmoid sinus was widely exposed and incised. The sinus was filled with creamy, yellow pus, which, under pressure, poured into the mastoid wound when the sinus was opened. The jugular vein was exposed, ligated and excised as in Case No. II. The temperature after the operation at no time exceeded 99°, and no symptom arose which hindered speedy recovery. The child left the hospital April 25, nineteen days after the operation, in almost perfect physical condition.

The blood count ran as follows: On the third day after admission W. B. C. was 17,400; on the sixth day, 26,600; on the seventh day, 22,000; on the ninth day, 21,400; on the eleventh day, 13,000; on the thirteenth

days (mastoid and sinus operation), 11,600; on the fifteenth day, 12,400; on the seventeenth day, 14,400; on the eighteenth day, 13,600; on the twenty-first day, 13,800.

One week after admission to the hospital the slight aural discharge, which had been daily growing less, ceased altogether. At no time while under observation was there present any pain in or around the ear, nor was there any mastoid swelling or tenderness. The mastoid region at all times, judging from the painstaking examinations which were made daily, was entirely normal. There was no sagging of the posterior wall of the external meatus, and, after the aural discharge ceased, the hearing improved. Eight days after admission there was soreness in the neck which disturbed the boy's rest, as it was difficult for him to find a position which gave comfort on the pillow. The neck muscles were quite tender, but on examination of the throat it was found that this external tenderness was due to a throat infection, and this finally proved the case, for when the throat improved the stiffness and soreness of the neck promptly disappeared. Had careful examination of the throat not been made this case might improperly have been reported as one in which there was tenderness of the neck as a symptom of jugular involvement in sinus thrombosis. On the ninth day in the hospital a cough came on, which continued for a week and proved very annoying, and a mild central pneumonia was disagnosed by a consultant internist.

At no time during the entire hospital period was there any nausea or vomiting, any headache, mental disturbance or pain, with the exception of the painful neck muscles, as above described. Indeed, I regard this case, as the preceding ones, entirely symptomless in so far as the recorded symptoms pointed to sinus thrombosis, with the exception of the trivial aural discharge and the temperature curve.

CASE IV.—Report of Dr. John M. Fouts, the family physician: "Howard S., aged thirteen, came to my office, May 1, 1920. Had some pain in right ear. A thin pus was running from ear. No tenderness of external ear or over the mastoid. Made firm pressure against tip of mastoid without complaint. Temperature nurmal. Appetite good. Boy was doing the work of a boy of his age on the farm.

"Had measles and whooping cough in February of 1911, with otitis media as a complication. After the first few days of his present illness the pain subsided, but the slight discharge persisted. At times nothing but dry scabs could be removed from external ear. The acute exacerbation of May 1 was caused by a mild bronchitis, according to the history given by the parents. The pain this time was very slight, scarcely mentioned by the patient. He assisted with the farm work until May 9, but lost in strength; was called to see him on this date. Was then confined to his bed with a temperature of 104° F., pulse of 100. Right ear discharging, no pain or tenderness over mastoid or neck. Lungs, heart, and throat negative. Tenderness in right iliac fossa and marked gurgling over same area. Had some pain over eyes. No diarrhea, but was susceptible to laxatives. May 10. Morning temperature 102°, pulse 98. Slept well, no appetite, no pain, tongue coated and moist. Evening temperature 104°, pulse 100. May 11. Morning temperature 102°, pulse 100. Evening temperature 105°, pulse 100. Complained of headache. Talked in sleep. Mind confused when aroused. Perspired some during the night and said he was chilly, but no distinct chill. No pain or tenderness in ear or over mastoid. May 12. General condition same; no appetite, but took a reasonable amount of nourishment. Drank water very freely. Was sick at stomach once during night. More delirious at night. May 13. Temperature and pulse same. Some headache. Some swelling below right ear, which was tender. Mother said he had had this before. The first time that there had been any tenderness about ear. The left elbow was swollen and very tender. May 14. Temperature 100° in the morning and 104° in the evening; pulse from 100 to 110. Muscles of back and back of neck contracted, but patient could get out of bed. Mind clear during the day and wanted to sit up. Ear discharge thicker and of bad odor, creamy. No pain or tenderness. Operation still refused and the patient declared he would rather die than go to the hospital. May 15 and 16, patient losing. Dr. J. F. Barnhill called May 17, and patient removed to the hospital May 18."

At the time of my visit the boy seemed deeply comatose, but when aroused answered questions with some intelligence. There was a stupid look when asleep. The eyes seemed normal in every way. There was no complaint of pain, but extreme irritability concerning any disturbance was evident. There was a slight discharge from the ear, which was foul smelling. No pain or swelling in or around the ear or neck, except that due to enlarged cervical nodes. There was no pain on deep pressure over the mastoid. Stiffness of the nuchal muscles was present to a degree that enabled me to lift the head and trunk entirely from the bed without any flexion. A large spindle-shaped, red and tender swelling involved the left elbow and the right knee. The abdomen was very tympanitic. Owing to his stupid condition it was difficult to determine the knee and other reflexes with accuracy.

In view of the absence of any lung or heart complication, and of malaria or typhoid fever, the diagnosis was probably sinus thrombosis. This seemed especially probable, too, since five years previously I had removed the boy's tonsils and adenoids, and at this time there was present a chronic discharge from the ear, due to the measles in 1911. I had stated to the mother at the time of the adenoid and tonsil operation that the ear probably would not be cured except by radical mastoid surgery. After the tonsils and adenoids were out, however, the aural discharge ceased and was almost forgotten. It was necessary, according to the mother's statement, to give no further aural attention than occasionally to remove what she thought were large plugs of ear wax.

May 19 the patient was transported a distance of 75 miles to a hospital in Indianapolis. The journey was not difficult, but on arrival the condition was much worse, neither food nor drink having been taken since the day previously. There was complete unconsciousness. Temperature, 102°; pulse, 100. Blood culture showed a short chain streptococcus. This was transferred to a blood agar plate, which twelve hours later showed a streptococcus growth, with complete hemolysis around the colonies—a beautiful demonstration of Streptococcus hemolyticus. Blood count on admission was W. B. C., 18,400; polynuclears, 83 per cent.; small lymphocytes, 10 per cent; large lymphocytes, 6 per cent; transitionals, 1 per cent.

An expert internist again went over the case and gave the positive opinion that there was present no general disease. The boy's parents were anxious now to have a surgical operation, even though the prognosis was bad, and was so stated frankly to them.

At operation a thick, hard cortex was rapidly removed with gouge and mallet, the interior of the mastoid being easily cleared with curette and rongeur. The cells contained pus and débris. The sinus was widely exposed. Near the tip of the mastoid the sinus wall had ruptured, and through the opening creamy, foul-smelling pus poured out under pressure. It is my belief that the pus encountered in the mastoid cells at operation came from the sinus. The mastoid wound was covered and isolated, the jugular vein was quickly exposed, ligated above and low down, and the intermediate portion was excised. No clot or pus was found in the jugular.

On cutting down on the jugular vein a row of matted, half-suppurating lymph nodes were found, overlying the carotid sheath. It was necessary to remove these to get access to the vein. It was these inflamed glands, undoubtedly, and not the jugular vein itself, which had caused tenderness on pressure of the neck, reported by the family physician. The boy died four hours after the operation.

A question of clinical importance is, was this sinus infected and suppurating while the boy was in his usual health, and while actually at work on the farm? It is my belief that such was the case. Five years previously, as already stated, there was present a chronic suppurative middle ear with mastoid involvement. While the mother states that the suppuration ceased, and that the boy was well, she further states on quizzing that the boy frequently picked at the diseased ear and sometimes removed large plugs of ear wax. This

"wax" was dried pus, showing that the suppuration, while less than formerly, and not sufficient in quantity to run from the ear, represented a slowed-down but nevertheless continuous, progress with fatal termination.

PENNWAY BUILDING.

THE PRINCIPLES OF ADRENAL SUPPORT.

BY HENRY R. HARROWER, M.D.,

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THE adrenal glands, small pads of endocrine tissue lying above each kidney, exert a very important influence upon those functions of the organism which are beyond the control of the will—the automatic or sympathetic regulation.

Among other things it is the function of these glands to regulate the tonicity of unstriped muscle, including that of the heart, blood vessel walls, and alimentary canal. In fact, all muscles, voluntary and involuntary, are affected by the adrenal principle, which is called "adrenin." The adrenals also are concerned in the regulation of the cell chemistry, as well as the harmonious function of the other associated glands of internal secretion.

These glands are influenced very decidedly by toxic substances which may get into the circulation. As a matter of fact, it is the function of the adrenals to respond immediately to toxic stimuli in order that the body's defensive and detoxicating mechanism may be started in its necessary work as soon as possible. As the result of this the administration or release of various poisons causes an increase in the work of the adrenal glands with circulatory changes which are very well known, as well as other changes in oxidization which are made necessary by the toxemia.

Since poisonings of various varieties are among the commonest causes of disease, *the adrenal element has a much greater importance than the medical profession has given it credit for.*

During the influenza epidemics the unusually severe toxemia resulted in serious depletion of the adrenals in many thousands of cases, and brought attention very forcibly to the importance of the adrenal glands as maintainers of the tonicity of the body. Not merely influenza, but all acute infectious diseases and the accompanying toxemias, as well as all chronic foci of infection, are common factors in over stimulating the adrenal glands. If the glands were not stimulated the body's defences against these conditions would not be initiated properly, and death would ensue.

It happens that the adrenal principles, especially adrenin, are very easily oxidized by the body, and there must be a continued supply of this principle in order to maintain the sympathetic and automatic functions of the body in proper order. If these glands are excessively stimulated, like any other organs of the body, they become tired out or depleted; and sometimes the degree of depletion is very marked, just as the degree of fatigue may be marked following severe exertion. As a result of this adrenal insufficiency, or hypoadrenia, there ensues a condition which is the result of the absence of the all-important stimuli expected from this gland.

Hypoadrenia is quite similar in its symptomatology to the more serious structural disease of the adrenals which was described by Addison in 1855. Addison's disease is believed to be a destruction of the adrenal glands, usually by tuberculosis, while the hypoadrenia to which attention is being directed here is a functional playing out of these glands due usually to the toxic stress referred to.

The symptoms of adrenal insufficiency are asthenic in character. In fact, fatigue is the principal result, and it may be of a most severe variety. The patient is tired out and unable to accomplish his usual mental or physical work. He has an aggravated degree of muscular fatigue which extends to the involuntary muscles causing heart weakness (very commonly these cases are classed as "myocarditis" when in reality there is no real structural change in the heart muscle at the time), the vessel walls lose their tonicity and as a result there is a condition of low blood pressure which, in turn, causes cold hands and feet and other evidences of circulatory insufficiency.

The muscles of the alimentary canal are equally atonic, and as a result we find constipation, indigestion, and the well-known intestinal stasis. Parenthically it may be stated that the toxemia from intestinal stasis is just as much a cause of adrenal stimulation as that which results from any other poisoning, and consequently the adrenals are still further depleted with still more atonicity. A vicious circle is produced.

Neurasthenia, or nervous break-down, is very commonly the result of adrenal insufficiency, not merely because of the ever accumulating poisoning, the result of the general atonicity of the body; but because of the direct influence upon the nerves. They, too, have lost their normal tonicity and are asthenic, just as the rest of the body is asthenic. Many forms of neurasthenia may be connected with other glands of internal secretion, especially the thyroid or the sex glands; but the most commonly involved of all of the endocrine glands undoubtedly are the adrenals, and practically every case of neurasthenia is of an endocrine character, and involves the adrenal glands.

Perhaps the most important of all the asthenic manifestations of adrenal insufficiency is what I have personally called "chemasthenia." By this I mean an asthenic state of the cell which causes metabolic laziness or cellular inefficiency. The chemistry of the cells most vital in its influence on the body is lessened, and the cells are unable to eliminate their own waste products. Consequently they cannot avail themselves of the food substances that are brought to them by the blood. This causes malnutrition and added toxemia which is of very serious import. Chemasthenia is invariably present in severe cases of adrenal insufficiency, and the urinary analysis, especially the study of the 24-hour output of urea, will indicate very promptly whether there is a deficiency of this kind.

Oftentimes the eliminated urea is reduced as much as two-thirds of the usual normal, and, naturally, the accumulation of these wastes in the body does not favor the best of health. Since most of the wastes of the body have an acid influence, that is to say, they remove from the body the reserve of alkaline salts which is kept on hand for just this purpose, demineralization and a tendency to acidosis is the rule in all these chronic cases.

Prof. W. B. Cannon, of Harvard University, has demonstrated quite conclusively that emotional factors stimulate the adrenals. Fear, rage, pain, and other emotions, including probably worry, act upon the adrenal glands almost identically as do toxins, and adrenal depletion from shock or mental storms is almost as common as that due to actual poisoning. Hence, the frequency of hypoadrenia is really very great, in fact *I believe that it is the most common of the endocrine disturbances.*

It is not difficult to diagnose hypoadrenia. The patient invariably complains of a marked lack of "pep," and is "all run-down." "'Asthenia' is their midde name." They are tired all the time; and mentally, physically, and physiologically these unfortunate individuals are worn out. There is evidence in the history of a chronic or acute toxemia, or there is other clinical proof that the fundamental causes which deplete the adrenals have been present. The blood pressure in most cases is considerably below normal; sometimes it has reached as low as 80 mm. systolic. The elimination of urinary solids is low, and nutrition ordinarily is reduced. As a result of this, anemia is not uncommon and the patient's powers of resistance are considerably less than usual, and they are subject to all sorts of aches and pains and discomfort of a functional type.

It just happens that most of these cases with hypoadrenia are in the large class to whom the average physician prescribes a tonic. Now, most of the tonics are of the strychnine type, that is, they are alkaloidal poisons and are tonics in that they stimulate the adrenals to produce more of its chemical substance and thereby to increase circulation, muscular tone, and nervous tone. In cases of adrenal insufficiency, however, the adrenal glands have had all the stimulation that they can stand and are played out. Therefore the administration of strychnine or similar substances is merely a means of aggravating the already serious adrenal insufficiency. For this reason strychnine and alkaloidal tonics, including coffee, should never be given to an individual with depleted adrenals. The idea is to remove as best we can all sources of toxic stimulation of these glands, to allow them to rest as best they are able, and to support them in a manner which I will now describe.

It is well known that organotherapy is dependent very largely upon a fundamental principle described by Prof. Hallion, of Paris, which is called "the law of homostimulation." This is as follows: "Extracts of an organ exert on the same organ an exciting influence which lasts for a longer or shorter time. When an organ is insufficient, it is conceivable that this influence augments this action, and when it is injured, that it favors its restoration." This homostimulation is not at all comparable to the stimulation that results from strychnine. As a matter of fact, organotherapy is the supplying of a suitably prepared and all ready-to-be-used pabulum that can be made available and used at once by the cells that correspond to those from which the extract was made. In other words, adrenal support by means of adrenal substance is a satisfactory means of antagonizing hypoadrenia, just exactly as the administration of thyroid substance to the person with thyroid insufficiency is likely to modify the conditions which are due to a lack of the thyroid hormones.

The administration of adrenal substance is known to exert a musculo-tonic effect. It slows, steadies, and strengthens the heart; it raises the blood pressure and, by actual measurement, increases the elimination of wastes. Therefore, adrenal support by means of adrenal therapy is a rational means of modifying the results of hypoadrenia, and with it, of course, other things may be done simultaneously that are equally advantageous. Chief among these is the removal of all forms of toxemia—from foci of infection, from the alimentary canal, from the food ingested, and from any other source that can be discovered and modified. Add to this remineralization, which means the administration of suitable alkaline mineral salts to replace those that are deficient in the body. To build up a reserve of alkalines is always in order. Still further, the cellular influence of other endocrine preparations which cooperate with the adrenal glands very properly may be made use of.

Practically every individual who is suffering from adrenal insufficiency also has a greater or less degree of hypothyroidism. At all events, oxidization is deficient, and every effort that can be made to increase the cellular activities of the body is a rational one. Small doses of thyroid are helpful in accomplishing this, for it is well known that the thyroid also is important because of its power to increase cellular chemistry and to favor detoxication. Hence, in many cases of hypoadrenia small doses of thyroid gland, perhaps a quarter of a grain a day, may be added to adrenal feeding.

Still another endocrine product is used with great success in conditions of the adynamic type. I refer to spermin, the endocrine principle from the interstitial cells of Leydig of the sex glands. Spermin is a muscular tonic; it stimulates muscular contractility and also the chemistry of the muscle cells, and perhaps other cells also. It has been recommended for many years as a means of increasing "pep" and the general tone of the body; and is distinctly called for in the cases of muscular asthenia so commonly associated with adrenal insufficiency. For many years I have used a formula containing the above mentioned products in cases of this sort.

In conclusion, I urge the consideration of the adrenal aspect of the every-day disorders which come to our attention. Since asthenia is so essentially a symptom of adrenal origin, let every history which embodies this most common statement prompt us to investigate the factors mentioned above which are believed to be related to adrenal functioning. If the asthenia is accompanied by low systolic tension, subnormal temperature, low 24-hour urea and solids, and a tendency to acidosis, the diagnosis is clear. The development of the history will have given reasons for this adrenal depletion, and its treatment should be added to every effort to modify the toxic or infective causes, as well as the other indicated hygienic and eliminative measures. Adrenal support is a rational adjuvant measure in the majority of the cases which come to us from day to day.

HORATIO C. WOOD, M.D.

AN APPRECIATION.*

By HENRY BEATES, Jr., M.D., Sc.D.,
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By the death of Prof. Horatio C. Wood the medical profession and mankind in general have suffered an irreparable loss. His life was an example of sincerity of purpose, diligence, honest endeavor, and justice, and an exceptionally powerful influence for the uplift, growth, and development of those sciences with which he was identified. Endowed with an unusual mind, and insatiable in the acquisition of knowledge, the ever conspicuous power and faculty of learning were demonstrative of his great intellect.

Indefatigable as an investigator, utilization of time and opportunity found him ever active in the study and solution of problems presented by the various natural sciences to which his life was dedicated.

The eagerness with which he engaged in study was a conspicuous characteristic, and illustrated by the following incident that occurred when a mere youth: Visiting the Philadelphia Academy of Natural Sciences and standing before a locked cabinet containing specimens in which he was deeply interested, and being unable to handle and examine them, his disappointment found expression in tears. The great Leidy passing by, and noticing the distress of the youthful Wood, inquired the cause. Being informed, and doubtless recognizing the impulses of genius, he had the cabinet unlocked and the specimens placed at the student's disposal.

Dr. Wood was an enthusiastic student of botany. In 1860, when but 19 years of age, he presented his first scientific paper, entitled "Contributions to the Carboniferous Flora of the United States." From then until 1873 fourteen papers, each of which was an authoritative classic, appeared in the Proceedings of the Academy of Natural Sciences, the American Philosophical Society, the Queckett Microscopical Club Journal, the Smithsonian Institute, and in the *American Journal of Science*. In 1872 the Smithsonian Institute published Dr. Wood's monograph, "The Fresh-Water Algæ of North America." This 270-pp. quarto contained 19 colored and 2 uncolored plates, prepared from 360 original microscopic drawings which, for accuracy of detail and perfection, are unsurpassed. It remained the authoritative work on this subject for 25 years.

Demonstrative of Dr. Wood's phenomenally acute powers of observation and consequent ability to recognize and discover new species, the following botanical papers may be mentioned: "Life History of Some Siphonaceous Fresh-Water Algæ," "Manner in Which *Schizomeris leibleinii* Produces Its Zoospores, and New Species of Desmids," "New Species of the Genus Sirosiphon, *S. lignicola, S. phloiophilum, S. disjunctum.*"

Entomology also engaged his attention during these years, and his achievements in this branch of science culminated in fourteen papers characterized by that thoroughness and masterful research which stamped each as an authoritative contribution and an acquisition of knowledge. Of these studies, which want of time prevents naming, that entitled "The Myriapoda of North America" was published in the American Philosophical Society Transactions in 1865. It was a brochure of 112 pages, with 61 figures in the text and 3 plates. The drawings, true to nature, were exponent of his skill. The excellence and reliability of his work was recognized by Louis Agassiz, who in 1865 headed a large naturalizing expedition to Brazil, and, after his return, wrote the following letter to Dr. Wood:

DEAR SIR:

While in Brazil I have collected a good many myriapods in every part of the empire visited, and I will gladly put the whole at your service as soon as the specimens can be picked out, but I cannot say how soon this will be possible, as I cannot make a beginning with the arrangement of my collections before I can secure the means of buying about 5000 gallons of alcohol to carry the work through.

Very truly yours,

AGASSIZ.

Dr. H. C. Wood.

Dr. Wood was an indefatigable worker. He would frequently concentrate his mind upon the subject in hand for 30 consecutive hours; then relax and indulge in an uninterrupted sleep of from 12 to 18 hours, when his insatiable thirst for knowledge found him again active in the pursuit of investigation and discovery, with that intensity of interest and painstaking care in observing the minutest details which crowned his labors with phenomenal success.

Profound learning necessarily established a high plane from which to observe conventional standards of achievement, and enabled Dr. Wood to enter his chosen profession of medicine with a mind exceptionally well informed, and an intellect of superior power.

As professor of botany in the Auxiliary Medical Course of the University of Pennsylvania, his ability as a teacher was highly cultivated, and his occupancy of the Chair of Materia Medica and Therapeutics in the major faculty of medicine constituted one of the strongest and most influential chairs of the then famous center of medical education. He was a brilliant and impressive lecturer and a teacher of great renown.

Dr. Wood's career in the natural sciences rendered him extremely alert in recognizing the inevitable consequences of cause and effect. He was painfully conscious of the imperfections and limitations of empirical medicine, and the measure thereof found expression in the fearless manner in which, then almost single handed, he entered the arena in a struggle having for its aim the establishing of physiologic or rational medicine upon a firm and scientific basis. With an open mind, ever alert to recognize and acknowledge truth, he did not belittle the knowledge of means to end that empirical medicine had established, but sought to add thereto elucidation and explanation. His sincere willingness to entertain and accept demonstration of mistake or error was parallel with his eagerness and desire to guide and instruct and guard against error wherever and whenever encountered, and the measure of his true greatness. To Professor Wood belongs the honor of having been a pioneer in establishing the Epoch of Rational Medicine. The

*Read at the annual meeting of the American Therapeutic Society, held in Philadelphia, May 7 and 8, 1920.

courage of conviction that found him alone championing rational medicine, *i. e.* therapeusis based upon knowledge and logical conclusion, was conditioned upon the recognition of the defects of empirical medicine. From the first edition of his epoch-making treatise on Therapeutics published in 1874, and antedating that of Lauder Brunton by 10 years, of which 14 editions were printed, and have served as a model for text books on Therapeutics in European countries, as well as in the United States, the following quotations from the preface serve to emphasize the firm foundation upon which he stood:

> There are a number of excellent treatises upon Materia Medica and Therapeutics, yet in various attempts at original research, as well as in the ward and lecture room of the hospital, I have keenly felt the want *of something more.* The old and tried method in therapeutics is that of empiricism, or if the term sounds harsh, of clinical experience. The best possible development of this plan of investigation is to be found in a close and careful analysis of cases before and after the administration of a remedy, and if the results be favorable the continued use of the drug in similar cases. That very much has been thus accomplished it were folly to deny. Therapeutics developed in this manner cannot rest, however, upon a secure foundation. Looking at the revolutions and contradictions of the past, listening to the therapeutic babel of the present, is it a wonder that men should take refuge in nihilism, and like the lotus eaters, dream that all alike is folly—that rest, and quiet, and calm are the only human fruition? A primary knowledge of the end to be accomplished, and a secondary acquaintance with the instruments, are a necessity for human effort, and until the sway of this law is acknowledged by physicians, medicine can never rise from the position of an empirical art to the dignity of applied science. The work of the therapeutist is with the second portion of the law. Evidently it is his special province to find out what are the means at his command, what the *individual drugs in use do when put into a human system.* Thus did the champion and pioneer of Rational Medicine enter the arena of controversy and withstand the attacks of relatively ignorant and emotional antagonists who sought by all means available, social, financial, and political, to prevent scientific investigation, and the establishment of the Era of Rational Medicine.

Animal experimentation was a *sine quâ non* which was most bitterly opposed. No less an authority (an authority, however, in another sphere, be it remarked) than the famous Niemeyer asserted that experiments made with medicaments upon lower animals, or upon healthy human beings have, as yet been of no direct service to our means of treating disease, and that a continuance of such experiments gives no prospect of such service. The antagonists asserted that medicines did not affect lower animals as they did human beings. Apparently the contention was well taken, but Dr. Wood demonstrated that while apparently this was true, in reality it was erroneous, and a misinterpretation. He proved that while it required as much morphine to kill a pigeon of a pound weight as to destroy a man, it was not a different action, but on the contrary, an identical one, the seemingly different effects being dependent upon varied degrees of susceptibility, and that the modus operandi was identical. This physiological law or truth Dr. Wood further demonstrated by a study of atropine. Contrasting an animal which may be exceedingly sensitive to the spinal action of atropine with one in which it exerts its effects upon the conducting fibers of the nerve trunks, we find it causes convulsion in one and paralysis in the other. This law makes understandable why so many drugs seemingly exert an antagonistic action. Dr. Wood, by conclusively demonstrating that degree and quality are *two separate and distinct things, and should never be confounded,* successfully combated the efforts of ignorance and emotionalism to make it a crime to pursue scientific research. What may be properly designated as the magnum opus of Wood, the institution of an epoch in medicine characterized by the relinquishment of the empirical and the adoption of the rational, and of establishing an era conspicuous for achievements in preventive as well as curative medicine, is sufficient to place his name side by side with those of the immortal Hippocrates, Galen, Sydenham, Hunter, Lister, Laennec, Jenner, Pasteur, and Koch.

In 1810 Majendie, studying the effects of nux vomica, recognized the vital importance of knowing how medicines affected the human system, but to Prof. Horatio C. Wood belongs the credit of having brought to the recognition of the medical world the necessity of adopting physiological or rational medicine as the one essential means of acquiring knowledge and skill and art in the prevention and treatment of disease upon which humanity depends.

Dr. Wood consecrated himself to medicine. In 1869 he made his famous experiment upon himself with American grown cannabis. The following year his first paper on the "Physiological Action of Drugs" was published in the *American Journal of the Medical Sciences.* His studies of the action of veratrum viride led to its general adoption by clinicians. In 1871 Dr. Wood's papers treating of the physiological action of amyl nitrite were published. Two years previously Lauder Brunton published his paper which set forth the value of amyl nitrite in angina pectoris, but the contribution of Dr. Wood was the first description of the physiological action of the drug upon the nervous system. His investigations of chloroform, ether, and other anesthetics, are so well known that mention only is necessary. These results were published in 1890, and the following year found him honored with being selected to make the principal address before the general session of the International Medical Congress at Berlin. These studies have probably been responsible, more than the work of any other scientist, for the general adoption of ether as an anesthetic by the entire surgical world. It was while pursuing the studies of anesthetics and the treatment of their toxic effects that Dr. Wood discovered the value of strychnine as a respiratory stimulant, and its importance in averting threatened death.

Of 5,000 scientists present at the Berlin Congress the Duke of Bavaria, a physician, selected and entertained 25 who were noted for exceptional achievements. Of these Professor Wood was one, and when about to be seated the duke, removing his crown, placed it upon Dr. Wood's head, and further honored him by requesting him to occupy the chair pro tem. Thus Professor Wood was a Duke of Bavaria for almost an hour.

In 1903 Dr. Wood represented the United States Government at the International Conference, held in Brussels for the purpose of unifying the more important preparations of the various pharma-

copeias. Early in its session the conference became so involved in acrimonious dispute as to the proper percentage of alcohol to be used in making tinctures that the whole usefulness of the meeting was seriously threatened. His strong personality and recognized advocacy of justice and right enabled him to convince the delegates of the foolishness of quibbling over minor details, and they finally adopted the present regulation of 10 per cent. tincture and various other standards which are recognized by the pharmacopeias of practically all civilized nations. This busy practitioner, teacher, investigator, and author published a text book on nervous diseases and their diagnosis in 1887, and of the 240 medical papers, each one of which was a classic, and an addition to the knowledge of the science and art of medicine, the treatise on thermic fever, or sunstroke, has especial value. Published in 1872, it was accorded the Boylston prize. That this work has contributed to the saving of thousands of lives annually is an evidence of one of the great services this man of genius has accorded to humanity.

His investigations of fever culminated in a work of 250 pages, which was published by the Smithsonian Institute in 1880. It is a monument to his learning and a most valuable contribution to medical science. Dr. Wood discovered the alkaloid hyocine while studying the effects of hyoscyamine, and in 1885 demonstrated its value for certain nervous diseases.

His researches in experimental pharmacology, physiology, and pathology embody more than fifty contributions of knowledge to the science and art of medicine.

Twelve conscientiously elaborated subjects of medical jurisprudence and toxicology which were, as all of his works, instructive and of great practical value, were contributed from the years 1873 to 1899.

As a clinician, his studies of pathology, medicine, and therapeutics comprise 139 papers, which for originality and profundity of learning are invaluable. Thirty-six published lectures and addresses appeared in various journals during the years from 1874 to 1900, and extended his beneficial influence throughout the continent.

Nine magazine articles from the year 1872 to 1879 brought to the lay mind information and knowledge which proved of great value in securing popular cooperation with efforts instituted by the profession for the betterment of standards of medical efficiency. In 1875 there appeared in *Lippincott's Magazine* an article contributed by Dr. Wood entitled, "Medical Education in the United States." This paper brought to a crisis the agitation which had been active for many years concerning this matter, which was and is of such vital importance to the profession of medicine, as well as the greatest and highest interests upon which human welfare is conditioned. It caused radical changes in the medical department of the University of Pennsylvania, and indirectly compelled other colleges of medicine to reform their curricula. It advocated State board examinations, and was a powerful influence for the establishment of the legal supervision of the qualifications and rights to practice the healing art.

In 1889 Yale University conferred upon Professor Wood the degree LL.D. The occasion was made an opportunity for Dr. Wood to use his influence in promoting and intensifying interest in higher medical education. The title of his address, "The Medical Profession, the Medical Sects, the Law," emphasized the necessity of demanding for the doctorate men of proper preliminary education, and the administration of an ample curriculum. The too commonly encountered unfitness of clinicians upon whom colleges had conferred the medical degree and the fearful consequences of this, he emphasized by the astounding statement that the horrible disasters of the Johnstown flood were insignificant when compared with those resulting from the illy prepared and unqualified practitioner. So strongly was Dr. Wood convinced of this seriously inadequate but then prevalent system of medical education, that the comparison was unhesitatingly presented to the interested audience with that vehemence which characterized his advocacy of higher ideals.

'Tis the habit of action that individualizes man, and imparts special qualities to his charcter. That "Nature never rhymes her children nor makes two men alike" is a fact that explains why men of genius constitute a center from which emanate influences for either good or evil that powerfully modify the lives of all within their range. That Dr. Wood was keenly alive to this great truth is made manifest by his definition of character. "Character is the established equilibrium existing between the emotional, the intellectual, and the volitional" are his words. To establish and possess that equilibrium is an achievement which few attain. It taxes to the utmost the noblest and best qualities with which a man is endowed, and that Dr. Wood was ever alert to so do was evidenced by his every action. Once, while in conversation, he suddenly stooped down and caught a large roach that was crossing the floor, and holding it in his hand, fondled it. Being asked why, his reply was that to master a baseless dislike of anything harmless was invaluable, and when it caused one to overcome empty prejudices, it contributed to the usefulness of being and did much to give force to one's influence for the betterment of fellow-man.

Dr. Wood was profoundly conscious of the value of time, and as a superficial glance into his active life shows, every moment was advantageously occupied. As an example of untiring and continual work he stands preeminent, and the fundamental principles underlying his achievements are well shown by the subject of his inaugural address before the trustees, faculty, and student body of the University of Pennsylvania, when as professor of Materia Medica and Therapeutics his wonderful career in that capacity began. He urged upon every one that a definite object in life be the goal for which to strive, and that substantial progress is conditioned upon a thorough mastery of each involved factor. In that manner by which he had the happy faculty of impressing great truths upon the minds of his pupils, he drove home these principles by quoting from Mother Goose, how leg over leg the dog got to Dover, and all who were privileged to hear him proclaim how the dream of his life was to become a professor and that by a conscientious mastery of minute and upbuilding details the goal

was reached, were doubtless stimulated to emulate the great teacher and strive to do their best.

As Emerson so impressively states, character is the moral order seen through the medium of an individual nature. An individual is an enclosure—time and space, liberty and necessity, truth and thought are left at large no longer. All things exist in the man tinged with the manners of his soul. With what quality is in him he infuses all nature that he can reach, nor does he tend to lose himself in vastness. He animates all he can, and he sees only what he animates. He encloses the world as the patriot does his country as a natural basis for his character and a theater for action. A healthy soul stands with the just and the true as a magnet arranges itself with the pole so that he stands to all beholders like a transparent object betwixt them and the sun, and who so journeys toward the sun journeys toward that person. He is thus the medium of the highest influence to all who are not on the same level. Thus men of character are the conscience of the society to which they belong. To the honor and memory of the great and first president of the American Therapeutic Society may be justly ascribed the consummation of a life conspicuous for moral, intellectual, and physical excellence, the influence of which for betterment activating the thousands emulating his example will continue on and on anon. His life will ever serve as a guide and stimulus for right living, and constitute a power for good in the uplift of humanity as lasting as time.

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THE GERM-PLASM.

By CASPER L. REDFIELD,

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THE germ-plasm is the living material from which the next generation of things is produced. It is the substance of the germ which is separated from the parent and which grows into a new individual like the parent. The doctrine of the "continuity of the germ-plasm," which dominates the biological world at the present time, is that when a bit of this germ-plasm is separated from the parent, part of it is used to produce a new individual in the second generation and part of it is set aside as a reserve in the body of the new individual to become later the origin of an individual in the third generation. When a bit of this reserved germ-plasm later leaves the second individual of the series, part of this bit is used to produce an individual in the third generation and another part is set aside in this individual to become the starting point of a fourth generation. And so on.

According to this theory, the germ-plasm resides in the adult individual but is not a part of the adult, and is not descended from it or from any previous adult. A mother and her daughter arise at different dates from the same continuous stream of germ-plasm, and are sisters rather than mother and daughter in the ordinary sense. The germ-plasm does nothing but reproduce itself, from a part of which another individual is started into existence. As the part which starts a new individual does not go back again to become a part of the general stock, it follows that the part which is held in reserve is descended from a long stream of germ-plasm which never did anything except grow and reproduce itself.

When we reproduce a plant by a cutting, that cutting will grow into a new plant which in due course will produce seeds, and from these seeds we can start a new generation. As a seed without germ-plasm will not grow, and as the germ-plasm is supposed not to be produced by the plant, it is evident that a supply of the germ-plasm must have existed in the cutting which was taken from one plant to produce another. As such cutting may come from a root or branch, or even from a leaf, it follows that the germ-plasm which forms no part of the adult must be distributed uniformly through all parts of such adult. It is supposed to pervade the entire body without being a part of it.

In this matter we have to deal not only with a physical body designated as the germ-plasm, but we have to deal with the powers of that body to produce individuals having many powers. There has been much said about the "physical basis of heredity," but very little about the nature of the powers that basis must have if it is to function. We will give a little attention to the power side of this problem.

It is known that powers are developed by exercising them, and that they degenerate when there is a failure to exercise them or when they are exercised less than some minimum amount per unit of time. For example, when a man takes up physical training he develops the powers of the muscles he exercises, and these powers continue to develop as long as the exercise is continued, up to some point near the end of life. When a physically active man takes up a sedentary life, his physical powers gradually decline, and that decline in powers continues as long as a failure to exercise continues.

When a horse is trained at the trot year after year he will continue to gain in trotting power as long as the trotting exercise continues. Race track records show such improvement up to seventeen years of age, and other evidence shows that it will continue under continued exercise up to the evening of life. When a race horse is retired to the harem and thereafter leads a physically indolent life, his physical powers decline, and continue to decline as long as the indolence continues.

It is known that the blood reaction of different kinds of animals is different, and that a micro-organism which can live in the blood of one animal is unable to survive in that of another. Most micro-organisms are able to exist in the bodies of only a few kinds of hosts.

Experiments have shown that when smallpox virus is taken from a human patient and inoculated into a cow, it will take only about once in ten trials. In fact, the smallpox germ can survive in the cow only when it comes to some cow which, from some cause or other, happens to be in an unusually weak condition at the time. But when this organism has once succeeded in its fight for life in the blood reaction of a weak cow, it has built up its powers by its own efforts in fighting that kind of blood reaction and then can be passed along to and can live in a cow in whose blood it would have died if inoculated there in the first instance. Then it can be passed along from cow to cow in series, and each

time it thus passes it further builds up its powers of fighting the blood reaction of cows by exercising such powers.

While the smallpox germ is thus busy developing its powers of fighting the blood reaction of cows, it is not fighting the blood reaction of man with the result that if it be inoculated into a man after having passed through a series of ten or twelve cows, it is found to be cowpox and not smallpox. It has lost the power of fighting the blood reaction of man by not exercising that power, and is able to survive only a short time in that blood reaction. And a man who is vaccinated builds up his powers of resisting smallpox by beginning his exercise on a weak form of it, with the result that he becomes able to resist fully virulent smallpox when it later puts in an appearance. But after he is vaccinated he ceases to exercise his powers of fighting smallpox virus because there is none present to fight, and the result is that these powers gradually decline. If he is to continue to be able to resist smallpox he must again exercise the powers he has by again being vaccinated.

Here we have a case of one kind of power being built up in the protoplasm of a germ by exercising that power, and simultaneously another power in the same protoplasm was permitted to decay by reason of a failure to exercise it. Also, we have the case of resisting powers being built up in the bodily cells of the man by exercising such powers as he had at the time, and subsequently the decline of the same powers in the same person by a failure to exercise them for some years.

When disease-producing bacteria are raised on some artificial food, as bouillon or agar, they do not have to fight a hostile blood reaction, and as a consequence they gradually lose their disease-producing powers by failing to exercise them. By putting such weakened bacteria through a course of training in which they are forced to use these powers to a gradually increasing extent, their virulence can be increased to something greater than it was when they were first placed upon artificial food. These facts were first found by Pasteur in working on the anthrax bacillus, and have since been found by other persons working on other germs. From the mass of evidence bearing on this matter we will consider here only Haffkine's work on the cholera bacillus.

He wanted two grades of this organism for vaccination purposes. He found that the bacilli obtained from the intestinal canal were too powerful for the preliminary inoculation and not powerful enough for the secondary one. He got the weak strain by raising the bacilli on agar, and found that it would remain weak just as long as he continued to raise them on artificial food. He got the powerful strain by passing the germs through a series of about thirty guinea pigs, and then found that they rapidly lost their power when placed on artificial food. To maintain the powerful strain in powerful condition he found it necessary to pass them, from time to time, through a series of guinea pigs.

Haffkine then inoculated guinea pigs with the weak culture, and several days later with the powerful culture. Both inoculations caused local swellings and a rise in temperature, but these soon passed away, as neither inoculation was great enough to be an overload for the system. A guinea pig treated in this way was found to be able to resist from eight to ten times what was the lethal dose of cholera poison for untreated guinea pigs. Pfeiffer found that the power developed in the guinea pig by this process was one which would first kill and then dissolve the cholera bacillus.

Man has domesticated many kinds of wild plants and by training them in various ways has caused them to develop their powers of producing the things he wanted. But while he has been doing this he has protected them from weeds so that they would not have to fight for room in which to grow. Because our domestic plants have not had to exert themselves in a fight for existence against weeds they have lost the power of so fighting and are not now able to survive when deserted by man. There is no selection in this. Man did not select plants because of their inability to defend themselves against weeds.

A seed is an inert object, but it contains germplasm and has the power, under proper circumstances, of developing into another plant like that from which it came. At least it has that power when it is first produced. But let that seed lie idle two, three, four or more years, and that power gradually declines and finally ceases to exist. The germ-plasm (the physical basis of heredity) is still there, but it has lost its power of developing into a new plant because of a failure to exercise that power for a considerable length of time. The loss of powers by reason of a failure to exercise them applies to the germ-plasm just the same as it does to the somatoplasm.

When we first attempt to raise a plant from cuttings we frequently find it difficult to make it grow in that way. But if we take a cutting from the first plant grown from a cutting we find that it grows a little easier the second time than it did the first time. If we take a cutting from this second plant we find that it grows still easier the third time, and so on time after time. There is no selection in this because no seeds are produced. The final plant is simply a section of the original plant, but its powers of growing from a cutting have been greatly developed by exercising them over and over again.

But a plant which is continually raised from cuttings is not raised from seed, and consequently is not exercising its powers of growing from seeds. It may be exercising its powers of producing seeds, but the powers of producing seeds and the power of growing from seeds after they are produced are two different things. Now it happens that all plants which are continually reproduced by cuttings, grafts, tubers, or divisions of any kind, and not by seeds, gradually and certainly lose their power of producing seeds which will germinate, and ultimately lose the power of producing seeds at all. The germ-plasm cannot retain a power which it does not exercise, and it cannot transmit a power which it does not have.

The sequoia are the oldest of living things. They are said to be from one thousand to two thousand years old, perhaps older. They produce abundance of seeds because they have been exercising their seed-producing powers regularly year after year. But it is extremely difficult to make those seeds

grow, and apparently they will not grow at all from the older trees. Right here is a distinction which the reader should get clearly in mind. A man does not get strong muscles because his brother goes into a gymnasium. The germ-plasm in seed produced this year by a sequoia does not have its powers of germinating developed by the exercise which was gone through by the germ-plasm in some sister seed produced by the same tree a thousand years ago. The last time, genetically possible, that the germinating powers were exercised was when the parent tree grew from a seed. Even in trees of such tremendous vitality as the sequoia, the germ-plasm loses powers which it does not exercise for a thousand years or more.

It is well known to breeders of cattle, horses and dogs that a young sire is more potent in the production of offspring than are older ones. This does not mean that the older sire produces a less number of spermatozoa. It means that those produced by the young sire have greater powers of uniting with ova and growing into new individuals, and less powers of some other kinds. The last time those powers were exercised was when the sire was produced by the germ-plasm derived from his parents, and the longer the idle period between one exercise and the next the more do those powers decline. In human beings of the same family, it is found that the sons of young parents are more prolific in the production of offspring than are the sons of older ones. This fact was determined by comparing brothers in family genealogies.

Let us now return to the doctrine of the continuity of the germ-plasm. According to that doctrine, the germ-plasm which is supposed to produce the new individual never, in all of the ages, exercised the powers of producing such an individual. But when we investigate the matter we find that when the germ-plasm fails for a considerable period of time to exercise any power it has, that power gradually declines and finally ceases to exist. As the germ-plasm actually has the power of germinating and growing into a new individual, it is evident that that power must have been exercised either directly by that germ-plasm or by some substance from which it was derived. And as the germ-plasm also has the power of transmitting to the new individual all of the powers exercised by the somatoplasm, it is evident that the germ-plasm must be condensed somatoplasm or the extract of somatoplasm. The continuity of living substance is a certainty, but the continuity of the germ-plasm is a physical impossibility. It cannot function.

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Medicolegal Notes.

Question of Hospital's Care in Safeguarding Delirious Patients.—While all the authorities hold that a private hospital owes to its patients such reasonable care and attention for their safety as their known mental and physical condition reasonably requires, yet this is always limited by the unbending rule that no one is required to guard against or take measures to avert that which under the circumstances is not likely to happen, or, more accurately, which a reasonable person under the circumstances would not anticipate as likely to happen. The law only requires reasonable care—that care to avert dangers which a reasonable man would take under the circumstances as they exist—and no man does or is required to take measures to avert a danger which the circumstances as known to him do not suggest as reasonably likely to happen. These circumstances include the patient's mental condition and aberrations, and what he is likely to do by reason thereof, the degree of his mental and physical helplessness, and the dangers which his surroundings afford. Under these rules the Missouri Supreme Court held in Breeze v. Railroad, 264 Mo. 258, 174 S. W. 409, that hospital attendants were not required to anticipate that a patient who was delirious and possessed of delusions, but showed no tendency to self-destruction, would throw himself out of a high window, and was not required to guard against such action. The same court in Phillips v. Railroad, 211 No. 419, 111 S. W. 109, held that the attendants of a mentally helpless patient should anticipate that such patient, if allowed to go unattended on the streets of a city, would likely wander onto a street car track and receive injury and should guard against such danger. In Robertson v. Towns Hospital, 178 App. Div. 285, 165 N. Y. Supp. 17, the court held that it was reasonable to anticipate that a patient suffering mental derangement from alcoholism would throw himself out of an open window when he had exhibited the delusion that some one was trying to kill him, from whom he was trying to escape, so, also, the court in University of Louisville v. Hammock, 127 Ky. 564, 106 S. W. 219, held that a patient similarly afflicted, the nature of his ailment being known to the attending physician, might reasonably be expected to become violent and dangerous at any time, and consequently that his liability to injure another patient should be guarded against. In Hogan v. Clarksburg Hospital Co., 63 W. Va. 84, 59 S. E. 943, a patient was injured by his wandering to an open fire and his clothes catching fire. The court said that the hospital was bound to exercise "that degree of care towards its patients placed therein measured by the capacity of such patients to look after and provide for their own safety."

In Torrey v. Riverside Sanitarium, 163 Wis. 71, 157 N. W. 552, the court said that it could not reasonably be anticipated that a mentally deranged patient, possessing delusions as to his heart and stomach, but tractable and showing no symptoms of violence, would suddenly break away from the attendant and injure a third party. In Harris v. Woman's Hospital, 14 N. Y. Supp. 881, a woman patient, in a fit of temporary insanity, threw herself from a window. She had shown some symptoms of mental derangement. In denying liability the court said that her death in this manner was not to be expected. In Wetzel v. Omaha Maternity Assn., 96 Neb. 636, 148 N. W. 582, where a delirious patient fell out of an open window, liability was upheld on the ground that the patient's condition and previous conduct were such that a tendency to self-injury might well have been foreseen and should have been guarded against. In an action for the death of a patient on the third floor of a hospital, who, while in a delirious condition and while attempting to escape from the hospital, fell to the ground and was killed, the Springfield (Mo.) Court of Appeals holds that the defendant hospital's negligence was a question for the jury.—Davis v. Springfield Hospital (Mo.), 218 S. W. 696.

Disease or Accident as Proximate Cause of Death.—In an action on a policy covering bodily injury sustained through accidental means the petition alleged that the insured having a wound in his side caused by an operation for appendicitis, from which he had fully recovered, an embolus from some accidental cause became attached to the wound, that while lying in bed propped up with pillows, the insured slipped off the pillows, and the jar of his body, incident to this fall, separated the embolus from its lodgment on the surface of the wound, and was taken up by the blood and projected through the veins to the heart, resulting in the insured's death. It was held that the petition stated a cause of action, as against a general demurrer, and that the question whether or not the insured would have died at the time he did die if it had not been for the alleged accident was for the jury.—Pacific Mut. Life Ins. Co. v. Meldrim, Georgia Court of Appeals, 101 S. E. 305.

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SYMPTOMATOLOGY OF CANCER OF THE MIDDLE EAR.

THE onset of cancer of the ear is frequently silent and it is only after an otological examination that a suspicion of malignant growth may arise. In these circumstances the patient will probably seek advice for a discharge from the ear dating back to childhood; polypi obstruct the fundus of the tympanum and after removal they soon recur. It is only on this account that a microscopical examination is usually made, but this should always be done in the first place and then an early diagnosis of malignancy may be made. Occasionally, it is true, an ordinary polypus may show an otitic proliferation and lead one to suspect cancer, but in simple polypus the proliferation is invariably in contact with the surface epithelium, while in cancer the masses are more isolated one from the other. If the process is malignant, the polypi are more friable, with rapid recurrences and frequent hemorrhages. In some cases the pain is severe and is the reason for the patient seeking medical advice, and although not a constant symptom it is rarely absent. It occurs in paroxysms and these are so violent that they are difficult to support. A discharge invariably exists whether it precedes the neoplastic development or is the result of a secondary infection. Absence of an internal suppurating process has been rarely observed and almost always the growth succeeds to a chronic discharge. At the commencement, the discharge is slight but it increases in amount, becoming profuse, fetid, and often bloody, containing necrotic débris. The growth quickly extends and is not long in invading the surrounding bony areas, producing destruction of tissue to a far greater extent than the worst cases of cholesteatomata.

Paralysis of the facial nerve is the rule in all neoplasms of the middle ear and bony portion of the external auditory canal. The anatomical disposition of the nerve along the wall of the tympanum and bony canal, after its reflection, exposes it often at an early date in the process. Vertigo—a sign of destruction of the labyrinth—is a usual symptom which arises sooner or later as the morbid process invades the semicircular canals, and Zeroni has recorded the case of a patient who consulted him for vertigo from this cause, who always fell on the side of the ear involved. The vertigo may be due to irritation and compression of the brain from intracranial extension of the neoplasm. From the very onset of the growth, subjective sounds may be complained of, with frequently a decrease of the auditory acuity which may reach absolute deafness if the labyrinth is involved. The integrity of the latter may exist, yet the deafness will, nevertheless, be absolute from compression on the fenestra of the labyrinth.

The growth continuing its destructive action develops in various directions. If the entire ear is involved necrosis of the bone occurs, either from pressure or from disturbances of the nutrition, following which extension into the temporal bone may occur. The necrosis extends beyond the walls of the canal, the roof and antrum of the labyrinth, while the middle wall and labyrinth often resist the destructive process. In one instance, Mathewson found the capsule of the labyrinth forming a sequestrum suspended on the auditory nerve. The neoplasm may extend along the base of the skull and neighboring parts of the neck, giving rise by compression to a clinical picture simulating bulbar paralysis or unilateral paralysis of the facial, glossopharyngeal, pneumogastric, and hypoglossus. When meeting the dura and the vessels, the growth appears to cease its progress, the dura becoming thickened and offering a barrier to the neoplasm.

The transverse sinus is often near the posterior wall of the auditory canal so that it may early become involved, but usually the vessels are occluded by thrombi so that hemorrhage is exceptional. The lymphatics are often involved, but metastases are relatively rare. Enlarged lymph-nodes are solely due to suppuration and infection, and the enlargement may be such that the pre- and retro-auricular nodes completely deform this side of the head. The growth may invade the parotid at an early date and also compress the facial nerve at this point. Invasion of the lateral walls of the pharynx may occur, provoking pseudo-abscesses or occluding the Eustachian tube. Cachexia occurs prematurely and progresses rapidly and is a good diagnostic sign in favor of malignant disease. After cachexia, meningitis is the next most frequent cause of death, while if the pneumogastric is involved death may take place from pneumonia or paralysis of the heart.

SUPERIMPREGNATION.

IN a lecture on this and allied subjects before the Law School of the University of Rio de Janeiro (*Revista Medico-Cirurgica do Brazil*, May, 1920, xxviii, 5) Dr. Carlos Seidl said that multiple pregnances are the inevitable result of fecundation of two or more ova, and with the exception of twin pregnancies are very rare. It is commonly assumed in multiple pregnancies that fecundation has occurred almost synchronously. In law it is the first child to be born who is deemed the eldest, but in right it should be the one in whom which fecundation first occurred. In multiple pregnancy the children suc-

ceed one another at short intervals but in rare cases one is not born until after the lapse of weeks or even months. This is known as superimpregnation and the presumption is that different ovules have been impregnated and in different acts of coitus, even possibly by different fathers.

Superimpregnation is of two sorts, superfecundation and superfetation. The former requires only that there be different ova and different acts of copulation, but the interval is reasonably short. In superfetation the woman, in a more or less advanced pregnancy, conceives again while there is a fetus actually in the uterus. The former is regarded as quite possible, the latter as impossible. The reasons are first that every alleged case of superfetation admits of another explanation such as bifid uterus or death of one fetus long before term, with the other fully developed. These false superfetations are common enough and as a rule readily recognizable. Even in twin pregnancy there may be notable differences in fetal development. Clinically considered, the cases are also explicable by some other theory than superfetation, such as latent gestation, where for some reason one twin is not viable at the birth of the first. Nevertheless some leading obstetricians have had cases which could hardly be explained save by the theory of superfetation.

Theoretical reasons against superfetation comprise the cessation of ovulation and the impossibility of ascent of the spermatozoids to the tube. Superfetation has never been shown to occur in animals although superfecundation can be experimentally brought about. This is easily proved by allowing males of different strains to cover a female at different periods, in which case the character of the offspring will show the double paternity. In the human race it has been noted in the case of a negress who had cohabited with white and colored men during the same period of ovulation, that twins have been born, one negro and one mulatto. Facts of this type have been reported in the West Indies by both English and French writers. Pinard reported a remarkable case of twin pregnancy in which one child was sound and the other syphilitic. He impressed the woman greatly by assuring her that one child was begotten by the husband and the other by her lover, and she confessed. In the laws of various nations relating to legitimacy are some which would make illegitimate any child born later than 300 days after separation from the husband and in such a case both true and false superimpregnation could come up for expertisation. Ordinarily a second labor at a later period should raise suspicion of some form of bifid uterus. Many conditions might come up in obstetrical practice, as when a woman has married very shortly after the death of her husband, in which case with some irregularity in gestation and labor the question of superfetation could come up. Professor Tronge of the Chair of Obtetrics at the University of Rio supposes a case in which the second marriage took place 50 days after the sudden death of the first husband. The woman had borne a child one month before this second marriage and if pregnant in both halves of a bifid uterus might give birth again as late as 8½ months after her second marriage, provided she had been impregnated just before the husband's death.

THE DYSPEPTIC ORIGIN OF NIGHTMARE AND PAVOR NOCTURNUS.

THAT a difficult digestion will often give rise to disagreeable dreams is well known to all who practise medicine. Nightmare is a disagreeable dream, accompanied by a feeling of oppression and pressure over the epigastrium, terminating in a distressing awakening, the forehead moist and the limbs cold. Besides the epigastric distress and starting out of sleep, nightmare is characterized by the homogeneousness of the mental visions that constitute it, occasionally even by their stereotyped nature and the persistency of the painful remembrance. After the evening meal the patient is frequently overtaken by somnolence which he rarely has the courage to overcome; he goes to bed early under the impression that this impulse to sleep will continue. But very shortly he experiences a sensation of weight which binds the epigastrium, then this sensation rises to the brain and nightmare occurs, usually of such a painful nature that the subject awakens in a start. The most common types are a feeling of falling with a sudden start out of sleep and a cry, pursuit by an enemy, or a sensation of crushing by a heavy weight. Spitta has recorded the case of a female novelist who was in the habit of partaking of a heavy meal immediately before retiring when she desired to provoke horrible dreams in order to have material all ready on the following day for descriptions in her stories. The eminent English physician, Whytt, was himself a hypochondriac and has left us an admirable account of the extraordinary sensations he experienced when his stomach was "out of order." At the time this occurred and he was disturbed by wind, he was often attacked by mild nightmare. He would arise at once and as soon as he was completely awake it always seemed to him as if there was a weight over the stomach or that something impeded him in the gastric region, and this sensation was accompanied by languor or a kind of oppression. Whytt at length found that a small glass of brandy was both a prophylactic and curative of the condition.

Robin believes that to dyspepsia is due the majority of cases of the singular condition known as pavor nocturnus that has been so well studied by West, Henoch, Comby, and others. It is a common experience to meet with dyspeptic children who—large eaters and drinkers—suffer from pavor nocturnus. In these subjects it cannot be maintained, as some believe, that the process is a larvate form of hysteria or epilepsy because a proper diet will put a stop to all the trouble. Unquestionably, nervous children are more prone to develop these nocturnal accidents, but dyspepsia is in itself quite

enough to develop them. The phenomenon occurs from two and a half to three hours after the evening meal. The child awakes suddenly, rises in bed, with the eyes open in a fixed stare. He sees animals or robbers, cries for his parents, but does not recognize them when they appear. Neither caressing nor consoling words comfort him, but after the lapse of a few minutes to half an hour a parxoysm of weeping occurs, sometimes with involuntary micturition, but convulsions never occur, and the child then falls asleep. Attention to the diet and the exhibition of simple medicaments to correct the dyspepsia constitute all the treatment necessary to cure the patient. It is a therapeutic error to resort to the administration of bromides and sedative medication.

Syndrome of Bloch.

In the Medical Record for December 2, 1916, xc, 23, Bloch published an account of a syndrome which comprised hyperthyroidism with pseudo-hysteria. In *El Siglo Medico* for June 5, 1920, lxvii, 3469, Juarros reports the case of a "curious variation" of the disease picture, as follows: The patient was a woman of 28 years without hereditary or personal pathological antecedents. She had never required medical aid. A relative died and her husband had to journey from Madrid to Argentine to collect the inheritance. The patient, who was much upset by the separation under such conditions, wept incessantly and was unable to sleep for some nights. Little attention was paid to her, as the manifestations were regarded as ordinary grief, whereas in reality a neuropsychosis had begun. She became worse and her attitudes, gestures, and speech became pompous and affected. She sought to dominate the other members of the household, showed much irritability and began to smash crockery and do other arbitrary and unconsidered acts. The diagnosis of the attending physicians varied from hysteria to neurasthenia but her periods of violence were such that the family began to desire her segregation. At this juncture it was found that a hyperthyroid syndrome had developed—tachycardia, perspiration, hot flushes—to which appeared to be added ovarian insufficiency which led the author to the diagnosis of Bloch's syndrome. She was given ovarian preparations and antithyroid serum in ampoules and in two months was well. The typical Bloch syndrome is said by its discoverer to occur in young widows, divorcées, and others whose sexual life is violently interrupted. The chief symptoms are insomnia, irritability, attacks of weeping, asthenia, exaggerated vanity and pretentiousness suggesting paranoia, sensitive breasts and ovaries, abnormal pigmentation suggesting Addison's disease, dysthyroidism and dysovarism, gastroenteric symptoms, etc., the affection yielding to opotherapy.

The Prognosis of Fractures of the Metacarpal Bones.

Fractures of the metacarpal bones, although not frequent, are certainly not uncommon, especially in adult males; but women, elderly subjects, and children are less liable to these fractures. They are produced by direct or indirect violence and are sometimes the consequence of tearing away of the bone by the radial tendons. Their symptomatology is reduced to pain, swelling, echymosis, functional impotence, deformity, and crepitation, these different symptoms being more or less complete according to the variability of the fracture. The clinical diagnosis is ordinarily easy but nevertheless radiography should always be resorted to. In the majority of cases the prognosis is good, complications being relatively rare. When there is no displacement of the fragments or if the case is one of simple fissure fracture, recovery is prompt, while if there is displacement the ultimate outcome will usually be good. But the possibility of complications must not be overlooked. Besides, it is usually the right hand that is involved, so that its importance is manifest. Bennet estimates that loss of function lasts for several months; this is merely a mean, because published statistics show very variable results in this respect. Dorny states that in favorable cases the functions of the thumb are recovered in about five weeks from the beginning of treatment. However, there are cases, especially those that have been neglected, in which the complete functional recovery in the case of the thumb takes a much longer time. In the case of simple fracture, it is generally conceded that the mean time for consolidation to take place is from twenty to thirty days and that the average time of temporary incapacity is from two to three months. As to the diminution of the work ing capacity it varies according to the metacarpal bone involved. In the case of the second or third metacarpal bone the decrease of working capacity is estimated at 8.5 per cent. if the active hand is involved, and at 7 per cent. in the case of the passive member (Forgue and Jeanbrun). Espagnon refers to a case in which the courts at Nancy refused to order the payment of damages for simple stiffness or difficulty in flexion of the left ring-finger. It is very evident that the amount of damages to be exacted will vary according to the metacarpal bone or bones involved, as well as the hand and the profession of the injured person.

Diagnosis of Sex Through Measurements of the Atlas.

An important medicolegal and anthropological resource is described by Marcel Baudouin in *Le Progrès Médical* for June 5, 1920, xliii, 23. It has to do with the ratio between the length and breadth of the articular facet of the atlas which enters into the cranio-atlantoid articulation. The origin of the idea is an assertion or belief, that the sex in a skeleton may be told from the atlas, which has a folk lore basis and is found in some of the older anatomies. The statement goes back to classical times, for Catullus noted that the neck of a young girl was smaller than that of a boy of the same age. This refers to the muscular mass, but the latter varies directly with the size of the articulating surfaces, so that the lateral masses of the atlas are larger in man than in woman. From this crude idea the author has been able as a result of many measurements to show that the ratio or index between the length and width of the arti-

cular facets exhibits notable sex differences, being considerably greater in woman. We may measure both the condyles on the occiput and the excavations on the atlas. These do not agree exactly for the condyloid index is somewhat greater than the glenoid index, although naturally this does not affect the sex ratio. In certain old Gallo-Roman skeletons the author was easily able to identify the male sex by the low condyloid and glenoid indexes which were respectively 42.85 and 46.15. In female skeletons of the same people the ratios would have been between 55 and 65 or even more. This simply means that in the male the articular facet is long and slender in comparison with that of the female, in whom it is relatively short and broad. Hence the quotient of length divided by width and multiplied by 100 will give a much larger figure for the female.

Saint Anthony's Fire.

THIS hypothetical medieval malady has received the attention of Durodié in an article which appears in the *Journal de Médecine de Bordeaux* for May 10, 1920, xci. 9. Of its severity there can be no question. It was recognized under a great variety of names, mostly characterized by the term "fire" in various connections. Among the synonyms were several which bear saints' names—St. Anthony's, St. Firmin's, St. Marcel's, one name of a country, Persian fire, and several more or less descriptive terms, such as "sacred fire," "infernal fire," etc. The most striking symptom was a spontaneous amputation of the feet after intolerable suffering. There is a record of twenty epidemics between the years 827 and 1347 or in other words about four to a century. The mortality while not comparable with that of plague years, was considerable. Thus in Aquitania in 1020 no less than 40,000 persons perished. A century later the malady spread over most of France and appears to have lingered in the Empire for a number of years. A hiatus then occurs for some centuries when there was a recrudescence, five epidemics occurring from 1630 to 1747. The affection seems to have shown a tendency to appear in severe winters with preceding wet summers and poor harvests. The preference in some cases of the months of the harvests suggests the possibility that the disease was chronic ergotism. The author's explanation of this historical malady shows a notable discrepancy from an older view which dates back before the late war and which was commented on at the time in medico-historical circles. The other theory saw in the "Persian fire" the disease anthrax which bears no relationship with ergotism.

Grancher's Disease.

UNDER the name of splenopneumonia, otherwise Grancher's disease, Salveti contributes an article in *La Pediatria* for May 15, 1920, xxviii, 10, with case report. The original description by Grancher was as follows: The patient is first seized with a chill which is followed by a dry cough. The left side is the one nearly always affected at the outset. There is absolute dulness on percussion with disappearance of vocal fremitus. The condition resembles pleurisy with effusion to such a degree that puncture alone will differentiate between the two. The pneumonia is of a very rare type while pleurisy with effusion is of course common. Differentiation from ordinary lobar pneumonia is much easier. Autopsy finds are few because the disease is rather benign, recovery being the rule. As the author's case ended fatally it possesses considerable value. The patient was aged 2 years, and death may have been in part due to hemorrhagic encephalitis. The pulmonary lesions were as follows: purulent bilateral bronchitis; massive total pneumonia of the left lung of the so-called desquamative type; subpleural abscess in the upper lobe; right pneumonia in the upper and middle lobes. The tubercle bacillus was absent and the offending germ was probably Fraenkel's pneumococcus. No clinical diagnosis seems to have been made, as in addition to pulmonary lesions there were intracranial manifestations and nephritis. Pleurisy was excluded by puncture. The case is by no means a clear cut one and the author at the close intimates that since it occurred during the influenzal pandemic it may have been an aberrant grippe. Encephalitis has not hitherto been seen as a complication in Grancher's disease.

News of the Week.

Canton Hospital Anniversary.—The Canton Hospital, founded in 1835, will celebrate its eighty-fifth anniversary this year. This is the oldest and one of the largest hospitals in the Orient, and is the first missionary hospital in the world still in existence. During its existence more than two million patients have been healed in the hospital and its dispensaries. In the past decade 120,000 dispensary and 20,000 in-patients were treated, and 14,000 operations performed upon in-patients. During 1919, 2,500 in-patients and 12,000 out-patients were cared for, and over 2,000 operations were performed upon in-patients.

All-American Health Conference.—The first of a series of regional health conferences authorized by the International Health Conference in Cannes is to be held in Washington, D. C., December 6-13. It will be devoted to a consideration of venereal diseases. The conference is being organized under the joint auspices of the United States Interdepartmental Social Hygiene Board, the United States Public Health Service, the American Red Cross, and the American Social Hygiene Association. Prominent health officers and sociologists from all parts of North and South America will attend. Professor William H. Welch of Johns Hopkins will serve as president.

Standardized Rat-Proof Houses.—Health officers from various States and the larger cities, at a conference in Galveston and Beaumont, Texas, to study bubonic plague and rat extermination, recommended to Surgeon-General Hugh S. Cumming that standard specifications for rat-proof buildings be drawn up by the United States Public Health Service. In accordance with the recommendation, plans for radical changes in the construction of business buildings, dwellings and wharves are being drawn up by the United States Public Health Service as part of a nation-wide campaign for rat extermination. These are to be

furnished to the different States and cities in order that they may be incorporated in the building codes throughout the country.

War Loss in Population.—According to the report of a statistical research conducted by the Society for Studying the Social Consequences of the War, of Copenhagen, ten European nations engaged in the war sustained a potential loss in population of 35,320,000 persons since 1914. Of this number 9,819,000 persons were killed in war; 5,301,000 deaths were due to augmentation of mortality, economic blockades and war epidemics; 20,200,000 fall in birth rate due to the mobilization of 56,000,000 men.

New Public Health Journals.—The *International Journal of Public Health*, the official scientific organ of the League of Red Cross Societies, made its first appearance in July, with complete editions in French, Italian, and Spanish. The journal is published and edited in the Department of Medical Information of the League at Geneva. Dr. Thomas R. Brown is editor, Dr. W. W. Francis, associate editor, and there are six assistant editors. The journal will appear every two months for the present.

Group Consultation Clinics.—The New York State Department of Health announces the successful conduct of the Group Consultation Clinics at Goshen, held on three days last week by 314 physicians. This clinic was established by the State Department of Health in conjunction with the State Department of Education, the State Hospital Commission, State Commission for Feebleminded, the State Charities' Aid Association and the American Red Cross, the object being to provide such modern medical facilities for the country doctor as would enable him to reach a correct diagnosis in difficult and obscure cases. The success of this clinic has been so great that similar clinics are planned for other sections of the State.

Extension of Work for Undernourished Children Suggested.—Dr. Royal S. Copeland, Health Commissioner of New York City, is so pleased with the work of the summer play schools, established primarily for the benefit of undernourished and backward children, that he will recommend an extension of the movement. Five such schools were operated during the summer, medical reports from which show that the nutrition grade of every child increased about 15 per cent., and that every child gained two pounds in weight.

The Menace of Typhus.—Dr. Harry Platz, who returned recently from Poland, where he made a study of conditions for the Joint Distribution Committee, will lay before the Government authorities a plan for raising $75,000,000, either by Congress or through private subscription, to send physicians and workers from the United States to join the representatives of other countries in fighting the world menace, typhus fever.

Smallpox on Another Liner.—The Italian liner *Dante Alighieri*, which arrived from Naples and Genoa recently, brought a case of smallpox among its 2,002 steerage passengers. The 400 first and second class passengers were vaccinated and the steerage passengers were sent to Hoffman's Island for observation.

"Still the Greatest Mother in the World."—Under this title the American Red Cross will inaugurate its fourth roll call November 11 to 25. Instead of the wounded soldier of the war-time "Greatest Mother" poster, the new poster shows a crippled child, an aged man and a distressed mother, the central figure, the Red Cross nurse, remains the same.

Free Dental Clinics.—The health service department of New York County Chapter of the American Red Cross has published a directory of dental clinics, showing that fifty-one dental clinics in New York City give their services free or at nominal charges. Eleven of these specialize in work for children.

Down With the Pacifier!—Pacifiers, not pacifists, are now under fire. The Passaic County (N. J.) Midwives' Association has dubbed this nursemaids' delight a habit forming drug, and has declared war upon it. The assembly at Trenton will be enlightened with regard to the evils of the pacifier, and will be importuned to pass a law to save the babies therefrom.

Prize for Article on Tuberculosis.—The *Indian Medical Record* announces a prize of £10 to be awarded to the best writer on "Tuberculosis. Its Etiology, Prophylaxis, and Treatment." The competition is open to all qualified medical men in service or in practice. Communications may be addressed to A. C. Bishard, Managing Editor *Indian Medical Record*, 2, Horokumer Tagore Sq., Corporation Street, Calcutta, India.

Dental Work Needed.—It has been stated by the headworker of the University Settlement, one of the United Neighborhood Houses of New York City, that more than 98 per cent of the children in this district have defective teeth. A free dental clinic is said to be the only remedy for this state of affairs, the parents of the children in the majority of cases, being unable to pay for dental services.

Two-Year Sleep Broken.—A woman who is said to have been asleep for two years in a county asylum in Wisconsin has regained consciousness. During the long period when she was "bound in another world" the woman was as helpless as a babe, having to be fed and cared for as if she had been an infant.

Dr. E. F. Hartung, County Physician in Kings County and practising physician of Brooklyn was severely beaten and robbed of $4,000 in cash and jewelry recently by a "patient" to whom he was summoned by a confederate.

Colonel F. F. Russell has resigned from the Medical Corps, U. S. Army, to assume charge of the Division of Public Health Laboratories of the International Health Board of the Rockefeller Foundation.

Medical Society Elections.—At a recent meeting of members of the Regular and Reserve Medical Corps of the Army who served during the World War, called in Birmingham, Ala., for the purpose of organizing the Medical Legion of the United States, the following officers were elected: *President*, Dr. William M. Jordan; *Vice-President*, Dr. Gaston W. Rogers; *Secretary*, Dr. Leo C. Wood.

The Chicago Radiological Association, organized August 5, elected the following officers: *President*, Dr. Alonzo C. Tenney; *Vice-Presidents*, Mr. A. M. Olson and Mr. J. H. Brothers; *Secretary*, Mr. J. W. Ross; *Treasurer*, Dr. John H. Carpenter.

Charitable Bequests.—By the will of Berthold Bendheim of New York City, who died August 23, the following bequests were made: To the Federation for the Support of Jewish Philanthropies and the Hebrew Orphan Asylum $2500 each, and $2000 each to the American Red Cross, Mount Sinai Hospital, Montefiore Home, the Hudson Guild, Felicia Fresh Air Fund Committee and the Madison House Society; $1000 each to the Crippled Children's East Side Free School and $500 each to Tuskegee Institute, Beth Israel Hospital, Society for the Improvement of the Condition of the Poor, and St. Mark's Hospital.

By the will of Mrs. Nellie C. Black, wife of the late John C. Black of Chicago, the residue of her estate, amounting to about $500,000, is left to the Children's Memorial Hospital, Chicago, which, after twenty years, will receive also the principal of a $250,000 trust fund.

Medical Society Meetings.—THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS will hold its thirty-third annual meeting at Atlantic City, September 20-22, under the presidency of Dr. George W. Crile of Cleveland, Ohio.

THE NEW YORK AND NEW ENGLAND ASSOCIATION OF RAILWAY SURGEONS will hold its thirtieth annual session in New York City, October 19, under the presidency of Dr. William B. Coley.

THE AMERICAN PUBLIC HEALTH ASSOCIATION will hold its annual meeting at San Francisco, September 13 to 17, inclusive.

THE MEDICAL SOCIETY OF THE MISSOURI VALLEY will hold its annual meeting at Omaha, Neb., September 6-7, under the presidency of Dr. Charles Ryan of Des Moines, Iowa.

THE NATIONAL DENTAL ASSOCIATION held its twenty-fourth annual session in Boston, August 23-27. This meeting marks the sixty-second anniversary celebration of organized dentistry.

Obituary Notes.—Dr WILLIAM STEED FLORENCE, interne at Bellevue Hospital, New York City, died August 22. He was graduated from the College of Physicians and Surgeons in June of this year.

Dr. WILLIAM DE FORREST VOORHEES, formerly of Brooklyn, N. Y., died at Auburn, N. Y., August 28.

Dr. EDGAR ABBOTT of Boston, a member of the staff of the Massachusetts General Hospital, was killed in an automobile accident on August 30.

Correspondence.

DESCRIPTIVE PSYCHOLOGY AND MEDICINE.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Will you permit me to add something, in the way of comment and exhortation, to my article on Psychology and Medicine published in the MEDICAL RECORD of August 28. In that article I told something about the old psychology; and while the ancient science may not help the sick, it is essential to an understanding of the mental functions, just as anatomy helps to an understanding of physiology.

I also gave some indication of what the "new" psychology means and of what it aims to do. I feel very seriously that the medical profession, educators, and moralists ought to understand with what we are confronted in connection with this movement. This "new" psychology presents a one-sided, but definite method of dealing with the education and character-building of the young, and with human conduct generally. Its cultural technique involves a special ethics, a philosophy of life, and a means of treating mental abnormality and disease.

So the medical profession, and especially those interested in public health and mental hygiene, ought to take a definite and carefully studied stand as to the sanity and wisdom of applying psychoanalysis in the moral, mental, and physical education of adolescents and others. Adopting it, we will bring up our children and direct our own lives on the theory that our motives, our conduct, and character are determined by certain highly organized subconscious activities largely sexual and infantile. The young will be shown that by a close and meticulous study of their early experiences and dreams they will learn to know themselves and adjust their conduct and their ideals accordingly. They will learn that man is under the control of these particular psychic laws, and can only make himself what such laws allow. Is this going to be the main and preferable method of developing mind and character? I hold that it is not, though I believe that psychoanalysis has a field and I respect highly those who are following in it intelligently and conscientiously.

Probing into the past life, and rooting up complexes, showing the real psychic causes of morbid habits of thought ought to be of help to some who have grown up with wrong points of view, and who do not know that they have removable maladjustments. This conception or new psychology gives us a technique for carrying out the old Socratic advice "know thyself." But I also hold that it is a dangerous therapeutic and pedagogic tool and one of limited value. It cannot take the place of methods of training and treatment approved by experience; nor, perhaps, of the Sermon on the Mount or any equivalent appeal. I would place it in therapeutics along with physical training, dietetic teaching, narcotics and bromides as one of the handmaids of medicine serving only a wise master.

After all, the really new psychology is not dynamic or behavioristic, or descriptive or somatic, but it will include all methods of observing and interpreting the psychic functions of the brain and explain the fundamental causes of human conduct. This is the modern, ultimate eclectic psychology.

CHAS. L. DANA, M.D.

53 WEST FIFTY-THIRD STREET.

THE LATE DR. LAASÉ AND THE DRUG LAWS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—I would like to ask the privilege of qualifying a statement prominently published in a New York newspaper in which the late Dr. Christian F. J. Laasé of this city is referred to as a "Foe of Drug Laws." It is felt that this characterization may reflect somewhat upon the reputation of this lamented laborer in the field in which he was beginning to achieve distinction, the study and treatment of the disease of narcotic drug addiction.

Dr. Laasé's opposition to drug laws was confined to combating these measures while they were up for legislative action, notably in this state, the last instance being the Cotillo Drug bill, which was repealed by the New York legislature as drawn in the interest of the compulsory institutionalization of drug addicts. That he obeyed these laws when enacted as far as it was humanly possible to do so was proved by his acquittal in the Federal Courts, where it was shown to the satisfaction of a jury that he had acted in good faith in all his dealings with his patients both as a physician and as a law-abiding citizen.

The Harrison drug law is now opposed by those whose activities in drug legislation in this state was looked upon by Dr. Laasé as inimical to the welfare of the victims of drug addiction and of the rights of the practitioners of medicine on the other hand. The term "foe of drug laws" may now be justly applied to them as they are responsible for a statement recently sent broadcast throughout the country in the form of an interview with Dr. Frederick R. Green, secretary to the Council of Health and Public Instruction of the American Medical Association.

This report elaborates and intensifies the objections to the Harrison law embodied in the one originally made by the Council of Health and Public Instruction and printed as follows in the Journal of the American Medical Association: "The Harrison law has now been in operation a sufficient length of time to afford a fair opportunity for determining its effectiveness. It must be admitted that it has failed of the purpose for which it was enacted, viz., the restriction of the use of habit-forming drugs to legitimate purposes. Reports indicate that efforts to enforce the law in the face of this over supply of drugs have resulted in the marked increase in the illicit distribution of opium, morphine, heroine, cocaine, and other inhibited drugs, while the extortion of unfortunate victims of drug habits have been made possible by the illegal methods under which the traffic is necessarily carried on. Reference is also made to the fact that 'the opportunities for profit due to the dishonest enforcement of the law in different localities has led to blackmail and official corruption." The remedy offered is the control by the United States Public Health Service of the control and distribution of habit-forming drugs. Although the compulsory institutionalization of drug addicts by this body is not mentioned, its contemplation may be surmised by the condemnation of the ambulatory treatment of drug addiction by the American Medical Association at the time this report was adopted. Nothing is said in this report about the dangers attaching to the prescribing for addicts by reputable physicians under the rulings of the Department of Internal revenue at the present time. By reason of this danger physicians everywhere have refused to treat these sufferers. This is the real reason for the growth of the illicit trade, the blackmail, and the extortion in connection with the law and now condemned by the American Medical Association.

JOHN P. DAVIN, M.D.

117 WEST SEVENTY-SIXTH STREET.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, August 6, 1920.

First Annual Meeting of the Federation of Medical and Allied Societies.—Sir Malcolm Morris presided over the first annual general meeting of the Federation, which was held in London on July 25 last. After the report of the executive council had been read, Sir Malcolm Morris gave his presidential address and said in part that the need for such a Federation could be deduced only too easily from the experience of the last few years. Was it possible to maintain that when questions affecting the welfare of the great body of medical men had been before Parliament the profession had been able to pull its full weight? Was it so, for example, when the health insurance system was being framed? Certainly it was not. Who that cared supremely for the highest interests of the profession—and among these highest interests he ranked its good repute—could look back upon the stormy events of those days without some sense of humiliation? The chaffering in public into which the profession was forced was only too well calculated to give the impression that medical men were thinking very much of their material interests and very little of the nation's welfare. Had there been in existence such a body as the Federation was fast growing to be, how different would have been the beginnings of health insurance. The Government would have known at the outset that it had to reckon with a Federation through which were able to speak not only the doctors, but also pharmaceutical chemists, who were immediately concerned, and related bodies which had no material interests at stake to deflect their judgment. How could the deliberate conclusions of such a Federation have failed to carry weight with the Government, and with that public opinion which was the final court of appeal? The need for federation was deducible not less plainly from the multiplicity of existing organizations. That there were some 200 separate medical bodies certainly showed that the profession was not lacking in the organizing faculty. But was it not evident that the effect of all this organizing energy would be vastly strengthened if these bodies were leagued together? They were influential in very different degrees. But were they all federated, the most powerful would have their influence increased tenfold; the least powerful would have their influence increased a hundredfold. With regard to politics, the speaker said that it could not be too often insisted upon that the Federation knew no party politics. To say that it knew no politics would be absurd, for the most important of its objects was to take political action at every possible opportunity. But it gave its support, its active and influential support, to Lieutenant-Colonel F. E. Freemantle, who was elected as Coalition Unionist, and to another member of the profession, Dr. Dunstan, who stood as a Labor candidate. And every medical member but one of the legislature except Dr. Addison, whose office debarred him from formal association with a movement with which he had none the less avowed his

sympathy, including Lord Dawson, who could speak for the profession in the House of Lords, belonged to the Federation. The medical members of the House of Commons now numbered ten, and it was known that they were only the advance guard. Before long, with the active backing of the Federation, their numbers would be multiplied, and the time was at hand when, on all questions affecting health interests, the Whips would have to reckon with a solid phalanx of medical men who would be able to speak with one voice on public health, however much they might differ on other questions. If any Government starved the Public Health Service they must cry "Hands off," and a powerful medical group in the House of Commons would be a bulwark. Behind it would stand the Federation. No longer would it be a "grave defect in medical organization," to use Dr. Addison's words, that there should be "no body of men in the profession who could be appealed to for judgment on a great public issue." Such a body the Federation was destined to become. That the system known as State medicine would undergo much further development was inevitable. The profession had no alternative but to adapt itself to the nation's needs, whatever form the adaptation might take. That task would require more statesmanship than was to be found in any one of the existing medical organizations, be it never so powerful. It was an enterprise which would tax to the uttermost the statesmanship of the whole profession. If that were so, how could any medical society or association be justified in withholding whatever contributions it could make to the common stock?

It would seem that the medical profession of Great Britain has finally realized the necessity for thorough organization. In fact, it has become a question of self-defense. The allied societies of the country are splendidly organized, and unless the medical men are strong enough to resist them, these societies will simply dictate terms to them. As Sir Malcolm Morris truly said, the Health Insurance Bill should open the eyes of medical men to what is before them unless they are in a position to fight for their rights. At present they are almost politically impotent and to a great extent at the mercy of self-seeking, self-serving politicians who are more than ever firmly convinced that vox populi is indeed vox dei. Of course, it is obvious that the character of medical practice is changing and that it is useless for doctors to kick against the pricks. They must adapt themselves to circumstances so long as these are not wholly opposed to the dignity of the profession and their interests. They must give and take, but must not allow themselves to be merely so many pawns in a bureaucratic system and in which public and individual health play but subsidiary parts. The only way in which the profession can assert itself is by union and organization. It only requires political power to protect itself and to lead in health matters rather than to be led or driven by those whose object is not so much the conservation of health as the consummation of their own political ambitions.

Congress of the International Society of Surgery.—Dr. W. W. Keen of Philadelphia presided over the fifth congress of the International Society of Surgery, which took place in Paris, July 19-23. It will be in the recollection of our readers that the fourth congress of this society was held in New York in April, 1914. It will be also remembered that at this meeting Dr. Depage was one of the most prominent figures, and that he was accompanied by his charming wife, Madame Depage, who was drowned in the Lusitania murder. At a preliminary meeting held just before the opening of the congress it was determined that Germans, Austrians and Turks should be excluded from membership. Hospitals and clinics were visited each morning of the week during which the meeting was held, and on every afternoon there was a scientific meeting. The opening session took place on the afternoon of July 19, when an address was given by Mr. Honnorat, the Minister of Education. Professor Keen, in his inaugural speech, took as his subject "Some of the Ideas Which as Doctors We Ought to Defend." He dealt with many questions of medical concern including those of the education of the medical man, scientific research, professional conscience, venereal disease, the altruism of the medical profession, and the value of total abstinence. Dr. E. A. Graham of New Orleans read a paper on asphyxia, in which he pointed out that this condition might be produced by (1) interference with the intake of air; (2) interference with the power of the blood to carry oxygen or to remove carbon dioxide; (3) interference with the circulation of the blood; (4) disturbance of the power of the tissues to utilize oxygen. He showed that a change of pressure in one pleural cavity is associated with a similar change in that of the opposite side. Both lungs, therefore, were nearly equally compressed when their expansion was restricted by air or fluid. The commonly accepted condition of "collapse" of one lung with maintenance of respiration by the other did not occur.

In the section of radiography over which Sir D'Arcy Power presided Dr. Abbe of New York gave a lantern-slide demonstration of the beta and gamma rays, and demonstrated the effects of magnetism upon the radium emanations. Dr. Coolidge showed his apparatus for taking *x*-ray pictures.

The next meeting will be held in England in 1923 under the presidency of Sir William Macewen, Mr. Charles Ryall becoming a delegate. It was decided that the subjects for set discussion in 1923 should be: (1) Serotherapy and vaccinotherapy in surgical affections. (2) Fractures of the base of the skull. (3) Malignant disease of the colon. (4) Arthroplasty. The public banquet was held at the Palais D'Orsay and was attended by more than 150 ladies and gentlemen under the chairmanship of Professor Keen.

Oxford Ophthalmological Congress.—The eleventh annual meeting of this congress was held in the department of anatomy, Oxford, July 14-16 last. On the first day a discussion on Perimetric Methods was opened by Dr. Luther C. Peter of Philadelphia, who dealt with the newer methods of perimetry and the type of cases for which they were especially adapted. He drew attention to the inefficiency of the ordinary perimeter in re-

cording changes in the central zone and discussed the various modern instruments best adapted for this purpose. The speaker suggested a change in the nomenclature from linear measure in millimeters to angle subtended in degrees or minutes, and discussed the size of the test object, for color studies in particular. The size for the central zone should subtend an angle of half a degree and that for the peripheral zone one degree. The special methods required for the study of bilateral central scotomata were (a) by making use of muscle sense, and (b) by the method of Dr. Peter for combining perimeter and campimeter.

Obituary.—Dr. James Scarth Spence Logie died at Kirkwall, Orkney, on July 17 last, in the 101st year of his age. He qualified L.R.C.S. Edin., in 1841, and practised during the greater part of his working life in Kirkwall, his practice extending over the whole of Orkney. There being no roads nor wheeled vehicles in the island when he began practice his professional visits were perforce made on horseback over rough hill country or in small sailing boats. Dr. Logie was medical officer of health for Kirkland. He was 100 years old on May 1 last, when he received letters and telegrams from the King, the Senate of Edinburgh University, and from the General Assembly of the Church of Scotland, of which he had been ordained an elder in 1855.

Progress of Medical Science.

Boston Medical and Surgical Journal.

August 19, 1920, clxxxiii, 8.

1. Acidosis of the Recurrent Vomiting Type. The Case of Darthea M. W. W. McKibben.
2. Preventive Medicine as Applied to the Individual. J. P. Bill.
3. The Question of Drainage in Cholecystectomy. John T. Bottomley.

1. Acidosis of the Recurrent Vomiting Type.—W. W. McKibben reports in detail the case of a child twenty months old whose history is illustrative of the type of acidosis known as recurrent, cyclic or periodic vomiting. Babies and children of neurotic ancestry, he says, and of lithemic diathesis tend to periodic attacks of vomiting. This is due to disordered fat and carbohydrate metabolism, as well as to sensitization to certain definite food proteins to be found out by skin reactions, or even more important, by experimentation with the foods themselves. The best way to meet the attacks is by stopping everything by mouth and giving one or two cleansing irrigations daily of sodium bicarbonate; and glucose or dextrose in solution by rectum; for the interval, elimination from the diet of all proteins to which the baby is sensitive until the baby desensitizes itself, or is desensitized; also a low fat and sugar intake. It is essential when nearing the cycle, or when the slightest symptoms recur, to watch, or better still, to have the urine closely watched by a physiochemist, so that at the first warning, a sufficient quantity of sodium bicarbonate may be given to neutralize the urine or to render it alkaline. It is important that these precocious children have long hours of sleep, and play alone out of doors as much as possible.

New York Medical Journal.

August 21, 1920, cxii, 8.

1. A Word to the General Practitioner About the Handling of Eye Cases. Edwin B. Miller.
2. Report of Five Operative Eye Cases. Edwin B. Miller.
3. Eye Conditions of Interest to the General Practitioner. Louis F. Love.
4. The History of Acidosis. William Henry Donnelly.
5. Report of a Case of Melanoma. S. R. Monteith.
6. Nephritis. Hyman I. Goldstein.
7. Child Health Work in the Solvay School. George M. Retan.

3. Eye Conditions of Interest to the General Practitioner.—Louis F. Love aims, in this paper, to give to the busy physician, in succinct form, the information he may require in his work, and to aid him in treating intelligently eye conditions that too often are neglected because of insufficient knowledge of the subject, particularly that pertaining to the differential diagnosis of the commoner eye affections. The diseases which he discusses as coming under this category are conjunctivitis; ophthalmia neonatorum; keratitis eczematosa, phlyctenular keratitis, or phlyctenular conjunctivitis; iritis; glaucoma.

7. Child Health Work in Solvay Schools.—George M. Retan discusses the health work conducted in the schools of Solvay, an incorporated village of 6,000 population, a suburb of the city of Syracuse. The objects sought were the lowering of the mortality rate, the prevention of sickness, and the encouraging of the best possible mental and physical development in each individual child. The work is divided into four general heads: 1. the prenatal clinic; 2. the infant welfare clinic; 3. the preschool clinic which fills the gap between the age of infancy and the school age, and 4. the school welfare work which takes the child from kindergarten through high school. The entire work is under the supervision of the school physician. The staff consists of the school physician, an ophthalmologist, a dentist, a dental assistant, two school nurses, one baby welfare nurse, a visiting housekeeper, a nutrition worker, and a physician who conducts the prenatal clinic. None of the work described, according to the writer, costs too much for any community if it is expected to train a generation of virile, healthy, energetic men and women.

Journal of the American Medical Association.

August 21, 1920, lxxv, 8.

1. Studies in Basal Metabolism. A. M. Snell, Frances Ford, and L. G. Rowntree.
2. The Causes of Emotivity, and Their Management. Tom A. Williams.
3. Endocrine Imbalance in the Feebleminded. Oscar J. Raeder.
4. The Surgical Treatment of Brain Abscess. A. W. Adson.
5. Correction of Congenital Clubfoot in Infants. Isadore Zadek.

1. Studies in Basal Metabolism.—Snell, Ford and Rowntree, in this study, which is accompanied with illustrations, charts and tables, give the results of an experience extending over fourteen months and involving approximately 750 determinations on 350 persons. They give detailed consideration to basal metabolism in certain diseases of the endocrine system. Hyperthyroidism, febrile diseases and leukemia exhibited the highest rates, while hypothyroidism, polyglandular deficiencies and afebrile conditions resulting from inanition and marked asthenia yielded the lowest rates. Starvation and prolonged rest in bed tend to result in low rates. From this extensive study the following conclusions are formulated: 1. The gasometric method of indirect calorimetry is a reliable and practical clinical method for determining the basal metabolic rate. 2. The basal metabolic rate is of the greatest significance in diseases of the endocrine system, particularly in diseases of the thyroid, revealing the extent of the increase in metabolism in exophthalmic goiter and in thyrotoxic adenoma, and the extent of the decrease in metabolism in cretinism and myxedema and allied conditions. 3. The basal metabolic rate furnishes an accurate index to the results of medical and surgical treatment of these conditions, and thereby becomes of value as a guide to treatment. 4. The basal metabolic rate is of value in revealing the effect of drugs on metabolism.

4. The Surgical Treatment of Brain Abscess.—A. W. Adson. See MEDICAL RECORD, May 29, p. 934.

5. Correction of Congenital Clubfoot in Infants.—Isadore Zadek holds that the treatment of congenital clubfoot should be begun early. It should be continued until the dorsum of the foot rests easily against the lower end of the leg, and this position should be maintained for about two months, if there is no tendency to recurrence, as in the average case. In the usual run of cases no brace is indicated. Too much reliance is placed in the use of clubfoot braces. The conventional brace is only retentive and not corrective. Frequent daily manipulations, opposite the original deformity, are essential until the correction is assured.

The Lancet.

July 31, 1920, cxcix, 5.

1. An address on Toxic Idiopathies: The Relationship Between Hay and Other Pollen Fevers, Animal Asthmas, Food Idiosyncrasies, Bronchial and Spasmodic Asthmas, Etc. J. Freeman.
2. The Croonian Lectures on the Psychology of the Special Senses and Their Functional Disorders. Arthur F. Hurst.
3. Symptomless Influenzal (Streptococcal) Mastoiditis. Francis F. Muecke and C. Grantham-Hill.
4. The Classification of Pulmonary Tuberculosis. L. S. Burrell.
5. Sulfarsenol in the Treatment of Syphilis, with Special Reference to Its Administration by Hypodermic Injections. F. Carminow Doble.
6. Pleural Obliteration; a Complication of Artificial Pneumothorax. W. C. Rivers.
7. Vertigo: Its Relation to Errors of Refraction. C. Ernest Pronger.

1. An Address on Toxic Idiopathies.—J. Freeman holds that the apparently diverse affections which he designates by the group name "toxic idiopathies," and which include hay fever, other pollen fevers, animal asthmas, food idiosyncrasies, bronchial and spasmodic asthma and sensitiveness to foreign proteids (worms, insect bites), are linked together in an extraordinary way by (1) their selectiveness; (2) by the symptom complexes; and (3) by heredity. The connecting link, if only one could discover it, must have great significance in immunology; the detection of one definite toxic idiopathy in a patient should put one on the alert to discover others; and anything that is learned about one will help in dealing with another toxic idiopathy. This refers chiefly to treatment. Excluding all the palliatives, one has the choice of two treatments for all of them—(1) avoiding the particular irritant, or (2) immunizing against it. The study of these toxic idiopathies, in the writer's opinion, will open a new field of medicine, but they throw light from a new angle across a very large field of the old medicine.

4. The Classification of Pulmonary Tuberculosis.—L. S. Burrell proposes the following classification of pulmonary tuberculosis, from which doubtful cases are excluded: The first stage, A, is subdivided into (1) the hospital stage, and (2) the sanitarium stage. Stage 3 is the stage of decline, and includes patients who are losing ground in spite of treatment. These stages are subdivided as follows: A. *State of institutional treatment.*—1. *Hospital stage.* a. In bed, or up less than two hours a day. b. Up from two to six hours a day. 2. *Sanatorium stage.*—a. Capable of less than half a day's work. b. Capable of half a day's work. c. Capable of a full day's work. B. *Stage of maximum improvement.*—1. Capable of a full day's work. 2. Capable of part-time work. 3. Unable to work. C. *Period of decline.* 1. Able to do some work. 2. Unable to work. 3 Bedridden.

The British Medical Journal.

July 31, 1920, ii, 3109.

1. The Present Position of Vitamines in Clinical Medicine. Opening papers by Professor F. Gowland Hopkins and Sir James Barr.
2. The Treatment of Calculi Impacted in the Pelvic Portion of the Ureter. Frank Kidd.

1. The Present Position of Vitamines in Clinical Medicine.—F. Gowland Hopkins, in opening this discussion before the Section of Medicine of the British Medical Association at its Eighty-Eighth Annual Meeting, said the modern conception of a deficiency disease is not based wholly upon a belief in the existence of vitamines. There may be quite other factors of deficiency in a diet which may produce symptoms to be observed clinically; but the hypothesis of vitamine deficiency plays a large part in current views concerning the chief examples of the conditions which he discusses (scurvy, beri-beri, xerophthalmia, rickets). The term vitamine "hypothesis" is eschewed by the writer. Vitamines, though still of unknown nature in the chemical sense, are not merely hypothetical. Those who believe in vitamines will doubtless be in a stronger position when the chemical nature of these substances is known, and when they can be administered in a pure condition. Short of that, however, the existence of these accessory factors in nutrition—factors which one can already sufficiently define—is now sure, and needs no further evidence. In connection with the clinical evidence one can seldom expect such clear-cut manifestations as are seen in experiments where only one factor is varied and all others controlled. In practice there will be, for instance, only very occasionally, complete absence of any one factor from the diet. Usually the deficiency will be partial only, and often this partial deficiency may involve more than one factor. It is most important to remember that the absence of a specific factor from the food produces results very different from those that follow actual starvation. In the latter case the energy requirements and other demands are met from the tissues, and there is rigid economy of effort and material. Some harmony, too, among all the processes is secured. But when an individual's diet is deficient in, say, a vitamine, he may still be dealing with large quantities of total food. The metabolic machinery may be working at full pressure while neverthless deprived of some essential wheel or cog. Another aspect of these same relations is illustrated in the experimental fact that the necessary vitamine supply is quantitatively not independent of the amount of diet as a whole, nor even of its character. Many possibilities will here occur to the mind of those accustomed to think in terms of metabolism.

Sir James Barr, while realizing that for anyone in the present day to deliberately say that he does not believe in "vitamines" is tantamount to pronouncing his own anathema maranatha, approaches the subject in a skeptical frame of mind. He believes in accessory food factors, substances which are essential to nutrition and even to life itself, though they have no intrinsic food value of their own. The chemical constitution and physiological effects of such substances are well known, whereas "vitamines," so far as their composition is concerned, seem to be a figment of the imagination. He develops the subject along this line.

2. The Treatment of Calculi Impacted in the Pelvic Portion of the Ureter.—Frank Kidd lays down the following golden rules: Be careful not to mistake the shadow for the substance. Always give Nature a chance and do not be in a hurry to perform a major operation. Train yourselves to employ minor surgical methods, which is the line of safetly for the patient.

Bulletin of Johns Hopkins Hospital.

July, 1920, xxxi 353.

1. A Striking Elevation of the Temperature of the Hand and Forearm Following the Excision of a Subclavian Aneurism and Ligations of the Left Subclavian and Axillary Arteries. William S. Halsted.
2. Bacillary Dentistry in Children. Wilburt C. Davison.
3. A Study in the Behavior of Syphilitic and Normal Sera Towards Certain Colloidal Solutions. V. R. Mason.
4. An Exerimental and Clinical Therapeutic Study of Whooping Cough. David I. Macht.
5. The Pigmented Epithelium of the Embryo Chick's Eye Studied *in Vivo* and *in Vitro*. With Special Reference to the Original and Development of Melanin Pigment. David T. Smith.

2. Bacillary Dysentery in Children.—Wilburt C. Davison calls attention to the fact that bacillary dysentery in infants sometimes masquerades under the names of summer diarrhea, infectious diarrhea, colitis or ileocolitis, which do not have the prestige and importance that is attached to the more ominous title "dysentery." That this disease in children is caused by *B. dysenteriæ* has long been known, and is adequately confirmed by the bacteriological findings in the 134 cases of diarrhea on which this study is based. Of these 134 cases of diarrhea, 71 were diagnosed by the clinicians as cases of dysentery (ileocolitis). Clinically, the disease is a definite type, occurring usually in well nourished and previously healthy children whose ages ranged from 3 months to 11 years. The ages of the 45 patients in the private practices of several physicians in Birmingham, Alabama, were higher than those of Baltimore. This may possibly be explained by the fact that in the former breast feeding was a more general rule and therefore the younger children escaped infection. With one or two doubtful exceptions, none of the patients was exclusively breast fed, but received supplementary feedings of whole milk, proprietary foods or general diet. The onset was usually characteristic and sudden. The child lost its appetite and showed evidence of having fever. Irritability, vomiting and convulsions were frequent initial symptoms. Within a few hours there was an increase in the number of stools. These were at

first fecal, rarely green, becoming blood-tinged on the second day, and within four days consisted almost entirely of blood and mucus. The number of stools ranged from 3 to 30 a day. The size of the stool was usually small and seemingly out of proportion to the patient's efforts. The fever subsided in most cases by the fifth day. The patients were usually quite ill, crying feebly when disturbed, were drowsy and apathetic, after their initial irritability had ceased, and had little or no appetite. Loss of sleep due to frequent and painful bowel movements was a distressing factor. Dehydration and marked loss of weight was evident by the end of the first week. In the patients that recovered, the blood disappeared from the stools during the second week and the diarrhea abated by the fourteenth day. Such was the course in 79 per cent of the cases. In 14 per cent (4 cases), however, the picture was misleading. In the dysentery cases in Baltimore and Birmingham there were 67 white children with 14 deaths and 4 colored with 1 death, a total mortality of 21 per cent. From the study of these cases Davison formulates the following conclusions: 1. Over 80 per cent of the acute cases of ileocolitis both in Baltimore and Birmingham were due to infection with *B. dysenteriæ*. 2. *B. dysenteriæ* (Flexner) is more prevalent than *B. dysenteriæ* (Shiga) in Baltimore, Maryland, and Birmingham, Alabama. 3. Clinically as well as bacteriologically the Baltimore and Birmingham cases were identical. 4. *B. dysenteriæ* (either Flexner or Shiga) was not found in the stools of 63 cases of simple diarrhea nor in those of 100 normal children. 5. The name ileocolitis should be changed to dysentery in children and the disease made reportable to the health authorities. 6. Dysentery (ileocolitis) is probably spread from the stools of one patient to the food and mouths of other children by flies and infected hands and not disseminated from a general dairy source. 7. Dysentery is less prevalent among children receiving breast milk or boiled milk mixtures in boiled containers. 8. The agglutination reactions of the patient's serum by standardized technique is of assistance in the diagnosis of dysentery. 9. *B. Morgan No. 1, B. welchii, B. pyocyaneus, B. proteus,* and the *Streptococcus fecalis* are not the cause of dysentery (ileocolitis) or diarrhea.

4. An Experimental and Clinical Therapeutic Study of Whooping-Cough.—David I. Macht made a study of about 115 cases of whooping-cough, the majority being children ranging in ages from a few weeks to fourteen years. All other medication was discontinued and the patients were given a 20 per cent. solution of benzyl-benzoate by mouth. The dosage varied from 5 to 40 drops in water, three or four times a day and oftener, depending upon the age of the patient and the severity of the disease. If the simple alcoholic solution of benzyl-benzoate was found to be too distasteful to the young patients it was flavored with a few drops of benzaldehyde and the medicine was administered in sugar water or milk. About 90 per cent. of all the patients showed more or less beneficial effects; about 50 per cent. exhibited marked improvement in the symptoms. The therapeutic effects of benzyl-benzoate were not of a curative character but were of a distinctly palliative nature. The findings are summarized in the following conclusions: 1. The administration of benzyl-benzoate solution alone and still better, in combination with small doses of benzaldehyde, exerts a beneficial palliative effect on the violence and number of whooping-cough paroxysms. 2. The mode of action of the drug in such cases has been investigated experimentally (discussed by the writer in the text). 3. In view of the low toxicity of benzyl-benzoate and benzaldehyde, and the considerable number of successful therapeutic results obtained with them, their further trial in the symptomatic treatment of paroxysmal cough and especially of whooping-cough is deemed advisable.

La Presse Médicale.

May 26, 1920, xxviii, 34.

Thymus Death.—Pulawski describes a case of so-called thymus death in a youth of 18 who was under treatment for epilepsy in a Warsaw hospital. He was forbidden to bathe alone but disregarded the command and was found dead in the tub clad in shirt and drawers. It was evident that he had attempted only a footbath from the state of the underdrawers which were rolled up. While thus occupied he had had a fit and had fallen in the tub which was a third full of water and there and then had drowned? The alternative includes death before drowning could have occurred. Death during a crisis of epilepsy is extremely rare. Autopsy now showed no evidence of death by submersion for the lungs and stomach were alike empty of water. On the other hand there were evidencs of edema of the lungs, but asphyxia should have been accompanied by a distended right heart while these cavities were found quite empty. The subject presented an enlarged and persistent thymus and the other phenomena of the status thymicolymphaticus. Ever since the time of Felix Plater it has been known that enlarged thymus stands in some relation to sudden death and the number of recorded cases of this coincidence is now very large. Although this coincidence is recognized in the explanations of sudden death we still know nothing of the mechanism. In 1830 Kopp stated that compression of the inferior laryngeal nerve by the mass caused death by induced spasm of the glottis. This theory was upset by Friedleben in 1858. Not until about 30 years later did Paltauf isolate the lymphatic constitution and its relation to sudden death from cardiac paralysis. Next the endocrine theory asserted itself and the excess or diminution of some hormone was invoked to explain these deaths. Later it has been claimed that in new born children the old mechanical factor of Kopp might obtain and sufficient tracheal compression result to cause sudden death. This explanation however has no application to adult life and the problem here is still unsolved.

La Riforma Medica.

May 1, 1920, xxxvi, 18.

Lethargic Encephalitis.—Gasbarrini and da Gradi have made elaborate clinical studies of this affection as follows: Urine: In nineteen patients this was subjected to numerous special tests. Both retention and incontinence were seen in lethargy, but no constant phenomena were seen. Incontinence was present in three fatal cases and retention in three others, of whom two recovered. There was never any positive diazoreaction, nor sugar, nor acidosis. Adrenaline glycosuria was obtained once in a subject with Graves's disease. Indican was constantly present, while the elimination of urea and uric acid was practically unchanged. About half the patients had albuminuria and in three fatal cases albumin was associated with casts. Research in twelve cases for adrenaline mydriasis gave nine positive results. Blood tests: As a rule there was leucocytosis, but in a few cases leucopenia. In seven cases the red cell count and hemoglobin were normal. Vital staining showed in most cases lessened number of red cells and anemia was the rule during convalescence. Cerebrospinal fluid: Nothing new was learned here, the finds showing much inconstancy. Thus in sixteen cases tested there was a lymphocytosis in ten, while in the balance the find was normal. Ultramicroscopic examination of various secretions and nervous substance was always negative. One patient in fifteen tested gave a positive Wassermann and negative results with typhoid, paratyphoid, Weil-Felix, and other diagnostic reactions were all negative, save one positive typhoid, which stood in some relation with recent immunization. Hemoculture: Negative throughout. Experimental injections of blood in man and animals: These were negative save a few quasi-positive results in guinea pigs. Cutireactions: Certain vaccines were tested in this manner, including a Pfefferian culture. The latter experiment was of special interest and certain positive results obtained were difficult of explanation. Further study along this line may prove instructive.

Cerebral Softening Simulating Lethargic Encephalitis.—Baudoin and Lantuejoul have seen a patient who presented the classical triad of sleeping sickness—somnolence, fever and ocular pareses. On the seventh day of these symptoms death occurred and autopsy showed a vast focus of softening. The spinal fluid contained 256 lymphocytes to the cm., consisting almost entirely of intact polynuclears.—*Gazette des Hôpitaux.*

Book Reviews.

PSYCHOANALYSIS. A brief account of the Freudian Theory by BARBARA LOW, B.A., Member of the British Psycho-Analytical Society, formerly Training College Lecturer. Introduction by ERNEST JONES, M.D., M.R.C.P. (Lond.) President of the British Psycho-Analytical Society, Editor of the "International Journal of Medical Psycho-Analysis"; Author of "Papers on Psycho-Analysis." New York: Harcourt, Brace and Howe, 1920.

IT is the fashion to allude nonchalantly to psychoanalysis, on the stage, over the tea cups, in the pages of magazines, we hear of Freud, of complexes, repressed desires, and so for the dilettante of knowledge, who wishes to take his part in pseudo-scientific repartee we can recommend this book. In less than 200 small pages Miss Low has presented a quite acceptable résume of the pure Freudian School. It is hardly a work for the physician, however, except possibly as a preliminary to a more comprehensive work, such as Freud's own, or Pfister's. The value too of a book of this sort to a neurotic or other candidate for psychoanalysis is extremely problematical; most psychoanalysts undoubtedly would prefer their patients to be enlightened by themselves. These shortcomings are inherent, however, in the scope of the book, not in the book itself, which is very well done.

THE MEDICAL CLINICS OF NORTH AMERICA. Volume 3. Number 6. Chicago Number. May, 1920. Published Bi-Monthly by W. B. Saunders Company, Philadelphia and London.

THIS number contains the contributions from the clinics of fifteen teachers of medicine in Chicago. In all over twenty topics are presented. The material is interesting and instructive and well presented. The character of the volume as a whole is about the same as that of its predecessors in this series.

PRACTICAL ORGANOTHERAPY; the Internal Secretions in General Practice. By HENRY R. HARROWER, M.D., F.R.S.M. (Lond.). Glendale, Cal.: The Harrower Laboratory, 1920.

THIS book of 270 pages is written by one who is an acknowledged authority on endocrine therapy and it is a mine of information to the inquiring physician anxious to learn something of the how and why of indocrinology. Especially would we recommend a perusal of Section II, which deals with "The Basis of Organotherapy" clearly and practically. The following sections are on "Practical Organotherapy," "The Diagnosis of the Internal Secretory Disorders," and "Everyday Organotherapy." The author has much to say on pluriglandular therapy and defends it with vigor against the attacks of the sceptical and ignorant who think they smash it with the potent phrase "shotgun prescription." The neurologists have much to say regarding pluriglandular disorders and there can be no doubt of the existence of such. The relation of this to pluriglandular therapy is evident to all but the closet therapeutists who probably couldn't tell a patient if they saw one. However, this is not the place for a discussion on endocrine therapy; for such the reader is referred to the articles appearing in great number in this and other medical journals, and especially to Dr. Harrower's little book.

THE EXTRA PHARMACOPŒIA. Revised by W. HARRISON MARTINDALE, Ph.D., Ph.C., F.C.S., and W. WYNN WESTCOTT, M.B. Lond., D.P.H. Seventeenth Edition. In Two Volumes. Vol. I. London: H. K. Lewis & Co., Ltd., 1920.

THE new edition of this veritable cyclopedia of materia medica and therapeutics will be warmly welcomed by the large and happily growing fraction of the medical profession that believes in the efficacy of drugs in the treatment of disease. It is five years since the sixteenth edition of the work appeared and since that time much material of great value has accumulated, waiting to be recorded in permanent shape. What this material, now incorporated in the book, is the authors set forth briefly in the preface. Not only has much that is new been added, but much that is old and obsolete has been excised. A curious instance of forehandedness in Germany, showing how that country had for years been preparing for fiendishness in the war which it was waiting for a fitting opportunity to declare, is given in the preface. For years a study of poison gases had been carried on by Lehmann and his pupils under the camouflage of industrial hygiene, the results being published from time to time in the *Archiv für Hygiene*. In the meanwhile nothing of the kind was done in Great Britain, the main reason being no doubt that the English never had a thought of resorting to such inhuman measures after having promised, with Germany, not to do so. A new feature is the description of the mode of manufacture of a large number of drugs formerly made in Germany, the English patents on which have now expired. There are many other good points, some new, some familiar to older students of the Extra Pharmacopœia. As has been the case since the beginning, each new edition is better than the one before it.

1104 PICTURED NOUNS IN ITALIAN, FRENCH AND SPANISH, WITH ENGLISH INDEX. By CLARENCE E. SWEZEY. New York. Published by the author, 1920.

ALTHOUGH this is not a medical book, it nevertheless might be found useful by a physician called on to treat immigrants who have been in this country too short a time to pick up sufficient English for their needs. The words pictured in the book are all nouns and so arranged that pictures and definitions can be referred to instantly. As an illustration: A child, say an Italian, has swallowed a pin; the frightened mother, knowing little English, tries to tell what has happened; the doctor is likewise ignorant of Italian, but he gives her a copy of the book, she sees the picture of a pin and points to it. She says *spillo*, he says *pin;* he says *stomach?* she says *stomaco*. And there you are; it's all over but the operation.

SWANZY'S HANDBOOK OF THE DISEASES OF THE EYE AND THEIR TREATMENT. Twelfth Edition. Edited by LOUIS WERNER, M.B., F.R.C.S.I., Senior Mod. Univ. Dub., Surgeon to the Royal Victoria Eye and Ear Hospital, Consultant Ophthalmic Surgeon to the Mater Hospital, Professor of Ophthalmology, University College, Dublin, and Examiner in Ophthalmology Dublin University. With Illustrations. Philadelphia: P. Blakiston's Son & Co., 1919.

THE present edition is the second which has appeared since the death of Sir Henry Swanzy. It contains more than a dozen new illustrations and twenty-seven pages more of text than the eleventh edition. A complete and careful revision has been made by the editor. The Diseases of the Cornea have been reclassified, and some additions have been made, including Superficial Linear Keratitis, the pathology and treatment of which are briefly discussed. Among other additions and improvements may be noted the description of Acne Rosacea Keratitis, Hypotony, a summary of the methods of diagnosis in Chronic Uveitis, and a *résumé* of the investigations of Dr. Gordon Holmes on the Cortical Center of Vision. Some of the operative text has been elaborated, notably the technique for excision of the lacrymal sac and for the transplantation of mucous membrane for trichiasis, and new operations have been added.

DAS HUNGERÖDEM. Eine klinische und ernährungsphysiologische Studie. Von Dr. C. MAASE und Priv. Doz. Dr. H. ZONDEK.. Mit 17 Abbildungen im Text. Leipzig: Georg Thieme, 1920.

AS the result of extensive metabolic and clinical studies of many cases of so-called "war edema," the authors consider that a better term is "hunger edema," since the condition is primarily caused by under nutrition. The lack of fat is especially important and this deficiency the authors believe leads to damage to the endothelial cells of the vessels which makes them more permeable. A contributing factor is the increased fluid intake which goes hand in hand with the reduction in food, for in order to obtain a feeling of satiety the population consumed large amounts of soup, coffee, etc., and the water content of the turnips which made up a large proportion of the dietary is also very high. Cold and fatigue were found to be additional inciting agents. The treatment consisted in rest in bed with the administration of food, especially fat and protein.

Society Reports.

MEDICAL SOCIETY OF THE STATE OF NEW JERSEY.

One Hundred and Fifty-Fourth Annual Meeting, Held at Spring Lake, June 15-17, 1920.

Arthroplasty, with Demonstration of Patients and Exhibition of X-Ray Plates.—Dr. GEORGE H. SEXSMITH of Bayonne read this paper, stating that arthroplasty was applicable to large and weight-bearing, as well as to small joints. Different interposing substances had been employed, but the only proper thing to use was an autogenous pedicled flap of sufficient thickness. The tendency of the short parts to contract must be overcome in the beginning by means of apparatus, or the operation would be a failure through causing too much pressure on the interposed tissue and destroying it. In operating on the knee, he included the entire lateral ligament, lateral displacement being prevented by proper preparation of the ends of the bone. He further stated that the result seemed to be one of great instability, but the operation gave a firm, weight-bearing joint by the end of six months. Six months should be allowed after the cure of infection before operation was undertaken; and in the case of tuberculosis, one year. He thought that the operation was safe and afforded great relief, but he did not believe that an absolutely perfect joint was ever produced by an arthroplastic procedure.

Dr. TWINCH of Newark said he had never tried deepening of the condyles. He thought that unless one turned the patella inside out, one would have union again.

Dr. BASSETT of Salem stated that he was convinced that where a good functional result was to be obtained, passive motion should be begun within ten or twelve hours. He had operated on some cases within ten or twelve hours and did not use any flaps at all. He said that the reason he began physio-therapy early in this joint was because of the embryonal osseous tissue that persisted in the capsule of this joint, as in no other joint of the body. In the so-called chip fractures one got, on the tenth day, a board-like mass, which was avoided if one began the treatment early. He thought that in all cases of fractures involving joints, it was important that these cases should not be immobilized so that the joint on either side of the bone fracture was fixed.

Dr. SEXSMITH said that in the first operation that he performed on the patient with the two knees, it looked as if the leg would have fallen off. She did not get infection, did not die, and she got a knee. That gave him courage to go after the other. In thirty days, this woman stood in front of the camera with her legs both under her. He said that it would be slow going in the case of a tuberculous joint, until after a year or two.

Heart Irregularities: Their Clinical Recognition and Interpretation.—Dr. CHARLES E. TEETER of Newark read this paper. He said that it was his purpose to attempt to elucidate the particularly important diagnostic criteria by which each form of heart irregularity might be recognized, as well as to indicate the symptoms and their relative degrees of importance. For a number of years, attention had been paid only to heart murmurs. These showed lesions of the valve, while arrhythmias showed lesions of the muscles, which are of much greater importance. The principal irregularities of rhythm are extra systoles—ventricular, auricular and nodal; alternating pulse; heart block, complete, or the Stokes-Adams syndrome; coupled rhythm, paroxysmal tachycardia, auricular fibrillation, and flutter. He said that formerly, if there was arrhythmia present, it was merely stated that the heart was irregular; but now the types could usually be approximated by bedside means, without the use of elaborate apparatus. Many of these patients were so acutely ill that elaborate apparatus could not be employed.

Dr. WALLACE of Montclair said that if one got the flutter cases digitalized they became totally irregular and a condition of auricular fibrillation resulted. Under digitalis they would frequently return to rhythm. They became normal again and stayed so for a longer or shorter time. There should be no misunderstanding as to the value of the electrocardiograph in the study of heart cases, but it was only one leg of the diagnostic tripod—the patient's history, the clinical diagnosis, and the electrocardiographic findings. He wondered how many had heard the auricles beat. He had heard them in an old man at the Mackenzie clinic. The patient's pulse was fifty to the minute; and between these beats one got the faint flutterings corresponding to the auricular contractions.

Dr. LATHROPE of Morristown said the heart muscle lesion was always the *sine qua non* of any case of cardiac failure. Any of the autopsies one saw on cases of cardiac failure would show very definite lesions in the heart muscles, as well as the associated lesions in the valves. He did not believe that patients died of valvular lesions *per se* He thought that they died of a weakened heart muscle, which was not able to compensate for the valve lesion. He stated that when one made a diagnosis of a heart muscle or heart valve condition, the first thing to bring into play was not digitalis, but common sense. He believed that a careful history with regard to heart cases was of more importance than the rest of the examination, because from that one learned just what that particular patient could do with that heart. If one removed the thing that was causing the damage and did it fairly promptly, one might be able to clear up the whole condition before actual gross changes had occurred in the heart.

Dr. GOLDSTEIN of Camden said we must not forget the older methods, for by the use of them we could make a fairly good clinical diagnosis of most of these arrhythmias. At present, one dared not rely too much on these instruments of precision, because he doubted whether there were more than two cardiac stations in the State, and he knew of no private physician who had an electrocardiographic outfit complete. He thought that an important thing was the group acquisition of these forms of apparatus.

Dr. MARVEL of Atlantic City asked Dr. Teeter what his observation had been in parxysmal tachycardia, whether he had found an increase of the fluoroscopic shadow in the transverse diameter of the aorta, and also in the ventricular shadow. Dr. Marvel stated that he had recently had an opportunity to watch two cases of chronic paroxysmal tachycardia, in which the shadows had been much increased and had changed in the interim between the attacks as much as two centimeters. He had been following the method of administering digitalis in auricular flutter and also in auricular fibrillation, for two years. He tried to regulate the amount of the drug to be administered by the action of the heart, and felt that guiding the amount administered by the results one obtained on the heart muscle was a much safer way to give digitalis than to give a definite amount for two or three days or a week in regular doses.

Dr. TEETER of Newark said digitalis was the most valuable heart remedy we had. Most of his patients had been so sick that he had not obtained an *x*-ray. He had always got clinical evidence of enlargement. Alternating pulse was very easily determined with the sphygmomanometer; and it was a matter of the greatest importance in prognosis. He said that nobody with an alternating pulse could stand a surgical operation.

Obesity.—Dr. FREDERICK C. HORSFORD of Newark read this paper. To become fat, he said, required an intake of food above the caloric needs, although not all people who ate more than the body required became fat. There was a great difference between simple overfatness and obesity, as the latter was pathological and probably of pancreatic origin. He said that the intermediate products of the metabolism of fats and of carbohydrates were similar in structure. In diabetes, there was enzyme formation and it had been suggested that in obesity the process was similar. He thought it was well to examine the urine from time to time so as to detect any tendency to alimentary glycosuria, so that the patient might be saved from diabetes. He further stated that it was very easy to transcend the food requirements. If people confined themselves to natural foods there would be much less chance of overburdening the system. For the complete combustion of fat, a large supply of oxygen must be furnished.

One should cut the fat from the diet, allowing the patients to use up their body fat. He suggested that it was well to have at hand a printed scheme of diet affording approximately nine hundred calories, with which to begin treatment. Heart weakness was only a relative contraindication to reduction treatment.

Dr. MARTLAND of Newark said that fat people died early. One saw at the autopsy table every day stout people who had died early deaths, many of which could have been averted. There were four classes of these cases. The first was exogenous, of which there were only two, overeating and lack of exercise. The second form was endogenous, which was usually due to abnormalities in the glands of internal secretion. Then there was a third class, the mixed. He stated that since obesity was a collection of fat between the muscles, there was a fourth form, with fatty tumors over various parts of the body and lipomas of the neck. Obese patients did not stand bacterial infections of the lungs, especially pneumonia. He thought that there were only three things in the treatment: The first was to cut down the caloric intake; the second, to increase the exercise; and third, if the metabolic rate was below normal, one could bring it up to normal by feeding thyroid and stimulating combustion, but in each case it should be found out whether one had an exogenous, an endogenous, or a mixed form

Dr. TEIMER of Newark said that one could not use protein beyond the requirements of the body for cellular growth and repair. Proteins conveyed in greater amount were simply used as fuel and after the caloric requirements were satisfied, were stored principally as fat. Nature had provided a number of wholesome checks against excessive overloading, furnished by the organs of elimination and of assimilation, and by a feeling of satiety. He said, however, that there were persons in whom these checks did not operate in the same degree or in whom they were overcome by artificial means, like stimulants. Persons who did not get fat from overeating were simply those in whom these checks were readily set in motion; their appetite failed as soon as they exceeded their usual consumption of food. He asked whether either of these conditions could be considered pathological. He agreed with Dr. Horsford that abuse of food would in time damage the organs charged with the metabolism of the abnormal amounts thrust upon them.

Dr. GOLDSTEIN of Camden stated that in adult males fat comprised about one-twentieth of the body weight. This proportion was greater in the female. Obesity required treatment only when symptoms of definite functional trouble of the organs or nervous system were present. He especially wished to emphasize the great amount of good that could be accomplished in cardiac insufficiency of the obese, as soon as the regulation of the food ingested and the energy expended was properly carried out. Obesity threw increased work on the heart and arteries and therefore played a very important rôle in the production of arteriosclerosis. As a substitute for sugar for sweetening in the treatment of obesity, he suggested the use of sodium benzosulphinide.

Dr. HORSFORD emphasized that overfatness was something to look on with suspicion. He did not think that every overfat person would become diabetic or develop cardiovascular lesions; but it was a disorder of metabolism, a toxemia; and a large number of people who suffered from obesity suffered from cardiovascular disease and hypertension and died a long time before they should.

Cooperation of the Specialist and the Family Physician.—Dr. LINN EMERSON of Orange read this paper, in which he said that in nearly 50 per cent. of the cases of fatal illness incorrect diagnoses were made, and hope for improvement in this respect lay in the specialists working in groups. He thought that under a plan of group practice it would be possible for a patient of moderate means to get a thorough examination at much less cost than he could if the separate specialists were consulted, one at a time. He went on to say that if the legislators would make a visit to some good clinic and see the results of the various examinations, they would not be so ready to listen to quacks. There should be a public medical service for industrial workers and their families, the compensation of the physicians engaged in this work to be regulated by the character of their work and the time given to it. He thought that a wise step would be the passage of uniform State laws licensing more than one grade of medical practitioner, thus shortening the period of preparation for those who wished to do only routine sanitary, public health, laboratory, or industrial work, and giving an opportunity for advancement to those who desired to become internists, surgeons, or specialists, with superior licensure for those who attained their greater proficiency. Hospitals and dispensaries should be largely under the supervision of the Bureau of Health, and all internes and members of the staff should be salaried. The heads of departments should receive adequate compensation, and if the service was not large enough to justify the use of the full time of these physicians, they should be compensated in proportion to the amount of time spent by them. Old-age pensions should be given to doctors, and they should be employed in departments of medical service for which the aged medical man was fit.

Dr. WILSON of Elizabeth stated that he wanted to emphasize three points in the paper: the Chiropractic Bill, Group Medicine, and Compulsory Health Insurance. He felt that it was necessary to deal with the Legislature in the only way that they could understand—through the ballot. He suggested that the Legislative Committee send the society the name of every representative who voted for the Chiropractic Bill, and that they try to see that these men were not returned. Group Medicine might result in commercializing medicine. Regarding compulsory health insurance, he had it on good authority that Lloyd George had changed his mind on the subject, because it had not come up to his expectations. The doctors in Germany and Scandinavia, and also in England, were said to be on strike. They were disgusted with this form of insurance over there, and were giving it up.

Dr. EMERSON of Orange felt strongly that the underlying principle of compulsory health insurance was right. There was nothing contrary to American institutions in it, provided it was carried out in a proper manner. He said that if we should have this thing there must be no distinctions, and that if we should socialize the whole medical profession we must pay them enough to justify the service that they rendered. There was nothing inimical to the medical profession in a service administered so that every individual might have medical service at the expense of the State, but the person who wanted the services of a doctor of superior skill and ability, and could pay a large fee might do so.

President's Address—The Doctor.—Dr. GORDON K. DICKINSON of Jersey City read his address. He said his object was to show that the affairs of men passed along in a determinate way. The time had come when the profession must wake up. The inevitable was with us, as it had been with the men in the past. If we kept our heads to the ground, grazing, forgetful of what must come, there would be disaster. Every man, whether a physician or not, should be a citizen; and the best one possible. He said there was no reason why a physician should not be also a politician.

Pulmonary Tuberculosis and Conditions Simulating the Same.—Dr. SAMUEL B. ENGLISH of Glen Gardner read this paper and said that if the tubercle bacillus was present the diagnosis could be made, and when it was not there was no other pathognomonic sign. While in adults a history of association or exposure might mean little, he thought that greater stress should be laid on it in the case of children. Too little attention was paid to previous illness, he said, and very often, in reaching back into the history we could find that a nervous breakdown, an exacerbation of grippe, or other condition, was really due to tuberculosis. Although little dependence could be placed on one or two negative returns, it was his observation that many patients were told, as the result of too few examinations of the sputum, that they had not the disease. The diagnosis of early disease should not rest on the presence of bacilli; but a diagnosis of advanced disease should be questioned, if the bacilli were not found. The absence of bacilli did not preclude a positive diagnosis. He stated that in early tuberculosis not only was there no single pathognomonic symptom, but there was no

single group of symptoms on which one might make a diagnosis. He thought that one could not exaggerate the importance of early diagnosis, because at that time the patient had the best chance of cure.

Dr. ARMSTRONG of White Haven, Pa., stated that physicians should endeavor to make correct diagnoses, among other reasons because the number of beds devoted to tuberculosis were inadequate to accommodate even active cases, not to speak of cases that were becoming active. At White Haven not more than 3 per cent. were turned away as being nontuberculous. The last report of the Trudeau Sanatorium at Saranac Lake stated that 8 per cent. were nontuberculous. Both of these were lower than the statistics that Dr. English had quoted. Dr. Armstrong said that the reason that theirs were lower than those of Saranac Lake was because they took patients for other reasons, while the latter insisted on taking only very early or incipient cases.

Dr. NEWCOMBE of Brown's Mills said that the infection of tuberculosis was most frequent in childhood before the tenth year. He considered it important to take a careful history and learn whether the child was breast or bottle fed, and whether it had had measles, typhoid, or pleurisy. Of those who had had blood spitting at any time 7 or 8 per cent. would sooner or later develop tuberculosis. He thought that if a physician had made a diagnosis of tuberculosis he should tell the patient what was the matter with him. It was better for the patient to know the truth early, when he had a chance to obtain an arrest of the condition. Too much attention was paid to physical signs and not enough to symptoms.

Dr. POLLAK of Secaucus said the Glen Gardner institution had been regarded by many practitioners as one in which only incipient cases were admitted, yet Dr. English had given figures which showed that only 8 per cent. were without positive sputum. If they had positive sputum, he said, they were out of the incipient class, and in the moderately advanced or advanced stage. He suggested that tuberculous patients be admitted to general hospitals, so as to give the physicians and nurses a chance to become acquainted with the disease.

Gastrospasm and Its Diagnostic Significance, with Lantern-Slide Demonstration.—Dr. J. ROEMER of Paterson read this paper. He said there were three varieties of gastrospasm: regional, circumscribed, and total. These might be differentiated under fluoroscopic observation and manipulation. The causes of gastrospasm might be either functional or organic, and intra- or extra-gastric. When accessible for recognition by means of the *x*-ray the spasm appeared most frequently on the greater curvature, a little below the cardia; but it might be found in any other part of the stomach; and several spasms might be present, dividing the stomach into compartments. He said that total gastric spasm was the rarest form and in most cases was of extra-gastric origin. Gastrospasm was characterized by extreme hypertonus. The stomach was considerably diminished in size and situated high in the abdomen. Peristalsis was absent, and the food was seen to pass almost continuously into the small intestine. He said the resemblance of all forms of gastrospasm to filling defects due to cancer was striking. Not only was the novice in danger of mistaking it for the latter, but the expert radiographer as well.

Dr. REISSMAN of Newark stated that there were two intrinsic causes of gastrospasm in which the surgeon was particularly interested, and these were ulcer and cancer. He also stated that when one found the ulcer it was immaterial whether the spasm was present or not; and when one had discovered the cancer by *x*-ray, it was equally immaterial whether there was spasm or not. When, however, one found a gastrospasm, a diseased area anywhere below the diaphragm should be looked for. He said anything below the diaphragm might cause a gastrospasm, particularly appendicitis and gall-bladder disease.

Dr. ROEMER of Paterson stated that the percentage of cases in which one found a penetrating ulcer of spasm were few. If he had made the diagnosis only from actually seeing the ulcer, he could not have made 20 per cent. of his diagnoses. The percentages of hypertonus and hypermotility were much higher, and these were far more important than was a direct visualization of the ulcer. He said that the only ulcer that was visualized was one that had penetrated the mucous membrane, making a sac leaving the mucous lining of the stomach. He further stated that most ulcers started as a small erosion; and in order to protect these small erosions, the stomach produced a spasm and a dilatation about the seat of the spasm.

Physical Diagnosis in Obstetrics.—Dr. JOHN FRANCIS CONDON of Newark read this paper. The importance of physical diagnosis in pregnancy was very often not appreciated, with the result that its neglect was a causative factor in the large morbidity and mortality in obstetrical practice. If a complete physical examination were made in all cases pathological conditions would be recognized and corrected before labor; and the treatment which seemed to occupy the main position in clinical obstetrics would not be an emergency treatment, but a well thought out plan in each case.

Dr. BUNTING of Elizabeth said that he really believed that there were a good many men in the State Society who had had an awakening with regard to obstetrics. He thought we were in the midst of a campaign for better obstetrics. People were looking around to find where they could get the best, not the cheapest. He was sure that there were members of the society who, as soon as they took up the work, and proved that they could do it, would be asked to join the staffs of a good many hospitals in New Jersey.

Diverticulosis of the Colon, with Special Reference to the Cecum.—Dr. M. W. REDDAN of Trenton read this paper. He said this condition was caused by Jackson's membrane, and not by pericolic bands, as formerly believed. It was frequently diagnosed as appendicitis; but appendectomy did not cure the patient. Diverticulosis of the colon was an exciting cause of diverticulitis, and subsequent cancer of the cecum.

The Problem of Venereal Disease Control.—Dr. J. F. WALLHAUSER of Newark read this paper, in which he said that very little success had attended efforts to regulate prostitution; on the contrary, the evil had grown worse. In every instance in which recognition by licensing had been tried, failure had been the result. Cooperation on the part of the public was greatly needed, and in education along proper lines there lay great possibilities for overcoming the evil. Sex education, if improperly managed, would do more harm than good, but the value of proper sex education had been proved. It had been a wonderful help in the army. During the war every effort was made by the Government as well as by the State and local authorities, to stamp out the evil, the matter being attacked from every angle. He thought these efforts should be continued in every locality, as was being successfully done in Newark. The main issue was that of public health, and not of morals. It was decided in Newark that it would be best to teach the parents, and let them impart the instruction to their children. The lessons learned had proved to be a cooperative force, in conjunction with the vice squad of the police department, in bringing cases to their clinic, which opened up a new field for detaining and reclaiming young prostitutes. Another important point was the early diagnosis of syphilis. The hope of preventing its later manifestations lay in recognizing the disease during the first month of infection. The longer treatment was delayed the less were the chances of cure. It was hard to impress this upon the patients, so he thought that enforced treatment was the only remedy. This brought up the matter of the reporting of venereal diseases, and the speaker thought that reporting by name and address was impossible of attainment, while reporting by number would be valueless for statistical purposes. In Massachusetts there had been a plan adopted by which the reporting was made dependent upon the patient's compliance with the direction of his physician. The present law of New Jersey had had sufficient trial to show that it will never fulfill the purpose intended. Prophylaxis, which had been so helpful in the army, could be applied to civilian life. As a public health measure, however, it could not be officially adopted, because it would be used as an excuse for permitting unlawful sex relations. In Newark there was a complete arrangement for taking care of venereal cases over a period of three years.

Dr. CASSELMAN of Camden said the eradication of syphilis could readily be attained by medical means, as it could be rendered practically noninfectious in less than two weeks. Gonorrhea was harder to control, because of the greater difficulty in rendering it noninfectious. He said health officers should require all delinquent patients reported to them by physicians to return for treatment. He thought reporting in any other way than by name and address would be a step backward. Personal prophylaxis was the cheapest, although not the best means of controlling the spread of venereal disease. It might be necessary to adopt it by reason of insufficient appropriations, in spite of the danger to public morals in such education.

Dr. SCHAUFFLER of Princeton stated that the army experience showed the importance of what Dr. Wallhauser had been emphasizing. Education and prophylaxis were the two main steps. Of these education was the most important. Prophylaxis was efficient in the army only because education went with it. He said that so it was with the education of the public that was at the bottom of all that we could do; and that education belonged to medical men primarily. Doctors did not know how to go to the people and tell them the facts in clear, concise language, so that the teachers might go ahead and impart the matter to their children, but they ought to sacrifice their time and inclinations and go to work on the subject.

Dr. KOPPEL of Jersey City said they had been reporting cases for two years, and it did not prove to be valuable except for statistics. He did not think it was of any use to either patient or physician. The report went to Trenton and was filed, and the health officer in his city did not know what happened to it. They insisted on reports and the physicians sent them to satisfy, he thought, the curiosity of the clerk. They had in Jersey City a detention hospital in connection with a clinic, and they did not let the acutely affected go out to infect others if they could help it.

Dr. CRASTER of Newark did not agree with Dr. Wallhauser in his gloomy picture of reporting. He felt that, just as was in the case of every other disease that was new in reporting, it was a question of getting familiar with the reporting of this thing. He hated to think that it would become necessary to adopt prophylaxis, but it might have to come to that. He hoped that physicians would appreciate the stand the Health Board was taking. It was trying to stamp out a contagious disease, one associated with a tremendous moral side. He said that without the cooperation of the physicians the health boards were completely helpless. They had to know that the physicians were helping them to make the disease at least controllable.

Dr. LIPPINCOTT of Camden said that it had been very striking to him to see how soon the men who were given educational advantages during the war had forgotten what was taught them. They came out of the army and the first thing they did was to contract either syphilis or gonorrhea. He had had so many men consult him that he had taken the trouble to ask whether they had forgotten their instructions along the line of prophylaxis. They had given him two answers: one, that they had been intoxicated and did not think about it; and the other, that they had gone to physicians and the doctors had said, "I do not care anything about that," and sent them off. Dr. Lippincott thought that prophylaxis, as we knew it to-day, was dangerous, because it gave a false sense of security. He did not see what good the reporting was doing. The statistics were not right, because a lot of physicians did not report their cases.

Dr. EMBURY of Basking Ridge said that sex manifestations were only one of the physiological functions that the human body performed, and it seemed to him that the basis of discussion should be, first of all, physiology, because we knew more about that than about the social or moral aspect of the subject. Masturbation in boys was more common than people were willing to admit, and the only reason that it was done away with in 90 per cent. or more of the cases was the establishment of regular sex relations on the part of the boys when they got older. He wanted to know what authority Dr. Wallhauser had for saying that continence was compatible in every case with good health. He thought that it was compatible with the health of some, but that this was true in the case of every man he could not believe.

Dr. GOLDSTEIN of Camden said that there was no doubt that a large percentage of human beings could be continent without having nervous symptoms and other complaints, but there was a small percentage who could not be continent without considerable trouble. He said that if they were going to report cases they ought to do it and not make a bluff at it. He thought that the reporting was necessary.

Dr. WALLHAUSER said that one would never get cooperation with force. He knew personally, from men in New York, that the syphilographers were not even diagnosing their cases in the office, for fear that someone would look at the records and they would be sued for not reporting them.

Cerebrospinal Fluid; Its Changes in Various Diseases and Their Significance.—Dr. E. G. HUMMEL of Camden read this paper. He said the changes in the cerebrospinal fluid in various diseases could not be generalized, and each disease presented at least some change peculiar to itself. There were three types of conditions that produced changes in the cerebrospinal fluid: meningismus, meningitis, and systemic disturbances. The changes in the cerebrospinal fluid which were found in various forms of meningitis differed from each other, not only bacteriologically and cytologically, but also physically, chemically, and physiochemically. He said the pathogenesis of meningitis must be dealt with separately in each form. While all the forms were produced by bacteria, the reaction of the meninges to the bacteria was different in each form. In meningism there was a purely mechanical disturbance; while in meningitis there was an infection, with destruction of the local tissues. In treating these various forms it was of the utmost importance that the remedy be brought into direct contact with the central nervous system, and as early as possible. The injection was made either intraspinally or intraventricularly. The intravenous injection of serum ought to be seriously considered, to produce sterilization of the blood for its possible influence on the meninges; but, when this was done the serum ought likewise to be injected into the cerebrospinal canal.

Dr. CASSELMAN of Camden said he would like to emphasize the value of the Pandy test, which was one of the simplest of laboratory examinations, and the most satisfactory method of determining the presence of an excess of globulin in the cerebrospinal fluid. The fluid must be absolutely fresh if it was to be examined for meningococci; but it was satisfactory, even if many days old, for the colloidal gold test for paresis. Dr. Casselman also said that usually the diagnosis ought to be made by means of the symptoms and physical findings, the specific changes in the cerebrospinal fluid being confirmatory. If the laboratory work was not done by the clinician himself he should tell the laboratory man what he suspected so that the latter might judge as to the best test to be used in the particular case.

Dr. GOLDSTEIN of Camden said as various other diseases might give rise to meningeal symptoms, meningismus, or serous meningitis, lumbar puncture which showed only a slight change in the fluid should not lead us at once to a diagnosis of meningitis or poliomyelitis, even if fever was present. He said that in every case of suspected meningococcus meningitis, one should culture the blood, because the bacteria might be found there while the cerebrospinal fluid was still bacteria free.

Dr. HUMMEL said it was very important for physicians to know the fluid changes that were noticed every day. They should associate their bedside findings with the labortory work. Bloody fluid was usually due to faulty technique. Sometimes headaches were produced because the equalization of pressure in the canal was changed; but, he said, no trouble would result, if the child were kept quiet until equalization of pressure had reestablished itself.

Essential Uterine Hemorrhage.—Dr. WILLIAM A. DWYER of Paterson read this paper. He said that in these cases the only pathological condition found in the endometrium was a hyperplastic mucosa with edematous stroma and cystic glands. The etiologic factors were sclerosis of the uterus, incoagulability of

the menstrual blood, and the influence of the ovary and corpus luteum. The uterus itself was a passive agent in the production of essential hemorrhage. He said that the activity of the corpus luteum as a causative factor was due either to stimulation or dysfunction of the gland. At the present time, owing to the lack of definite knowledge concerning the action of the glands of internal secretion, we were obliged to resort to either hysterectomy or a destruction of the follicular apparatus by radium or the *x*-ray.

Dr. ILL of Newark said that he knew of only one form of essential uterine hemorrhage, and that was in young girls, who started bleeding and bled for months and months, no matter what one did, and then stopped for months and months. The question of the corpus luteum being at fault was worth studying, but it should not be forgotten that the ovule ripened first, and that the corpus luteum was a secondary matter. Curettage had been very much overdone. At the same time, he thought that it was an exceedingly valuable adjunct to the physician's armamentarium. The congestion produced by excessive conception caused changes in the tissues which resulted in hemorrhage. He had done extensive work along the line of radium treatment and the ovary had gotten small first, and the uterus had grown small afterward. The menopause symptoms in these patients had been very severe. He said that he would rather remove the uterus and leave the ovaries than use radium. He believed that all these cases of hemorrhage could be made out to be anatomical, with the exception of the young girls.

Dr. FIELD of New York City said we often saw cases of bleeding of the uterus in very young persons in which every known means except extirpation had been carried out with utter failure, and if there was any means by which aid could be given to such persons without removing the organ, he wanted to discuss the advisability of using such a means before resorting to the knife. He said that in a series of eleven cases in young girls referred to the Radium Institute, radium had been prompt in checking the hemorrhage. Removal of the uterus was almost the last thing that should be undertaken in such cases. The very first action of radium was to produce a contraction of the blood vessels. The uterine body should be left alone and the ovaries should be rayed over first. A better contraction was gotten in this way than by direct uterine application. No one had proved that radium permanently caused sterility in a young person. At the most, two years and a half later, the patient got a return of menstruation. He did not, in such cases, find any unpleasant symptoms following the use of radium.

Dr. HARRIS of Paterson said that undoubtedy radium had great potentialities for harm; and in the case of a young girl great care as to the dosage should be taken. He believed that radium properly applied was the thing to be tried in any such cases.

Dr. LEE of Camden said that he believed in radium and used it; but he thought it a faulty and dangerous procedure to say that the first thing to be done was to employ radium when one had a patient with bleeding for which one could find no definite cause.

Dr. DWYER of Paterson said that if one examined the uterus of a woman of forty-two or three years of age who had given birth to children, one would probably find the same standing out of the blood vessels as in a woman from whom the uterus had been removed for sclerosis. The chances were that with an increased knowledge of radium, menopausal symptoms would not be as marked and disturbing as now. He thought that it was better to take out the uterus than to subject young girls to the nervous phenomena of the menopause.

A Study of Acute Infections of the Ear as Seen by the Physician.—Dr. J. CLARENCE KEELER of Philadelphia read this paper, in which he said that in former days knowledge of ear diseases was limited to two classes: those that could be cured by surgery and those that could not be so cured. He stated that there should be a close affiliation between the otologist and the internist, so that those suffering from an abscess might be relieved in the quickest manner; because the presence of pus constituted a great danger. He thought that it was of primary importance to determine which portion of the hearing apparatus was involved. He said that the physician should be equipped with a good light, so that he might determine whether the trouble was in the external auditory canal or in the middle ear. One of the best methods of treatment of affections of the middle ear consisted in incision under gas anesthesia and drainage. The most common trouble with the external ear was the presence of foreign bodies, which might be either animate or inanimate. The former were usually insects, which should be killed by drowning before removal was attempted. The removal of inanimate foreign bodies should not be attempted until the tissues had been shrunk. Infections of the middle ear might be acute or chronic catarrhal, or acute or chronic suppurative otitis media. Acute infectious diseases might cause chronic middle-ear infections. In such cases a free incision into the ear drum through the portion presenting the greatest bulging should be made. In that way complications and disastrous consequences would be forestalled. It was a fallacy to think that when the discharge had ceased the danger was over. Dr. Keeler emphasized the fact that in a purulent discharge from the ear that resisted the usual and established methods of treatment, even though the classical symptoms, such as pain, tenderness, swelling, and discoloration of the tissues over the mastoid were absent, one should ever be heedful of the demand for immediate surgery of the mastoid.

Dr. NORTH of Trenton said that in children who had measles, scarlet fever, and bad colds, it seemed advisable not only to give attention to the disease, but also to treat the nose and throat in attempting to stay the onset of acute otitis media and therefore save the little patient from a disease that would probably last the rest of his natural life. Strict attention should be paid to adenoids and infected tonsils as well as the teeth. He was much in favor of every practitioner making a routine examination of his patient's ears. It would not take a great deal of experience to become familiar with the use of the otoscope so as to tell whether there was inflammation of the external ear or drum. In the Trenton Clinic they had come to rely very much on *x*-ray findings regarding mastoid disease.

Dr. STEWART of Atlantic City said that the question of ear wax was one that came to practitioners at the seashore, largely because the wax was dislodged by the water, causing sudden deafness. The removal of the wax should be done carefully, not using a large syringe and not using a force that would break the drum membrane, or bring about irritation. The habit of filling the ear with peroxide of hydrogen ought to be condemned, because when it combined with ear wax, or pus, it caused pressure by the liberation of gas.

Dr. EMERSON of Orange said the general practitioner saw the cases of acute otitis before the specialist, in many instances, where the child was so sick that he could not give information as to the source of trouble. Physicians were often called to see small babies because the attendant had been unable to explain their pain and restlessness, and found acute otitis media, relief of which caused a drop in the temperature and relief of pain. In older children there was often obstruction of the Eustachian tubes. The tonsils were greater offenders in this than adenoids. The tonsil swelled up and by pressure on its side and extension by contiguity, one got a stoppage of the tube and an accumulation of fluid in the middle ear. The general practitioner, if called early, and if he knew how, could abort many of these cases. If the practitioner gave the child a good saline cathartic and ordered it put to bed it was the best thing to do, and he should also use a solution of adrenalin in the nose and give belladonna internally; then three-fourths of the cases would resolve and the drum membrane would not have to be punctured. If the patients did not get better immediately the drum membrane must be incised and the material allowed to escape. When the child got over the discharge he should not be allowed to go through another winter without having the tonsils and adenoids removed. Every child who had had an acute otitis media was almost sure to have another and repeated attacks; and even though a chronic suppurative otitis did not ensue, he was sure that many cases of so-called chronic otitis media in individuals in middle and late life were due to attacks of chronic

purulent catarrhal and suppurative chronic ottitis media in early life.

Dr. SCARLETT of Trenton said that the outer lining of the drum membrane was skin, and to pour drops into the external auditory canal was like pouring medicine on the outside of the skin. One had to get to the seat of the trouble. Frequently one could make out the bulging on inspection. Before the drum membrane ruptured, the part where it ruptured became necrotic. Then when the discharge ceased there was a hole in the membrane; but by incising it one got rid of the discharge and as the case progressed the parts came together. Then when it was entirely healed one could hardly notice the scar.

Dr. GOLDSTEIN of Camden said that he wished to emphasize the importance of examining the ears of children frequently in order that the cause of unexplained fever could be found. One should examine the ears and throats in all the little patients with fever.

Dr. KEELER of Philadelphia said that anyone operating on ears, noses, and throats, and on tonsils and adenoids, should have the cooperation of the dentist. He made it a universal rule to have all cases *x*-rayed. When he had a case of impacted wax and removed it he looked at the drum membrane because often there was inspissated pus. He stated that if one started an exacerbation of the condition by removing this wax one might have a malpractice suit on his hands. If there was a perforation the patient should be told that there might be a discharge following.

Oration in Surgery—Fractures.—Dr. WILLIAM L. ESTES of South Bethlehem, Pa., said that the most important methods of treatment for getting good functional results in simple fractures of the extremities were as follows: It was important to give the patient the benefit of a well-taken skiagram. Shock was often marked and required care in management. Early shock was due to nociassociation, and should be treated with morphine. Late shock usually meant hemorrhage. The pain was so severe in many cases as to exhaust the patient. One should place the extremity in a position to give ease, and then administer a full dose of morphine unless one was ready to put on the final dressing immediately. When the patient must be transported the limb should be fixed in the position in which it was found. Traction and fixation should be employed. He said that it was rarely necessary to confine the ends of a fracture so that they did not move at all. When a little mobility was allowed the fragments sometimes united better. If the surgeon was unaccustomed to treating fractures he should consult an experienced man before doing anything. One should never attempt to set a fracture unless splints or apparatus were at hand to retain it. The extremity should be fixed so that the ends of the fractured bone would not do further injury or occasion unnecessary pain; and nothing else should be done until the splinting could be done. Plaster of Paris moulded splints, put on during general anesthesia as soon after the injury as possible afforded the best means of fixation which should be done with the aid of the fluoroscope. Since the war doctors had been using suspension with the Balkan frame. When steady traction was necessary to retain the fracture during the application of the splint the Hawley table was good. With suspension the use of the Balkan frame was of value, but required skill in adjustment. In Buck's extension too little weight was usually employed; it was still a favorite method with the older surgeons. The Balkan frame suspended the fractured limb, and the extension was regulated by weight and pulley. Splints were not of so much value, except in the forearm. Massage might be begun as soon as the spasms had ceased. He stated that massage should be repeated every few days, as it shortened the convalescence. Operative treatment required especial skill. Children did not need operation, as a rule. The American Surgical Association's Committee on Fractures found that the anatomical recoveries were more numerous in the operated cases, but that the functional recoveries were better in the nonoperative cases. Although numerically in the minority, the surgeons who believed in operations had a large clientèle, and had especial opportunities for observing the end results. The treatment of fractures was a matter that still required a great deal of study. He urged simplification of methods and standardization of results. The mechanical devices were too numerous and too complex. A careful reduction under anesthesia and the application of plaster of Paris appealed to him as the most important elements in the treatment. The traction apparatus should be put on and retained until the plaster was hard enough to resist further displacement. In prognosis he thought it would be well to be cautious in predicting the results in any fracture of the long bones. The British seemed to get better results from the operative method than did the Americans. Men trained directly under Lane or Jones had done most of these operations, which might explain their good results.

The Cause of the Continued High Mortality in Intestinal Obstruction.—Dr. DAMON B. PFEIFFER of Philadelphia, Pa., read this paper, in which he said that the mortality of intestinal obstruction had not diminished appreciably in the last twenty-five years. The causes chiefly responsible for this were: (1) The deceptive character of the early general symptoms and signs; (2) a lack of appreciation of the deadly nature of the toxins generated by intestinal obstruction. A review of the recent work on these toxins emphasized the necessity of recasting the symptomatology of the early, curable stage. Operative measures had made but little progress in the last twenty years, and seemed to have reached approximately their final development. Until some method was found of directly combating the toxemia of obstruction, the only rational hope of an improved mortality lay in considering the condition as a "super-emergency."

Dr. COSTILL of Trenton said that if one were to get any improvement in the mortality of this condition, one should have to start by early recognition. He remembered when in appendicitis the surgeons waited until all the signs had appeared, which ended in death, before the case was turned over to the surgeon for operation. Dr. Costill stated that they were still doing the same thing very largely in these cases of intestinal obstruction. Physicians knew that the high mortality was due finally to a toxemia, but they did not know what that toxemia was, nor did it make any practical difference. Their only hope was in realizing that it could be dealt with only in a surgical manner. When the general practitioner began to realize that when he had a sudden attack of intermittent pain in the abdomen, with hyperperistalsis, it was time to seek the surgeon, a great step in the right direction would have been taken.

Dr. HARRIS of Paterson said that the most important thing for a physician to learn was that in these cases of intestinal obstruction one should do only one thing, which did not do any harm; that is, one should give enemas and let them run out through the tube. Anything the doctor liked could be used. One should give a pint and let it run out, and then inject a pint and a half. When most of this had been returned, one should give more, increasing a pint each time. In this way one could tell how far the obstruction was from the anus. The bed should have been put in the Trendelenburg position before the enema was given. The water should be allowed to run out through the tube. He said the bowel should be emptied as far as possible.

Dr. CHANDLER of South Orange said that Dr. Harris's advice was good for an early case that had lasted only a few hours; but it was a rule that he had made in his practice for twenty-five or thirty years, "When in doubt, operate." This was the best rule in intestinal obstruction of any sort. By waiting the life of the patient became imperiled.

Dr. DICKINSON of Jersey City said that most clinicians did not think much of auscultation of the abdomen. Usually that was so, but occasionally one could get the tinkle and the heart sounds distinctly at the pubes. The surgeon must then go on immediately. Dr. Dickinson stated that he should listen for these sounds, and be ready to operate. Plain water at 130° should be allowed to run in and out. At the end of twenty minutes one got not only evacuation of the bowel up to the stricture, but also stimulation of the sympathetic plexus, stimulation of heart action, diuresis, diaphoresis, and comfort of body and mind. Very often, also, one would get proper slumber for the patient, which would not be gotten otherwise.

Symposium on Focal Infection: The Hospital, the Doctor, and the Dentist.—Dr. FLETCHER F. CARMAN of Montclair read this paper, which was a plea to physicians, particularly those connected with hospitals, to look into the mouths of their patients, especially the sick poor found in the public wards, and therein find their diagnoses. Treating symptoms alone should be stopped, *e.g.* those arthritic, cardiac, nephritic, hepatic, gastric, and intestinal conditions; but, rather, the root of the trouble should be sought and treatment begun there. He made a plea to the dentists for their cooperation with the physicians in their respective communities, through the hospitals; so that they might become conservators of health primarily, instead of, as heretofore, simply conservators of teeth.

Etiology and Treatment of Mental Diseases, with Special Reference to the General Practitioner's Duty in Prophylactic Work.—Dr. HENRY A. COTTON of Trenton read this paper. He said that laboratory investigation of the so-called functional psychoses showed that a large percentage of them were caused by focal infections, principally of the teeth, tonsils, and gastrointestinal tract. Treatment by eliminating these foci of infection resulted in the patient's recovery. It was necessary that the infection be recognized before the mental symptoms began. When prophylactic work could be done by the physician before or after the nervous or mental symptoms developed, only 15 per cent. of these cases remained in the hospital, as against 60 per cent. previously.

It was very encouraging to hear a paper like that of Dr. Carman, since at the present day one felt that by far the majority of conditions were due to a toxemia, the result of infection. But infection was not limited to the teeth. He said that while one should lay stress on the teeth, those who limited their observations to the teeth alone would often be disappointed.

Dr. ROSEWATER of Newark said that one should stop practising medicine as it was done to-day. No one man was perfectly competent to do all this work, and no patient had money enough to run the gamut of all the experts that were necessary, so they must have group medicine.

Dr. GOLDSTEIN of Camden said that they knew that these patients would get improvement much more rapidly if their focal infections were treated. He could not, however, put a great deal of trust in the marvelous recoveries that occurred so soon after the removal of the focus infection. He did not see how cases of rheumatism and nephritis in which the foci of infection were treated, got well immediately. He asked if the entire source of infection was removed, what about the effects of the infection that had been existing for ten years?

Oration in Medicine. The Internist: His Duty to the Public, to His Patients and to Himself.—Dr. W. BLAIR STEWART of Atlantic City delivered this oration. He said that no physician could miss one medical society meeting without fear of missing something that would help him in the treatment of his next case. Many problems were solved by contact with others in the office, the society, and the clinic. Doctors owed it to their patients and to themselves to use every means to improve their knowledge and skill. When they referred a case to a surgeon, they should study the case with him, and insist on being present at the operation. He said that there was a new era in surgery, called team-work. The internist, the surgeon, and the laboratory man should study diagnosis together. Consulting work might be done at home, but the hospital was preferable. It should never be used as a place for the meeting of idle, jealous, and political medical groups. If the local hospital did not command the respect of the public, there was something wrong with the medical staff, the board of management, or both. The medical profession must realize the importance of a hospital for the good of the public and not for the benefit of a clique. Preventive medicine would be the practice of the future, and it was necessary to educate the people as to how to maintain good health. Dr. Stewart further said that if merchants would give more study to the sanitary housing of their employees, their workers would not have to lose an average of nine days a year from preventable sickness. Tuberculosis, typhoid fever, and many other diseases had no excuse for their existence other than ignorance. With the extraction of one's teeth, the enucleation of tonsils, the sacrificing of appendices, one did not know definitely where one was, or how much would be left of one's body in future generations. One should not forget the social side of life by allowing engagements, other than emergencies of birth and death, to interfere.

Focal Infections in Relation to Eye Disease.—W. D. OLMSTEAD of Trenton read this paper in which he said that one could trace nearly every disease of the eye to one of the three or four sources of focal infection. He had presented this paper to reiterate and emphasize that which had been written on the subject, and principally to draw attention to the close association of focal infection and eye diseases. A true appreciation of this would enable one to solve many a previously puzzling optical enigma. He urged the value of a careful, painstaking examination in every case, as a routine procedure.

The Election of Officers resulted as follows: *President*, Philander A. Harris, Paterson; *First Vice-President*, Henry B. Costill, Trenton; *Second Vice-President*, James Hunter, Jr., Westville; *Third Vice-President*, Wells P. Eagleton, Newark. The Society will meet next year at Atlantic City.

THE AMERICAN PEDIATRIC SOCIETY.

Thirty-second Annual Meeting, Held in Highland Falls, Ill., May 31, and June 1 and 2, 1920.

THE PRESIDENT, DR. THOMAS W. SOUTHWORTH OF NEW YORK, IN THE CHAIR.

(*Concluded from page* 374.)

Has Malt Soup Extract an Antiscorbutic Value?—Dr. HENRY J. GERSTENBERGER of Cleveland presented this paper. He stated that while making a study of the respiratory quotient of scorbutic infants, it was decided for certain definite reasons to feed these infants on Keller's malt soup extract. This mixture, as was well known, had made for itself a record of producing and never curing scurvy. During this study three infants with marked and severe scurvy recovered unexpectedly in a rapid and complete manner. This surprising occurrence was probably due to this special lot of malt soup. Dr. Gerstenberg discussed various factors in the manufacture of malt soup preparations that might have had an influence in imparting antiscorbutic properties.

Dr. JOSEPH BRENNEMANN of Chicago said it was extremely difficult to say why some foods cured scurvy and others did not. It seemed that some children were cured of scurvy by almost any change of diet. Individual susceptibility seemed to play a large part in determining which children would develop this disease. The more one studied scurvy the more keenly he felt that the present hypothesis failed to explain many things in connection with this disease.

Dr. J. P. CROZER GRIFFITH of Philadelphia said that many members of the society would remember the oft-quoted statistics of their "Collective Investigation upon the Cause of Infantile Scurvy." In this there was nothing more evident than that there were various different dietetic conditions which were capable of producing the disease. Some children developed scurvy on pasteurized milk, some on boiled milk, some on raw milk, and some even on breast milk. Some recovered when pasteurized milk was changed to raw milk, and some, curiously enough, when raw milk was substituted for boiled milk. This committee reported that the only justifiable conclusion was that there was something wrong with the diet, but that what this dietetic error was did not appear clear. It was beyond question, however, that there must be besides diet a peculiar disposition to develop scurvy seen in a comparatively small number of infants. If this were not the case we would find all the infants fed on a certain mixture or proprietary food developing the disease. Malt soup had been a favorite food with him for many years, and he had seen only two or three cases develop scurvy in spite of the fact that no orange juice was administered. He thought malt soup was not to be blamed for scurvy more than other foods.

Dr. CHARLES GILMORE KERLEY said he was somewhat surprised to hear these things, for it was his experience that more cases of scurvy in infants were caused by malt soup than by any other method of feeding.

Dr. THOMAS S. SOUTHWORTH thought this subject should be very thoroughly discussed before the impression was conveyed that malt soup extract was an antiscorbutic. In one institution in which malt soup extract had been used for some years because they obtained better results with it than with lactic acid milk, they had had repeated outbreaks of scurvy when the management of the institution had failed to provide sufficient orange juice or tomato. It was absolutely imperative that infants receiving malt soup should have orange juice or tomato in considerable quantity.

Dr. GERSTENBERGER said he was thoroughly in accord with Dr. Southworth in believing that it would be a mistake to give the impression that malt soup extract was an antiscorbutic. He had made the report because it had suggested the possibility that there was something in the preparation of this special lot of malt soup that had caused it to possess antiscorbutic properties, and that if they could find out what this was it might be possible to manufacture a malt soup preparation which would not cause scurvy in case orange juice or tomato were omitted from the diet.

The Medical Supervision of the Boarded-Out Child.—Dr. MAYNARD LADD of Boston presented this communication, in which he described the work of the Boston Dispensary, which was administered through the cooperation of the Boston Children's Aid Society and the Church Home Society, two large child-placing agencies. This cooperative plan had served to demonstrate the value of expert continuous supervision of children in the care of child-placing societies and the value of utilizing for this purpose the equipment and medical staff of an organized dispensary, including specialties in all the chief branches of medicine and surgery, as well as clinical and *x*-ray laboratories for modern medical diagnosis and treatment. Dr. Ladd presented a statistical study of 876 individual children cared for by this organization. They were caring for about 500 children a year. Of these about 15 per cent. were sufficiently ill to require hospital care. This might be taken as a fair estimate of the hospital requirements of such a group of children. A little less than one-third of the hospital admissions were for necessary tonsillectomies and adenoidectomies. The death rate among these children was 1.1 per cent. This was undoubtedly due to the prompt detection of serious cases of illness and the facilities provided for early and, if necessary, prolonged hospital care. These statistics offered proof of the practicability of reducing the death rate of a supervised group to a point below that which was accepted as normal for the community. This clinic provided what every child ought to have, but few received: (1) A complete physical examination when accepted by the society. (2) Correction of defects which interfered with proper nutrition and development. (3) Prescription and supervision under trained nurses of proper diet, especially for infants and children in the second and third years. (4) Provision for meeting promptly cases of acute illness occurring in foster homes. (5) Examination on discharge with analysis of the history of the child under this care and transmission to parents and guardians through social service agency of the data in regard to the child's state of health and the subsequent care he should receive.

A Twenty-four Hour Schedule for Boys.—Dr. RICHARD M. SMITH of Boston presented this paper. He said that in a previous article entitled, "A Health Study of a Boys' School" (*Am. Jour. Dis. of Children*, October, 1919), he had drawn attention to certain fundamental principles with reference to the care of the health of school children and had pointed out lines for the further extension of health supervision. A table for the distribution of the boy's time during school hours between study, activity, and inactivity, was therein reported. A further use of this table had convinced them that it gave a correct distribution of the boy's time. The parent, the physician, and the teacher were together responsible for the child's life, and no part of that life could be arranged intelligently without the cooperation of all three individuals. His educational work in school must be arranged bearing in mind not only the studies necessary for the school curriculum, but whether also he was doing work at home, such as music and the languages. His exercise was made up of what he did at home in the afternoon quite as much as of the carefully arranged athletics at school. At the Rovers Open Air School for Boys a study was made of the weekly twenty-four hours' distribution of the time of the boys. The matter of time distribution and the question of instruction were the two most important factors in the health of school children. There were no means at present of determining whether or not a given boy was distributing his time in conformity with a healthful management. Dr. Smith presented a table which demonstrated what appeared to be a healthful distribution of the hours of the week, based upon data from the actual school schedules and statement made by the parents concerning the time spent at home. This table showed the following: A boy of six years spent about 40½ hours per week in study and exercise, and 127½ in recreation and sleep; a boy of eight years spent 48½ hours in study and exercise and 119½ in sleep and relaxation; a boy of 10 years spent 55 hours in study and exercise and 113 in relaxation and sleep; a boy of 12 spent 62½ hours in study and exercise and 105½ in relaxation and sleep. This represented what an average healthy boy of a given age could do who was taking enough school work to advance in his grade and who was having sufficient exercise to keep in good condition. It was possible for a child to have a schedule different in every respect from this average, yet be in normal health and progress satisfactorily in school. Such a child was obviously unusual and certainly could not be taken for a model for others to follow. Dr. Smith believed the principles involved in these tables were correct and hoped they would be used sufficiently so that correct principles might be inserted if those given needed modification.

A Study of Breast Feeding in the City of Minneapolis.—Dr. JULIUS P. SEDGWICK of Minneapolis presented this paper. He said that in their private work and in the clinic they had been using certain principles to encourage breast feeding and to maintain the supply of bresat milk. These were presented before the American Medical Association in 1917. The present communication dealt with the results of their efforts to apply these principles on a larger scale. They wished to ascertain what statistical results they could show as a result of the application of these principles as to the proportion of mothers nursing their babies and the effect on the infant mortality rate. In their endeavor to promote the supply of breast milk they had found that the most effective means was to make a demand upon the breast, though they also took advantage of other well-known means that might be of assistance. They felt that making a demand upon the breast by expression of the milk was often a most important factor in maintaining the supply. The technique used in expression was not that of going over the whole gland tissue and using massage, but consisted simply of emptying the sinus back of the colored areola. Expression was especially indicated in obtaining a supply of breast milk for premature infants or when for any reason the infant could not take the breast, or the mother's nipples were inverted, fissured, or sore. The other part of their plan consisted in reaching the public. This they had accomplished by gaining the cooperation of the medical profession, the health department, the infant welfare society and that of prominent citizens. The mother of every infant born in Minneapolis during the year was either seen by a representative of the organization or reached by mail or telephone. Each mother was given information and literature, and was followed and seen or heard from every month, or oftener if necessary. As a result of this work 96 per cent. of the babies born in Minneapolis were on the breast, and the mortality had dropped from 71 to 65 per cent. for that year.

Dr. ROOD TAYLOR of Minneapolis stated that although Dr. Sedgwick had reported on this subject before the national societies only the last two or three years, he had been preaching this doctrine and doing this work for a much longer time. He was under the impression that a large proportion of the work done by

pediatricians had to do with the artificial feeding of infants; in private practice in Minneapolis that field of pediatrics formed a very small proportion of their work.

Dr. CHARLES GILMORE KERLEY of New York thought it was a question whether infants nursed nine months did better than those nursed only three or four months. It would be interesting to know the condition of the infants nursed nine months in comparison with those in which there had been earlier weaning and bottle feeding.

Dr. H. M. MCCLANAHAN of Omaha referred to an investigation he had made showing that most mothers weaned their babies because some doctor had advised that course. He thought they should first do missionary work among the doctors, for most mothers were willing to nurse their children unless advised to the contrary. Dr. McClanahan recalled a paper he had read showing that the morbidity of breast-fed babies was considerably less than that of bottle-fed infants.

Dr. RICHARD M. SMITH of Boston questioned whether expression of milk as a factor in securing these results had not been overestimated. Was it not possible that these results were due to awakening attention to the value of breast feeding? He thought that with this work as an incentive breast feeding would be used much more than ever before.

Dr. LANGLEY PORTER of San Francisco said he had considerable experience with cattle that suggested certain questions in reference to breast feeding. There were certain cows that produced a high-grade milk and certain others that produced a low-grade milk, and the same was true of human beings; there were certain families that produced milk well and certain others did not. In certain individuals the function of producing milk was so poor that it was not worth while expending time and effort that were destined to fail. Dr. Sedgwick was fortunate in having to deal with Norwegians and Swedes who were naturally better nurses than the modern American woman. Another factor that tended to reduce the milk supply quite as much as disuse was overstimulation. It was just as important to pay attention to that side of the question as to see that the breast received proper stimulation. Dr. Sedgwick's method, however, was most effective.

Dr. SEDGWICK, in closing the discussion, said he regretted that they had not been able to get the weights of these babies. They had been very careful, however, to see that every baby received enough nourishment, and they had used both complemental and mixed feeding. As to the overstimulation, there might be a few instances of overstimulation, but they were very few in comparison with those who were understimulated. With reference to the feeding interval, they had used four-hour intervals, and four-hour expression of both breasts, if necessary. If the breasts were alternated every four hours that meant that each breast was stimulated only every eight hours, and frequently that was insufficient to maintain the milk supply. As to diet, they were very simple in their directions. They told the mother that she *could* have whatever her husband *should* have. She required a few more calories, however. Continued stimulation was more important than the ingestion of large amounts of fluid.

The Fate of Subcutaneously Injected Red Blood Cells.—Dr. ROOD TAYLOR of Minneapolis contributed this paper, in which he said that modern transfusion methods so successful in adults were mechanically less satisfactory in small infants. Thirty years ago studies were carried out which indicated that blood injected subcutaneously or intraperitoneally reached the circulation at least in part. Subsequent work by others on the whole had supported these early findings. In the present study large amounts of citrated blood were injected subcutaneously into six children. Thereafter there was an increase in hemoglobin percentage which was, as a rule, most marked after two weeks. There was usually no great increase in the number of red blood cells. The red blood cells of two children were counted before and after the injection by Ashby's method, serum which agglutinated the patient's own corpuscles but which did not agglutinate the injected corpuscles being used as diluent in the hemocytometer. The results showed that within five days after the subcutaneous injections of homologous citrated blood there was no marked absorption of the injected cells into the patient's circulation.

Recent Studies of Blood Nitrogen in Infants and Children.—Dr. FREDERIC W. SCHULTZ of Minneapolis presented this study, which had for its object the establishment of normal figures for the nonprotein nitrogen content of the blood in infants and older children. Practically no complete studies on normal children were available; such figures were, however, available for normal adults as the result of the work of Professor Folin. In the present study determinations were made of the total nitrogen, (urea, uric acid, creatinine, combined creatin and creatinine, and of the blood sugar. The amino acid fraction was being studied, but the results were not yet ready for presentation. The methods used were those of Folin. An effort was made to have the material as normal as possible. In infants under ten months the blood was taken from the head sinus; in older children from the median basilic or external jugular. Ten cubic centimeters was usually taken, which was sufficient for all determinations, and even allowed of repeating some. All determinations were carried out within twenty-four hours. The blood was taken from two and one-half to seventeen hours after the intake of food. The children were arbitrarily divided into five age groups as follows: From 1 to 6 months, 7 to 14 months, 2 to 6 years, 7 to 10 years, and from 11 to 14 years. There were in all 88 cases. A chart was presented showing the maximum and minimum figures for the different age periods, and all gradations between. It was found that the total nitrogen ranged from 24.90 to 41.10 mg., the average being between 32 and 34; for adults Folin and his coworkers found 24 to 32 mgs. The urea ranged from 10.80 to 20.40 bg., the average being about 15.50 mg.; for adults the average was between 10 and 23 mg. The uric acid varied from 0.55 to 4.75 mg., the average being about 2 mg.; the average for the adult was from 2 to 3 mg. Creatinine ranged from 1.110 to 2.055 mg., the average being about 1.4 mg.; the average for the adult was 1.1 to 1.3 mg. The creatin and creatinine ranged between 4.74 and 8.92, with an average of 6.5 mg.; the average for the adult was 6.5 to 9.5. The blood sugar ranged between 0.05 and 0.14 per cent., with an average of about 0.09 per cent.; the average for the adult was between 0.06 and 0.12 per cent. Thus the constancy of the nonprotein nitrogen excretion during the periods of infancy and childhood corroborated the findings for normal adults. This was true for all the components except for uric acid, which showed the same variability it showed in adult blood.

The Calcium-Magnesium-Phosphorus Balance in Children Subject to Convulsive Disorders.—Dr. B. RAYMOND HOOBLER presented this paper, in which he stated that the group studied were those classified as epileptics of the petit mal type. None of them gave a history of epilepsy in the family. The question was therefore whether they had epilepsy or some other convulsive disorder. A search of the literature failed to reveal satisfactory data as to normal balances for these substances, so they had first attempted to establish their own normal values for comparison with children of the same ages and weights to be studied. It was found that nearly every one of these children subject to convulsive attacks had a low balance in either magnesium, calcium, or phosphorus, but in none was the balance lowered in all three substances. By estimating the percentages of retention and absorption one could come very close to the actual state of mineral metabolism. In convulsive disorders of this type a search should be made for mineral deficiency, either in calcium, magnesium, or phosphorus, and if such a deficiency was found the attempt should be made to bring it up to normal.

The Circulatory System in Nutritional Disturbances.—Dr. W. MCK. MARRIOTT, Dr. H. MCCULLOCH, and Dr. K. UTHEIM of St. Louis made this contribution, which was presented by Dr. Marriott. He stated that in that particular nutritional disturbance known as athrepsia or marasmus it was very evident clinically that some changes in the circulation had occurred. This was recognized by the low surface temperature, slow pulse, and grayish color of the skin. It had

seemed desirable to estimate quantitatively the degree of circulatory changes and, if possible, to determine the cause of the changes. In measuring the circulation they had used the calorimetric method of G. N. Stewart. Before applying this method to infants they had applied it to animals and compared the results with those obtained by the Ludwig "Strohmühr." The method was easily applied to infants. In a series of 29 normal infants the average flow of the blood was 17.2 c.c. per 100 c.c. of arm per minute. In applying the method to 35 athreptic infants the volume flow of the blood was found to be very greatly diminished, sometimes being as low as 1 or 2 c.c. per minute. As these infants improved the volume flow of the blood increased and in some instances became normal. The next question to answer was regarding the cause of the decrease in circulation. One cause of diminished volume flow of the blood is known to be a decreased blood volume. The next step was to determine the blood volume of normal and athreptic infants. In a series of normal infants the average blood volume was 9.1 per cent of the body weight, the variations being from 8 to 10.8 per cent. The average blood volume of a number of athreptic infants studied was 8 per cent. of the body weight. One showed as low as 4.8 per cent. As adipose tissue was a relatively nonvascular organ, none would expect a thin infant to have a larger amount of blood per kilo of body weight than a fat one. They found the reverse to be often the case. This indicated definite decrease in the volume of the blood. The lowered blood volume was sufficient to account for the low volume flow in at least some of these infants. Other factors, however, seemed to be probably operative. The peripheral volume flow of the blood would be decreased if capillary or arteriolar constriction had occurred. They found such a constriction to occur in these infants. This was shown by the fact that there was a piling up of blood corpuscles on the capillary side. Blood obtained by a prick in the skin of these infants showed a distinctly higher hemoglobin in red and white cell counts than blood obtained directly from the veins. This constriction of the arterioles leads to poor peripheral circulation, and probably to the gray color of the skin. It also accounts for the fact that some of these extremely athreptic and apparently anemic infants had normal red blood cell counts when determinations are made on capillary blood. They considered the arteriolar constriction as a compensatory mechanism to maintain blood pressure when the blood volume was diminished. They found this mechanism ordinarily sufficient to maintain the blood pressure, as they very rarely observed low blood pressures in the athreptic infants studied. Having considered the changes in the blood and in the vessels, they next turned to a consideration of the heart muscle itself. This it might be expected would atrophy with the rest of the body, but at post mortem very little change in the heart muscle could be made out. It was possible, however, that functional changes might occur. To determine whether or not such was the case, electrocardiograms were made and in a certain number of the infants definite changes in the functional activity of the heart muscle were demonstrated. The variations from the normal most frequently observed were low amplitude of all waves. The P and T waves were frequently absent, especially in leads 1 and 3. The P-R time was found to be as long as 0.2 seconds, and the Q-R-S time was frequently prolonged. The ventricular complexes were occasionally abnormal in form, the R wave especially being notched. With improvement in the clinical condition of the patients the form of the electrocardiograms changed and this suggested that the alterations in the heart muscle were functional rather than organic. They suggested that poor circulation through the coronary arteries was in part responsible for the changes, a vicious circle being thus established. Some experiments were done on animals in an attempt to reproduce the athreptic condition. After a period of complete starvation, the blood volume of rabbits was found to be definitely decreased and also the volume flow. When the animals were again fed they maintained a constant weight for a considerable period of time until the blood volume slowly increased. After this the process of repair became more rapid. In some animals the blood volume did not return to normal and these animals failed to recover their weight and finally died.

Electrocardiography in Children.—Drs. MAX SEHAM and FREDERICK W. SCHLUTZ of Minneapolis covered in this paper, first, the physiological peculiarities of the normal electrocardiograms of all ages of childhood, including the premature, from one hour to thirteen years; second, the pulse period in 50ths of a second in all ages; third, the transmission time of both auricle and ventricle; fourth, diseases peculiar to childhood. The electrocardiogram at birth was constant. All of the new-borns, 22 in number, showed similar curves. A right ventricular preponderance was characteristic, showing a deep S, and a high R_1. During the first three months this form persisted. During the fourth month the S became smaller than the R in Derivation 1, signifying a change from right to left ventricular preponderance. From the fourth month to the end of the first years it gradually changed into the adult type. From the first year on the adult characteristics persisted. In the premature the form of the electrocardiogram was incomplete. All of the deflections except S were not seen. After birth all of the deflections in both the auricular and the ventricular complex were well established, and in practically all instances showed on the tracings. The pulse in newborns was quite regular, as was shown by the electrocardiograms. Sinus arrhythmia was not complete until the school age. From this time until puberty it occurred in about 50 per cent. of all normal children. By measurement of the P-R intervals and the R-T intervals the transmission time could be accurately studied. The average P-R in newborns was 0.10 of a second, from two to five years it was 0.12 of a second, and from six to thirteen years it was 0.28 of a second. This included the Q-R-S period, which in the respective ages was from 0.03 of a second to 0.09 of a second. The electrocardiograph was not only of value in pediatrics for the normal, but it was a great aid in diagnosis in abnormal conditions. A study of 22 congenital heart lesions, two of which came to autopsy, showed that only in cases in which the right side of a heart was involved, especially pulmonary stenosis, there was a characteristic right ventricular preponderance shown. In seven of eleven drop hearts, all of which were confirmed by *x*-ray, the ventricular complex in lead 1 was unusually low. Exudative diathesis decomposition, hypertrophy of the heart when unassociated with heart murmur spasmophilia, tuberculosis of the lungs, and other miscellaneous diseases were studied in 300 cases.

Books Received.

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NORMAL HISTOLOGY. By GEORGE A. PIERSOL, M.D. 418 pages, with 438 illustrations, 88 of which are in color. Published by J. B. Lippincott Company, Philadelphia.

ÉTUDE CRITIQUE DE L'ETIOLOGIE DES BRONCHITES CHRONIQUES AVEC SCLEROSE PULMONAIRE. By JACQUES DALSACE, M.D. 132 pages.

MORTALITY STATISTICS (1918), 603 pages. Nineteenth Annual Report.

THE EXTRA PHARMACOPŒIA OF MARTINDALE AND WESTCOTT. Revised by W. HARRISON MARTINDALE, Ph. D., Ph.C., F.C.S. and W. WYNN WESTCOTT, M.B. Lond., D.P.H.. Seventeenth Edition. Vol 1. 1115 pages. Published by H. K. Lewis & Co., Ltd., London, 1920.

THE ACCESSORY SINUSES OF THE NOSE. By ROSS HALL SKILLERN, M.D. 418 pages, with 300 illustrations. Published by J. B. Lippincott Company, Philadelphia.

CHIRURGIE RÉPARATRICE ET ORTHOPÉDIQUE Edited by MM. E. JEANBRAU, P. NOVÉ-JOSSERAND, L. OMBRÉDANNE, and P. DESFOSSES. In two volumes. Vol. I, 659 pages with illustrations. Vol. II, 656 pages with illustrations. Published by Masson & Cie,, Paris.

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Original Articles.

MAMMALOGY—AN ANATOMICAL AND TAXONOMIC CONSIDERATION OF THE GROUP TO WHICH MAN BELONGS.

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WHILE residing in New York City a number of years ago, I prepared an extensive and illustrated work on *The Game Mammals of the United States.* Had it been printed in the form planned, it would have been an exhaustive treatise on the entire group of our so-called game mammals—all the way from a chipmunk to an elk. Unfortunately I had made the work too exhaustive for the American publishers and presses; so the years slipped by, and the MS. and some 150 fine illustrations could not gain a place in the light owing to the national vice of commercialism so rampant in this country.

A few years before the outbreak of the world war, and at the time when Germany's output of scientific and semi-scientific literature was at its height, I made the attempt to bring the work out in that country, but succeeded only in part. Dr. E. E. Leonhardt, Curator of the Zoölogical Museum of Dresden, translated into German for me all the chapters treating of the mammals themselves, while the classificatory parts and the anatomy were both omitted. These translations appeared in *Natur und Haus,* a Berlin magazine having but a meagre circulation in the United States. The classificatory scheme of the Class Mammals, also extracted from the original MS., appeared in a modest little natural history magazine in Christiania, Norway,—a publication that claimed no circulation in this country whatever.

Recently I have published one or two of the main chapters in *American Forestry,* the official magazine of the American Forestry Association, having its headquarters in the Maryland Building at Washington. Such other chapters as possess interest to foresters will, as the editor of that publication, Mr. P. S. Ridsdale, informs me, appear in subsequent issues. This leaves the anatomical and classificatory part still to be taken care of; and upon reading this carefully over, at this date, I find in it and in its illustrations, so much of value to human and comparative anatomists generally, including veterinarians, that that matter appears to be worthy of a place in some standard American journal having a wide circulation among the various representatives of those departments of general medicine.

It may be of interest to record the fact here that the original work was, by permission, dedicated to Colonel Theodore Roosevelt, who made a personal effort to bring it out but was unsuccessful. The correspondence on the subject is still in my possession, and is really an interesting bit of history. The Colonel approved of the following text of the dedication, it being "in recognition of the far-reaching influence he has ever exerted in advancing the Biological Sciences, and especially that of Mammalogy, through his personal contributions to those sciences, and through his North and South American and African explorations."

With these few words to stand as a Foreword, the information embodied in that part of the aforesaid manuscript is here offered to the readers of the MEDICAL RECORD.

As Ichthyology is the science of Fishes, Ornithology the science of Birds, so is Mammalogy the science of Mammals. We find the word mammalogy to be derived from the English word mammal and a Greek word, *logos,* meaning a discourse or a treatise. Again, the English word mammal is derived from a Latin word, *mamma,* which is the term applied to the breast of a mammiferous animal. The Mammalia, then, is a group of vertebrated or backboned animals that, in addition to other special anatomical characters, possess breasts, whether those breasts are fully functional, as in man, or only rudimentary, as in the Australian Duckbill (Ornithorhyncus).

Now to comprehend fully our definition for Mammalogy, it is necessary to know what is meant by a science or by the word science. Science (from the Latin word *scientia,* knowledge; *scio,* to know), or what constitutes the science of any subject, is the knowledge of amassed or observed facts in relation to that subject. It means even more than this; for it implies that this knowledge has been systematized, set in order, severely tested and coördinated after rational methods, so that the observed facts are presented to our minds in their true relations. Biology is the science of life or living animals, and mammalogy is one of the special sciences of biology, —and so are ichthyology, ornithology, and others.

Mammalogy, then, a special science or department of biology, consists in a rational digest of all the observed facts in regard to the science of mammals.

It is an exposition of all that we know of this class of animals, systematically arranged, and includes the logical inferences of what still belongs to the realm of the unknown in regard to them. It has to do with, or treats of, the anatomical structure of morphology of mammals, both existing and extinct; of their physiology, and of their psychol-

ogy or mental attributes. The science of extinct mammals, however, is usually relegated to the special department of palæontology or palæomammalogy; for it is evident that we can know only through logical inference what most of the ana-

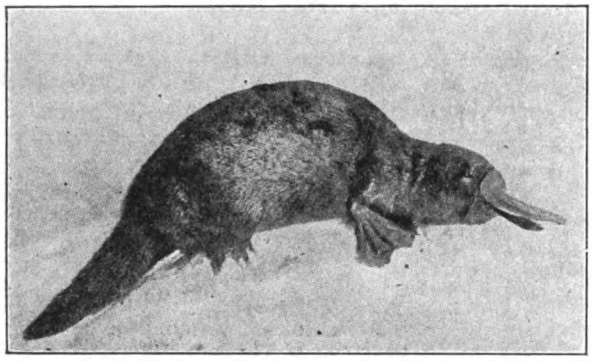

FIG. 1.—The Duck-billed Platypus. (After W. Saville-Kent, F.Z.S.)

tomy, all of the physiology, and the mental attributes of extinct mammals were like, except in cases where those mammals came under the observation and examination of science prior to their extinction. Mammalogy also treats of the natural habits of existing mammals, and their behavior under all sorts of conditions, both normal and abnormal. It takes into consideration their geographical distribution both in times past and present; it concerns itself with the geological record of mammals, their sequence in time, their ancestry, and their probable origin. It defines the relations and interrelations of all species and subspecies of mammals, as far as possible, of those still existing, and, by deduction, their affinities with those now extinct. It treats of the relations of mammals to all other groups and classes of all other animals in nature, and therefore includes also their taxonomy or classification. In fact, mammalogy aims to elucidate the true significance of this group of vertebrates in nature, and their place, relatively speaking, in the system.

This brings us to the point where we must define what a mammal really is. In ancient zoölogy they were generally referred to as "The *beasts* of the field,"—an utterly meaningless epithet at the present time. Far more recently they have been designated as the Quadrumana, and as *quadrupeds*, meaning, of course, that they were all "four-handed" or "four-footed" vertebrates; but for the reason that these terms did not include all the representatives of the Class, they have gradually come to be abandoned. It is evident that under such terms the bats would be excluded, as well as such undoubted mammals as man and the whales. *Homo* is a bipedal vertebrate, and the whales are great marine mammals; both bring forth their young alive and nurse them at the breast. They are also mammalian in their anatomical structure. It was the famous Swedish naturalist Linnæus who invented the name Mammalia, and its derivatives have all naturally followed. It is now in common use among English-speaking zoölogists, and the French biologists have it as *Mammifères*. Finally, it is as well to note that the name "quadruped" would include many reptiles and batrachians, and perhaps other forms; it is therefore objectionable.

As has been said, then, we employ the term Mammalia to include all existing mammals, and such extinct ones as undoubtedly belonged to this, the highest Class of the vertebrate sub-kingdom, and by far the most important one. When we come to consider only those mammals still existing on the Earth, as forming the Class Mammalia as it now exists, its limits as a class are perfectly well defined and universally recognized by biologists.

As already stated, a modern mammal is primarily characterized by the possession of mammæ or breasts, or, more strictly speaking, mammary glands with teats. These are rudimentary in the males, but highly developed in the females, becoming functional after pregnancy, when they secrete milk for the young. To this last the four existing representatives of the *Ornithodelphia* of the Australian region form exceptions, as it is now known that both the Spiny Ant-eaters (*Echidnidæ*) and the "Water-Moles" or Duckbills (*Ornithorhynchidæ*) lay eggs from which the young come forth, and that the mammary glands in the females of these low forms of mammals are extremely rudimentary in structure. It goes almost without the saying that all mammals possess, as a component part of the skeleton, a spinal column formed of a series of free bones called *vertebræ*. In this they agree with all the other classes of the Vertebrata, as birds, reptiles, fish, and others. They also possess in their anatomical structure all the other characteristics common to the vertebrate division of the animal kingdom generally. In common with birds, mammals are warm-blooded animals, and possess a heart with four cavities and a complete, double circulation. They differ from reptiles in both of these particulars, and from both birds and reptiles in that the red corpuscles of the blood are almost without exception circular in outline and nucleated.

In mammals the lungs are freely suspended within the cavity of the chest, which cavity is separated from the abdominal one by a muscular partition known as the diaphragm. They have a more or less abundant growth of hair, an outgrowth from the skin. A few scattered hairs have even been discovered in the case of whales, and in no mammal do we ever find the skin clothed with feathers. In no stage of their development do mammals ever possess external gills or branchiæ, though they agree with both reptiles and birds in the possession

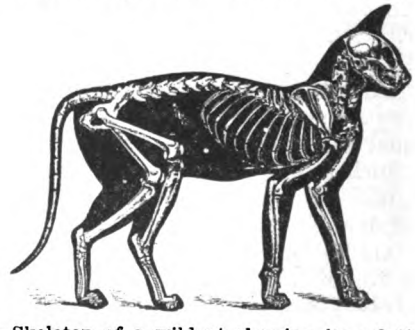

FIG. 2.—Skeleton of a wildcat showing its relations to the external form. (By the Author after Mivart.)

of an amnion and allantois during their early stages.

The aortic arch or main arterial vessel springing from the heart is single, and all mammals have certain structures, parts of the brain and central nerv-

ous system, highly developed; while the vocal organ, in the form of a complete larynx, is at the upper end of the trachea, being the reverse of what it is in birds,—they having a syrinx at the lower extremity of the windpipe, which is largely instru-

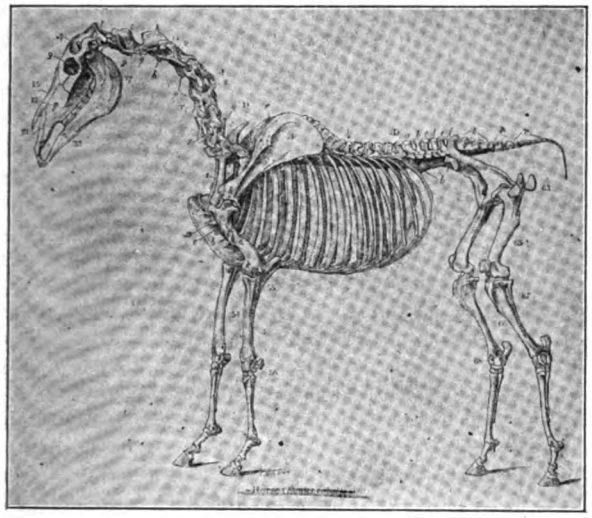

FIG. 3.—Skeleton of the Horse, viewed upon the left side. (After Owen.) 22, superior maxillary bone; 15, nasal; 9, orbit; 9^1, parietal bone; 33, lower jaw; 17, angle of jaw; 1, the atlas vertebra; *c*, axis vertebra; *k*, *u*, *t*, *s*, etc., cervical vertebræ: *a*, *g*, *h*, *o*, *r*, *z*, hæmal spines to vertebræ, d.d., dorsal vertebræ; *a-f*, lumbar vertebræ; 1 sacrum; *p.r.* caudal vertebræ; 51, shoulder-blade or scapula. 1, collar-bone; *g-k*, humerus; *b*, sternum or breast bone; 55, radius; 54, ulna; 56, wrist-bones; *b*, pelvis; 63, femur; 67, leg-bones (tibia and fibula); 68, ankle-joint.

mental in the production of their notes and songs. In mammals, again, the upper vertebra (atlas) of the spinal column articulates with the skull by means of an articulate facet on either side—a pair of condyles. There is but a single median condyle in birds, reptiles, and other vertebrate forms. No mammal has more than two pairs of limbs, and these are, in the vast majority of species, completely developed and adapted to terrestrial locomotion. In whales the posterior or pelvic pair of limbs are very rudimentary and concealed within the body of the animal; in bats the anterior or pectoral pair are greatly modified to subserve the faculty of flight. Fossorial mammals, as moles and others, also have the anterior pair adapted to the requirements of animals that are constantly burrowing in the earth, and spend most of their time beneath the surface of the ground. Seals have their limbs modified as paddles, as do other pelagic forms; while some arboreal mammals have their limbs modified to meet the life they lead among the branches of the trees where they live, rarely descending to the ground. The pectoral, or anterior pair or fore limbs, are invariably present in mammals, and, in one way or another, fully functional.

There are no very close connecting links between existing Mammalia and any other group of existing vertebrates, such as birds and reptiles. This, as has already been said, renders the limital definition of the group quite perfect; but this was by no means the case in the early ancestry of mammals. The interval between them and vertebrates of other main Classes becomes less and less perfectly defined as we pass back into the geologic history of the mammalia. This is true of all existing animal groups. A good instance of it is seen in birds and in vertebrates that are nothing more nor less than greatly modified reptiles, which every particle of fossil material in our hand goes toward proving most conclusively. Birds and reptiles sprang from a common ancestry, and their earliest ancestral stock known to us is reptiliform. At a more remote period they were derived from more and more primitive types and forms, until the two branches merged into each other at the dawn of animal life upon Earth. Mammals have a similar history and origin. At no period of time has any mammal, from man to the lowest mammalian type that has ever existed, had any other origin than through a more or less perfect physiological union of the sexes and fecundation by the male. It matters not whether the birth is from an egg, as in the *Ornithorhynchus*, or a viviparous one, as in man and monkeys; the fact remains the same, for no mammal, at any time, has ever been specially created and endowed with the structure and attributes it now possesses. Every individual mammal comes down along a definite line of descent, and has had its ancestry. As we pass back into time, these lineal descendants depart in form and structure more and more from the present existing types or species, and become more and more like the primitive forms. Sometimes the line of descent may be a little bent, one way or another, due to definite causes; still, thousands upon thousands of fossil remains, from all parts of the known world, support this law of evolutionary origin of mammals and other animals on the Earth.

Touching these and other points, the late Sir William Henry Flower of England has said that "In the gradual order of evolution of living beings, mammals taken altogether are certainly the highest in organization, as they were probably the last to appear on the earth's surface, though this must be said with some reservation, pending further knowl-

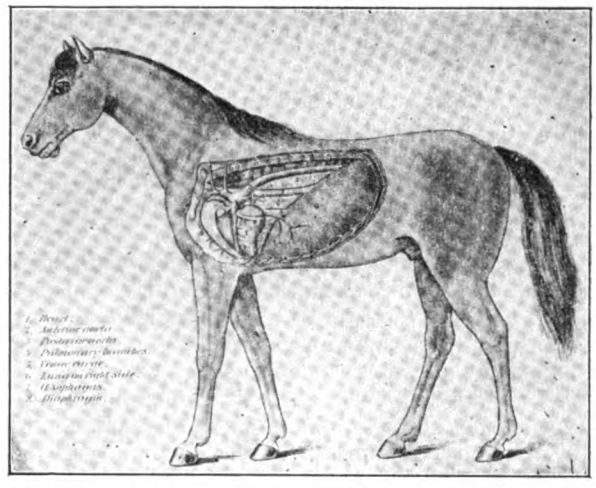

FIG. 4.—Anatomy of Horse; interior of chest, showing position of heart and diaphragm. Photo by the author. Haines del. after Colin. 1, heart; 2, anterior aorta; 3, posterior aorta; 4, pulmonary branches; 5, venæ cavæ; 6, lung on right side; 7, œsophagus; 8, diaphragm.

edge of the early history of the class birds. But, as in speaking of all other large and greatly differentiated groups, the expression must not be understood in too limited a sense. The tendency to gradual perfection for their particular station in

life, which all groups manifest, leads to various lines of specialization, or divergence from the common or general type, which may or may not take the direction of elevation. A too complex and sensitive condition of organization may in some circumstances of life be disadvantageous, and modification may then take place in a retrograde direction. In mammals as in other classes there are low forms as well as high forms; but by any tests that can be applied, especially those based on the state of development of the central nervous system, it will be seen that the average exceeds the average of any other class; that many species of this class far excel those of any other in perfection of structure, and that it contains one form which is unquestionably the culminating point yet arrived at among organized beings."

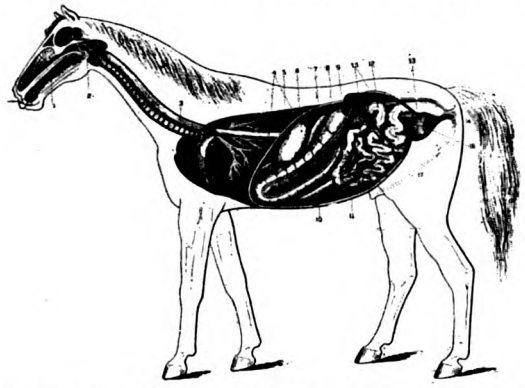

FIG. 5.—Digestive apparatus of horse. (Photo by author, Haines del. after Mégnin.) 1, Mouth; 2, pharynx; 3 œsophagus; 4, diaphragm; 5, spleen; 6, stomach; 7, duodenum; 8, liver, upper extremity; 9, large colon; 10, cecum; 11, small intestine; 12, floating colon. 13, rectum; 14, anus; 15, left kidney and its ureter; 16, bladder; 17, urethra.

In speaking of the history of the Mammalia in past times, the same distinguished writer has said that "such knowledge as we yet possess of the history of mammals in past times is of very recent growth, and is still extremely incomplete. The very rapid advances which have been made in the last few years, especially in consequence of the explorations of rich fossilferous beds in North America, have not only completely changed the present prospect of the science, but give such promise for the future that any sketch, which we might now attempt of this branch of the subject, could only be regarded as representing a transient phase of knowledge." (1883).

About the time that this was published, the late Joseph Le Conte remarked in his *Elements of Geology* that "One of the most noteworthy facts connected with the first mammals is the apparent suddenness of their appearance in great numbers. We have already seen small marsupials quite abundant in the Mesozoic, but no trace of *true* mammals. In fact, the existence of these would seem to be incompatible with the reign of the huge reptiles. But, with the opening of the Eocene, the earth seems to swarm with mammals. And this is true not only in Europe, where the unconformity of strata indicates a lost interval at this point of the history, but also on the Western Plains and Rocky Mountain region, where the Cretaceous seems to graduate insensibly into the Tertiary. . . .

"True placental mammals not only appear suddenly and in great numbers, but of nearly all orders, even the highest except man, viz., monkeys. These, however, are not typical monkeys, but lemurs, which may be regarded as a generalized form, connecting monkeys with other orders." (p. 517.)

Even before these lines were written by Doctor Le Conte, an enormous amount of fossil material, representing the ancestors of many mammals, had been collected, examined and reported upon by palæontologists. Then, too, a great deal had been accomplished in Europe and in other parts of the world. In American deposits have been found the fossil remains of many of the extinct ancestral forms of the great order of Pachyderms; they represent Proboscidians and various species of Rhinoceros and Hippopotamus. Through the discovery of such fossils as are represented by the *Coryphodontidæ*, much light was thrown upon the common ancestral stock of the generalized form of Herbivores, and the even more generalized Carnivores. The former were generally five-toed Ungulates resembling tapirs, while the latter approached nearer the bears than any other modern group of mammals. The remarkable group of the *Dinocerata* is now pretty generally known and need not be described here. The almost complete ancestry of such animals as horses, camels, and others, had been worked out, as well as the line of descent of the Cats (*Felidæ*) and other interesting families and orders. In speaking of the Tertiary period, Le Conte has said that from "the earliest and most generalized types, therefore, to the present specialized types, the principal changes have been, first, from plantigrade to digitigrade, second, from short-footed digitigrade to long-footed digitigrade, *i.e. increasing elevation of the heel;* third, from five toes to one toe in the Horse, or two toes in the Ruminants, and fourth, from simple omnivorous molars to the complex herbivorous millstones of the Horse and Ox.

"The change from plantigrade to digitigrade, with increasing elevation of the heel, when taken in connection with the increasing size of the brain, and therefore presumably with increasing brain-power, shows a gradual improvement of structure adapted for speed and activity, and a *pari-passu* increase of nervous and muscular energy necessary to work the improved structure."

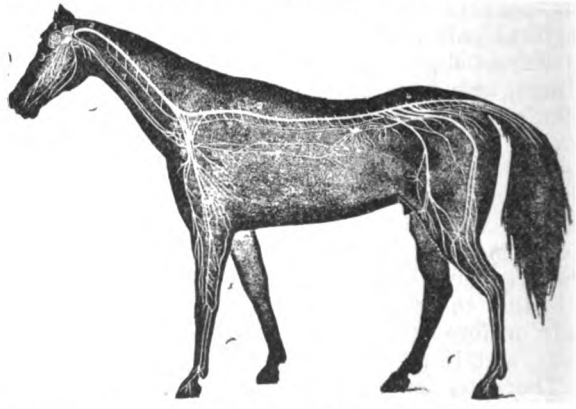

FIG. 6.—Nervous system in the horse. (Photo by the author. Haines del. after Mégnin.) 1, Brain; 2, spinal cord; 3, brachial plexus; 4, sacrolumbar plexus; 5, pneumogastric; 6, sciatic; 7, sympathetic system; 8, solar plexus.

Le Conte says, moreover, that the mammalian fauna of the Quarternary, which follows the Tertiary, "is almost wholly peculiar.

"It differs greatly from the Tertiary fauna preceding, and the present fauna succeeding. The species are, moreover, very numerous, and many of them of extraordinary size; for it is the culmination of the mammalian age."

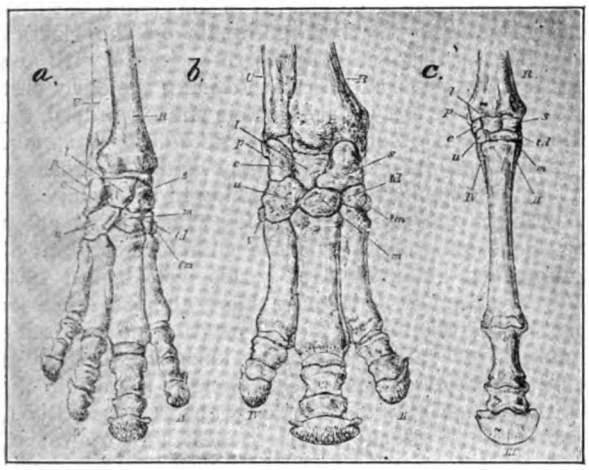

FIG. 7.—Bones of manus (*a*) of Tapir (*Tapirus indicus*) 1/5; (*b*) of rhinoceros (*Rhinoceros sumatrensis*) 1/5; (*c*) of horse (*Equus caballus*) ⅛. II and IV rudimentary metacarpals. R, radius; V, ulna; *s*, scaphoid; 1, lunar; *c*, cuneiform; *p*, pisiform; *u*, unciform; *m*, magnum; *td*. trapezoid tm. trapezium. (After Flower.)

During the Quarternary the fossil remains have principally been found in caverns, during that or those times the animals were floated onto beaches and terraces, were sunk in marshes and bogs, and finally were preserved in frozen soils and in the ice cliffs. The principal mammals, among a host of others, were various huge creatures of the elephant type (Mammoth), great deer and elk, lion, bears, enormous sabre-toothed tigers, ponderous edentates (*Megalonyx*, etc.), armadillos, and big pachyderms. Man also appeared in abundant evidence among the other mammals, along with which he had risen from the tertiary and earlier ages in geologic history.

In writing about the history of any group of animals in time—the world-time—I usually speak of the *ascent* rather than the *descent* of the particular group in question. That is, all animals have, in the history of the Earth, *ascended* from the most primitive forms imaginable. Mammals have formed no exception to this rule, and man, which is only another name for another family of mammals, stands in the same case. Every individual mammal now living on the Earth has sprung from a pair of parents—parents more or less like their progeny, yet, in a specific sense, different. Passing backward through the ages, these minute, fractional differences have always occurred, so that in enormous, unthinkable ages of time—which ages may be considered as constituting the world's history—it has become possible to appreciate the significance of these changes. They have constituted an evolution of forms, which now covers a vast and far-reaching history, but which it will not be the province of the present work to deal with further here.

Be it remembered, however, that the present existing game mammals of North America are but the now-living representatives of a long, long line of ancestry. As we trace any one of them back by the fossil remains of any such of their ancestors as we have been so fortunate as to have discovered, we find that, the further we go back into time, the more and more do the various forms depart in all particulars from the now existing species. This is indicated by the geological horizons in which the fossil remains are found. Not only this, but the further we trace any species or genus of mammals back, the nearer and nearer they approach some other great group in time, and the latter in turn, still further back in the world's history, converged toward some other group. Take such "Cats," for example, as we now have in our fauna; what has just been pointed out applies to them. At present they nearly all belong, such as the jaguars and the cougars, to the genus *Felis*, while the lynxes are arrayed in the genus *Lynx*. For many generations back all of their ancestors belong to these two genera, although these differ more and more the further back they are traced, until we come to meet with some—only a very few at first—that have become so different that, were they in existence to-day, we could not place them with the modern Cats in the genus *Felis*. Among the former we find such types as the nearly cosmopolitan and ponderous Sabre-toothed Tigers (*Smilodon*) of quarternary times, and a great many other Cats, the fossil remains of which have been discovered. The reader who desires to follow this particular group (*Felis*) further, and look into the wonderfully interesting history of the origin and evolution of the *Felidæ*, can do no better than read the many papers on the subject by such eminent writers as the late Professor Cope, Burmeister, Mivart, Owen, Cantley, Falconer, De Blainville, Gervais, Leidy, Filhol, and not a few others who have paid attention to this subject.

But in North America alone we have found fossil remains representing hundreds of other species of mammals. In tertiary times these are seen to be

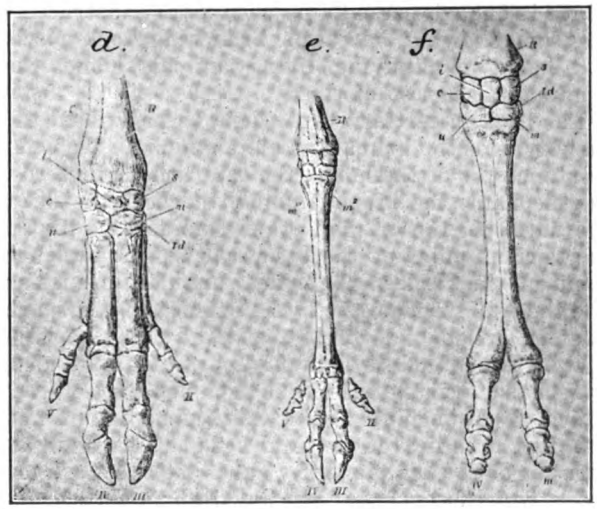

FIG. 8.—Bones of manus (*d*) of pig (*Sus scrofa*), ⅛; (*e*) of red deer (*Cervus elaphas*), 1/7; (*f*) of camel (*Camelas bactrianus*), ⅛. Lettering the same as in Fig. 7. (After Flower.)

nearly all connecting types, belonging to two generalized series, which Cope designated as the Bunotheria and the Amblypoda. From the former, by differentiation, there arose the carnivorous mammals, the insectivorous, the quadrumana, and the

like; while from the latter came the Ungulata with its various family groups.

It was the great French savant, Cuvier, who divided all the ungulate mammals into two great orders, which he named the Pachyderms and the Ruminants. "The Pachyderms," says Le Conte, "are a heterogeneous order, but the Ruminants have been regarded as one of the most distinct of all mammalian orders. Their horns in pairs, their hoofs in pairs, absence of upper front teeth, complex stomachs, and the habit of rumination, differentiated them widely from all other animals." But Prof. Owen showed that this distinction, so clear in zoölogy, was untenable in palæontology. He found, in studying extinct Ungulates, that another distinction, viz., foot-structure, was more fundamental and persistent. He therefore divided all Ungulates into *Perissodactyls* (odd-toed) and *Artiodactyls* (even-toed). A Perissodactyl may have five toes, as in the Coryphodon and the Elephant; or three toes, as in the Palæothere, the Rhinoceros and Tapir; or one toe, as in the Horse. The Artiodactyls always have their toes in pairs; there may be only two toes, as in Anoplothere and in Ruminants; or four, as in the Hog and the Hippopotamus. Owen, indeed, made the Elephant, Mastodon, etc., a distinct order under the name of Proboscidians; but these are probably best regarded as a very distinct offshoot or suborder of the Perissodactyls.

"Now, in earliest tertiary times the Perissodactyls and Artiodactyls already had diverged from a common stock, probably something like the Coryphodontidæ, although these were doubtless more nearly allied to the Perissodactyls. Each of the primary branches then divided and again divided, until the extreme branch in one direction became the Horse, and the extreme branch in the other direction the Ox." (*Elements of Geology*, pp. 531, 532).

Professor Le Conte, in the work from which the above is quoted, presents us with a very instructive diagram showing how this branching took place, and how "by studying living animals alone, the Ruminants seem so distinct."

Far back in tertiary time, then, there existed the early type of the primal ungulate mammal, the common ancestor of the horse, the tapir, the rhinoceros, the elephant, the hippopotamus, the hog, the deer, the antelope, the ox, and other ruminants with all the various allies of these several types. As time went on, the stock of the primal ungulate branched, and the Amblypoda came into existence. One branch was the artiodactyle branch and the other perissodactyl. The artiodactyle in due course again divided, one branch giving rise to a common stock from which, by branching again, the hippopotamus and the hog families were produced; while another, turning off rather abruptly, gave rise to a common stock, which branches in a tripartite manner, throwing off the deer family, the antelopes, and the bovine animals—the ruminant group of modern or present-day mammals. The other branch of the Amblypoda or the perissodactyl branch, in due course again divided, one branch giving rise to a common stock, from which, on the one hand, the proboscidians were differentiated, while on the other the ancestral stock of the horses on one line, and the tapirs and rhinoceroses on the other, were the groups that eventually evolved, and they are with us at the present time. So, according to this, our deer, antelope, and ox groups all sprang from a common ancestor, which arose from the artiodactyl stock of the amblypoda, one of the two branches of the primal ungulate stock of the tertiary period.

As to how many years ago it is that mammals first came into being as *true* mammals on the Earth's surface, it is quite impossible to estimate with any accuracy. They were ushered in during the early part of the Cenozoic era (early Eocene time); indeed, the Cenozoic era is often known as the *age of mammals*. It is divided into the Tertiary and Quarternary periods. The Quarternary is followed by *the present* or "Recent age" (Psychozoic). The Glacial epoch was the earliest epoch of the Quarternary, and it "commenced about 240,000 years ago, lasted 160,000 years, and 80,000 years have elapsed since its close." (Le Conte). Many of the now-existing mammals, or rather the same species, were to be found in existence then. Geologically speaking, the cutting of the Niagara Gorge by the Niagara River, is an event of recent time; it is still in operation, and a long way from being completed. It is going on at the rate of about one foot per annum, and Mr. Lyell, who has carefully computed it, states that thus far it has required 36,000 years. But this, as a time-matter, is of very small moment—absolutely insignificant as compared with the enormous lapse of eras and periods since the *beginning of the Tertiary*. Powell and Dutton have estimated that the average erosion over the whole of the Colorado Plateau region amounts to 6,500 feet, and this does not include the forming of the Colorado Canyon by the Colorado River, a cutting of 11,000 feet. Now take such a river as the Mississippi, one of average erosive power, as the gauge for our measurement, the rate of continental erosion, *at the present time*, is about *one foot in five thousand years*. To cut 6,000 feet would require 30,000,000 years. The enormous mass eroded on the Colorado Plateau has been carried off since the *middle* of the Tertiary time, and, as has just been said, the average thickness of the Earth's crust there is about 6,500 feet. The first mammals may have then appeared on the scene in this world about forty or fifty millions of years ago. It is at least ten thousand years since man, as *man*, came into being; but, as in the case with all other mammals, the evolution has been *extremely gradual*. No one can possibly conjecture what kind of animals there will be living in the world at the end of another million of years, to say nothing of fifty millions. The present mammalian fauna of the world will have been extinct for ages. No species now in existence will be in existence *then*,—that is, if that time ever arrives for the world. There may be no life on the Earth at all, the entire globe having become as cold and as dead as a moon. Only seventy-five or a hundred years ago our western prairies absolutely swarmed with bison, a large and conspicuous mammal; to-day there are not one thousand of them in existence. In a few generations more not an elk, nor a prong-horn antelope, nor a cougar, nor a grizzly bear, nor a dozen such forms will be in existence anywhere. All exterminated! Known only by their remains in museums, and what we are saying about them in present-day literature.

Quite apart from the question of the origin and evolution of mammals on the Earth, though in a way related to it, there is to be considered another and one of marked importance, and this is the geographical distribution of mammals. In studying the evolution of the Mammalia from our earliest knowledge of them to the present time, we resort to the consideration of all the fossil remains in our possession, and this material is duly compared with all we have learned about the species now existing. New geographical distribution, or, as it is also termed, Zoögeography, on the other hand treats of the dispersion of the various living forms over the land and water areas of the Earth, be they of plant or animal life. So far as possible, this takes into consideration geologic, as well as present time, and if mammals be the class engaging our attention, we designate the study of Zoögeography of the mammalia, and so on for all the other groups. Our knowledge of the geographical distribution of the earliest known mammals is extremely meagre. This is due to the fragmentary nature of the material thus far discovered, for it is clear that we can only depend upon fossil remains for anything we may hope to learn about it.

As we approach quarternary time, however, and pass in review what we have discovered in regard to tertiary mammals, the data become far more extensive, and our knowledge of the distribution of extinct mammals over the Earth and in the waters thereof considerably improves and widens, but still remains quite insignificant as compared with what we know of the zoögeography of existing species of mammals. The reason for this is very evident. Thousands upon thousands of species of mammals have lived through entire geologic times and become utterly extinct, and of them we have as yet discovered none of their fossil remains. Then such fossil mammals as we have come across have been found only in particular localities, thus giving us but little knowledge of the areas over which they roamed at the time they flourished, their comparative numbers, or the times of their coming into being, or when they died out. For existing faunæ, however, the state of things is entirely different; for every year that passes we become more and more familiar with the exact regional limits constituting the present habitat of any particular mammal now known to us, be that mammal a terrestrial species or an aquatic one. Knowledge of this character at the present time is very extensive, and, to a remarkable degree, very accurate; it forms an important chapter in the biology of mammals, and further on in the present article will be applied to our studies of the game mammals of this country.

To a certain extent, the time any particular species of mammal appeared in the world's history, and what its geographical range was at any time during its life's history, are related questions, the one bearing upon the other. If such a thing ever happened in the history of the Class that only one individual of any particular species had come into existence and perished without leaving any descendants, the questions of the geographical distribution of that individual and of the time at which it lived would be coincidental ones. The same would apply to the last individual of a species or a race in the present fauna. For example, suppose all the beavers (*Castor canadensis*) in captivity had died out, and there remained in existence but one single specimen in the wild state. Were it to die tomorrow on the shores of Hudson's Bay, it could only be said of it that it was a mammal of the Psychozoic age, and that its geographical range had become restricted to the very identical point where the animal had expired and the race become extinct. Therefore it is clear that, during the existence of any particular species of mammal, the geographical distribution of that species may never be fixed. From one cause or another the species may be rapidly extending the limits of its range, or, for other causes, that range may be becoming restricted and the species on the road toward extermination or extinction. Some few of the causes for these fluctuations in the status of various species of mammals in regard to their geographical distribution will be touched upon further on.

It is possible that, in former times, the buffalo (*Bison americanus*) had a geographical distribution extending over the entire territory now known as the United States and parts of British America and Mexico. The animal now is at the point of extinction in the wild state, and its geographical distribution is restricted to a few points in the Yellowstone Park and in the Pan Handle of Texas. The cause for this is too well known to warrant the space for discussion here.

In quarternary times, the age that just preceded the present one, the geographical distribution of the main families of mammals was quite similiar to what we find in our now-existing fauna; but the animals were of gigantic proportions, and the species and numbers far more abundant. There were many other species, too, that died out in the quarternary and left no descendants. We have no idea what they appeared like in life, while in some other cases we have.

Now the mammals of the tertiary in North America were entirely different from the animals of the present-day or existing fauna, although the latter are their descendants. It is a good many millions of years ago since the miocene time of the tertiary; but during that age there no doubt existed a mammal of which we now possess the fossil remains, and which we call the *Oreodon*. It was a remarkable animal, having affinities with the camel, the deer, and the hog. Notwithstanding the enormous, almost inconceivable, lapse of time since it roamed over this country, with the physical topography it had in those days, we can with certainty state now that a large part of its range or geographical distribution included all that portion of the Continent now known as extending from Nebraska to Oregon. Its fossil remains have been discovered in a sufficient number of places in this region to convince us of the truth of this, though we cannot, of course, state with certainty what the exact limits of its range were.

The Mammalia are especially serviceable for our purposes in working out the various problems presented us in our studies of geographical distribution. The eminent British naturalist, Wallace, employed them with marked success in this line of investigation, and he was one of the most distinguished of zoögeographers then living. As Sir William H. Flower has said, the reason they can be employed

with such advantage is, that "owing to the comparatively limited methods of locomotion or transport which most of them possess, the area of distribution of each species is more definite and restricted than in some other classes."

It is evident that mammals may, according to their principal methods of locomotion, be divided into three main groups, as effecting their distribution over the surface of the Earth. These groups are first, aërial, second, aquatic, and third, terrestrial mammals. The bats are the only aërial mammals we have, while the chief aquatic ones are the seals, the sirenians, and the cetaceans, as the whales, porpoises, and their allies. A discussion of these two groups need not detain us here, as none of those mammals will be described in the present article, and we can demonstrate all that is necessary in regard to geographical distribution here from a consideration of the last group or the terrestrial mammals.

"One of the most important facts connected with present distribution of terrestrial mammals," says Flower, "but one of which the cause is sufficiently obvious, is their entire absence, except where introduced by the direct agency of man, from all oceanic islands, including even the great New Zealand group. Another, equally striking, but less easily explained, is the very marked isolation as regards its mammalian fauna of the Australian region of zoölogists. When once the narrow neutral ground on the border line between this and the Oriental region is passed, there is not found, notwithstanding the vast extent of land it comprises, a single indigenous placental or monodelphous mammal, except a few species of a single family (*Muridæ*) (Rats and Mice) of the very wide-spread order *Rodentia*—the Wild Dog or Dingo having been in all probability introduced."

It is a well-known fact, on the other hand, that the Monotremes, as the Duckbills, Echidnas, and the Marsupials, are almost entirely confined to this region—the American opossums forming the only exception.

The placental mammals are distributed more or less generally throughout the other zoölogical regions of the Earth, "and in many cases form valuable indications by which the natural boundaries of these divisions have been traced. Many anomalies, otherwise inexplicable in the present range of families and species, have been cleared up by the study of their distribution in former geological epochs, a subject in relation to which the present facts of distribution should always be studied. There are few lines of evidence so conclusive as this in favor of the existing species being modified lineal descendants of those which have lived in previous times upon the Earth." (Flower.)

Coming back again to our direct consideration of the significance and the importance of zoögeography, we find it primarily to be a scheme by means of which we can classify our knowledge of animal distribution, and in an orderly manner present it to the mind, so that it can be easily appreciated. As pointed out in my "Lectures on Biology," delivered in Washington, D. C., a number of years ago, many scientists have devoted years of study to this subject alone, and among them we must not neglect to mention, in addition to Mr. Wallace already referred to, the names of Buffon, the eminent French biologist, Agassiz, Allen, Gill, of this country, Sclater of London, and Alexander von Humboldt.

For the better appreciation of the data of distribution of existing and extinct animals and plants, naturalists have divided the land and water areas of the world into certain divisions according to certain laws and circumstances. Recently American biologists have thus divided the American Continent; in the present connection, however, it will meet my purpose, as it has upon former occasions, to adopt the views so ably presented by Mr. Wallace. As in the case of other departments of science, zoögeography has grown up from early and crude notions of its principles to its now largely elaborated state. American zoölogists, as a rule, divide the land and water areas of the face of the Earth into divisions in chief, which they term "realms;" while our British confrères give the name "regions" to those areas.

Now, as has already been pointed out above, it is a well-known fact, that certain mammals are practically confined to the dry land, while others are aërial or aquatic by nature. There is, however, still another factor that enters into the question of distribution not mentioned. In any given locality, where the land area rises as mountains into unusual altitudes, it is to be observed that, in any such given locality, it frequently happens that the mammalian fauna of the bases of such elevations is quite different from what we find at the summits or peaks, and, moreover, the species gradually change as we ascend or descend. For example, in some parts of the Big Horn Mountains or mountain region, one will meet with antelope in the foot-hills, grizzly bear half way up, and pikas on top, and similar instances hold good all over the world. Not only do differences of latitude and longitude, differences of climate, and depressions and elevations in the land areas, influence the kinds of mammals and other forms found in those various parts of the world, or in any particular country, but the diversity in the physical geography of the Earth's surface, as a whole, is another powerful factor in determining faunal limits. Plains may encourage extended migration, as hills, mountains, large rivers, and seas may check the same. The abundance, absence, or scarcity of certain foods over certain areas also have an influence. In many cases the faunal limits can be but loosely defined, as any faunal district may almost imperceptibly merge into any one of its adjoining ones; but certain surface contours may often, on the other hand, sharply define some of the boundaries, and animals of the contiguous areas not pass over the line. Some species—and it applies to the mammals of this country—may range through several faunal areas; others are, perhaps, never found beyond some quite limited locality—these several restrictions and diffusions nearly always being due to assignable natural causes. Where certain species arrive at their maximum of abundance, it is generally supposed to indicate the area of the origination of that species. This last, however, is by no means always true.

Soils also play their part, and it will be clear that the fauna of the extensive marshy districts are sure to be quite unlike the fauna of a great desert; indeed, in the case of the latter, it has led an emi-

nent authority to say that "deserts may act much like inland seas to separate the animals of the adjoining, more fertile, tracts, and they afford dwelling-places for animals which are incapable of living elsewhere. Desert faunæ have a general *facies* the world over, though the original elements, out of which the faunæ have been made up, may radically differ."

In so far as mammals are concerned, our western American deserts often offer fine examples of this law. Our government naturalists have taken many species of small mammals in the desert regions of the United States found nowhere else in this country or in the world.

Although a great ocean, such as the Pacific or the Atlantic, forms almost a positive barrier to the spread of the land animals of its opposite coasts, which are invariably quite distinct, yet, at the same time, within its own self, the great ocean currents form means of dispersal of prime importance for many land animals and the vast majority of marine forms. Again, as we have already pointed out, climate, in most cases, is a positive barrier to the spread of animals in many directions, whereas the alternation of the seasons, and even the severity and mildness of the summers and winters, powerfully urge many animals to migrate, and thus, for the time being at least, to pass beyond either their local or general faunal areas. Migrations from such causes in the main, however, take place within the boundary of any faunal region where they occur. A familiar example of this is our own United States vernal and autumnal migration of birds, which takes place every year, and that for the entire width and breadth of the Continent. The enormous known migrations of lemmings and grey squirrels are probably influenced by other causes.

As another means of dispersal of animals—though one having little or no effect upon mammals of the present time in this country—we have those various movements which take place in the atmosphere itself; and it has been noted that the trade winds, hurricanes and cyclones, or even minor whirlwinds, do much sometimes toward scattering the lighter forms of animal life, as well as the seeds of many plants; by such means new organisms are often transported to distant areas, to which they were formerly unknown. In any special case, should the environment prove compatible to a species thus violently introduced, that species may become established and thrive in the new region, or it may, the reverse holding true, become gradually extinct, or even perish at once.

Quite a number of artificial means, introduced by man himself, have, from time to time, acted as factors, in either favoring the dispersal of certain animals or tending to restrict them to certain localities—bridging large streams; the transportation of many of the smaller forms in steamers, grain cars, trains, and other modes of conveyance; the joining of large bodies of water by means of the opening of artificial canals, and finally, even the construction of country roads, have all had their influence along the line indicated.

Already reference has been made to the dispersal and rearrangement of faunæ and floræ in past ages of the world, and they were powerfully affected by geologic changes, as, for example, the effects produced by the glacial period as a whole, as well as those profounder changes: the upheavals, depressions and submergences of continental margins and areas. It must be borne well in mind that, at the present time, the faunæ, which of course include all the mammalian faunæ of the various zoögeographic regions, are continuously, but gradually, undergoing many changes, brought about by the extermination of some forms, by the slow development of new species, and by the gradual physical changes of the Earth characteristic of the present epoch.

To sum them up, we may say in the words of Huxley: "It has been discovered by careful comparison of local faunæ and floræ that certain areas of the Earth's surface are inhabited by groups of animals and plants which are not found elsewhere, and which thus characterize each of these areas."

We are now in position to return to the naming of those areas, and, as I have already said,. the views of Mr. Wallace will be the ones set forth to exemplify the manner in which naturalists have divided the face of the Earth into regions for the purposes already designated above. There are doubtless later views than his; but in the main, the same arrangement obtains in them all, while the boundaries may change from time to time as our biological knowledge, as a whole, widens.

It was in 1876 that Wallace published the work containing his scheme; he then recognized six primary zoögeographical regions of the globe, and subdivided them as follows:

I. Palæarctic region, with four subregions: (1) North Europe; (2) Mediterranean, or South Europe; (3) Siberia; (4) Manchuria, or Japan.
II. Ethiopian region, with four subregions: (1) East Africa; (2) West Africa; (3) South Africa; (4) Madagascar.
III. Oriental region, with four subregions: (1) Hindoostan, or Central India; (2) Ceylon; (3) Indo-China, or Himalayas; (4) Indo-Malaya.
IV. Australian region, with four subregions: (1) Austro-Malaya; (2) Australia; (3) Polynesia; (4) New Zealand.
V. Neotropical region, with four subregions: (1) Chili, or South Temperate America; (2) Brazil; (3) Mexico, or Tropical North America; (4) Antilles.
VI. Nearctic region, with four subregions: (1) California; (2) Rock Mountains; (3) Alleghanies, or East United States; (4) Canada.

As has already been intimated, these regions are practically independent of the question of the marine distribution of animals. But the principles which apply to zoöoceanic areas and regions are, in the main, almost identical with those laws which govern the occurrence of life-forms in the terrestrial zoögeographical divisions. So that, for our present purpose, they need not be especially discussed here.

With respect to the terrestrial divisions just given, and using Mr. Wallace's own words, we are to note that the "I. Palæarctic Region, which includes all Europe to the Azores and Iceland; all temperate Asia from the high Himalayas and west of the Indies, with Japan, and China from Ningpo and to the north of the watershed of the Yang-Tse-Kiang; also North Africa and Arabia, to about the

line of the tropic of Cancer. This may be popularly called the European region, Europe being the richest and most varied portion of it and containing representatives of all the more important types; but it must not be forgotten that the region includes a much larger area in Asia, and that there are many peculiar North Asiatic animals.

"II. The Ethiopian Region, which includes all Africa south of the tropic of Cancer, as well as part of Arabia, with Madagascar and the adjacent islands. It may be popularly termed the African region.

"III. The Oriental Region, which is comparatively small, including India and Ceylon, the Indo-Chinese countries, and southern China, and the Malay Archipelago as far as the Philippines, Borneo, and Java. It may be popularly called the South Asiatic or Indian region.

"IV. The Australian Region, which is composed of the remainder of the Malay Archipelago, Australia, New Zealand, and all the tropical islands of the Pacific, as far east as the Marquesas and the low Archipelago.

"V. The Neotropical Region, which comprises the whole of South America and the adjacent islands, the West Indies or Antilles, and the tropical parts of Central America and Mexico. It may be called the South American Region.

"VI. The Nearctic Region, which consists of all temperate and arctic North America, with Greenland, and is thus well described as the North American Region."

It is hardly necessary to point out here that extensive areas of the Palæarctic, Nearctic, and other regions are under a high state of cultivation, and that much of the area they cover is thickly populated. In consequence of these two facts, extermination, in times past, has been the fate of many of its mammalia, and this process is at present going on more rapidly than ever. It has thinned the ranks of animal life within the boundaries of those regions to such an extent that, notwithstanding the extensiveness of one of them—the Palæarctic—it ranks at present below the smaller Old and New World regions of the tropics in the richness of its mammalian fauna. Some of the forms of the Palæarctic Region, however, are quite peculiar, while others are highly characteristic. There are camels and a half-dozen different genera of deer; a genus of dogs of the family *Canidæ* occurs, and a great variety of the rodentia abound, as rats, mice, squirrels, hares, and their kind. Seven genera of ruminants fall within the limits of this region, all of the family *Bovidæ;* weasels and pandas are also characteristic. Upon its northern coasts are found seals, and the land carnivora are well represented in the wildcats, the wolves, foxes, and bears. In other parts wild horses and asses exist, the latter being abundant in Asia.

Passing to the Ethiopian Region, which includes in the main Africa and the great island of Madagascar, we are struck at once with the marked differences in its mammalian fauna as compared with what we found in the Palæarctic Region. Madagascar and the Mascarene Islands are especially remarkable, and in the case of the first-mentioned we find many characteristic small mammals not found on the African Continent, while it lacks all the large carnivora, the apes, giraffes, elephants, antelopes, and others which are found there. Through the recent explorations of Sir Harry Johnston, some large and very remarkable mammals have been added to this region, such as a new giraffe and an ant-bear; but above all else the extraordinary mammal the *Okapia johnstoni.* Even Wallace admitted, thirty years ago, that "the African Continent is preëminently the country of large mammalia. It possesses an abundance of elephants, rhinoceroses of several species, giraffes (now peculiar to it), gorillas and baboons, the largest of the ape tribe, a host of large and remarkable antelopes, the huge hippopotamus, several species of zebras, wild buffaloes, several remarkable forms of swine, and an abundance of lions, leopards, and hyenas—forming together an assemblage of large and highly organized animals such as occur nowhere else upon the globe. There are also many smaller, but remarkable forms."

And so it goes with the four remaining regions defined above, the Oriental, the Australian, the Neotropical, and the Nearctic. Each possesses its peculiar and characteristic forms of mammals, and each region its varying physical aspect. What has been said of the first two holds true, in principle, in all the others. In the present article, the mammals of the Nearctic interest us most, and particularly the game mammals; but, as their distribution in the United States will be touched upon further along, the subject will not be entered upon here. The main object of the present article has been to bring before the reader the salient principles of the question of animal distribution on the face of the Earth, both in the present and past ages of the world's history.

Australia of the Australian Region is especially characteristic, inasmuch as all the more ordinary forms of mammals are not found there, their room being taken by the varied group of the marsupials, of which there are five distinct families and many genera. *Echidna* and *Ornithorhynchus,* two other distinct families of most remarkable mammals, are also found on the Australian Continent.

As has been noted above, we thus see how it is that animal and plant life is distributed over the face of the globe according to certain natural laws, and that those distributions have varied during the past history of the Earth, owing to the varied application of the same laws, and to other circumstances. In short, there is, in the individual case of any existing animal or plant on the Earth, *a reason* for its being found over one area and not over another. There is a very good reason why the moose is found in Maine and not in Mexico or Africa, and why the Okapi (*Okapia johnstoni*) is found in the heart of the latter country and not in the Rocky Mountains of North America, or in the forests of Australia. There is a very good reason why we find the sage brush (*Artemesia*) growing over our western plains and not over the barren tracts of Central Thibet, or why we find yucca flourishing in Mexico and not in Michigan—and so on for everything else that now lives on the Earth or ever has lived upon it.

Science has made very considerable progress toward the elucidation and demonstration of many of the laws to which reference has been made in this article; there still remains, however, in the grasp of the great unknown a vast store of facts not yet

brought to light, though the incessant investigation of the scientific researcher tends to pass them almost daily over to the realm of the known.

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THE THERAPY OF HYPERTHYROIDISM.

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THE results of the non-surgical treatment of hyperthyroidism are most gratifying. Indeed, the majority of cases improve steadily, if the following plan of treatment is carried out. However, cures do not occur after several weeks' treatment, as usually the overcoming of the thyrotoxicosis is a matter of months. Sometimes, however, all medical measures fail to produce a cure, in which cases, after prolonged medical and *x*-ray treatment, surgical consideration is in order.

The essential part in the treatment of any disease is the eradication of the cause. This fact is especially true in hyperthyroidism. The cause of this condition is practically always toxemic or neurotic in origin. The source of the toxemia is usually an infection of the teeth, gums, tonsils, sinuses, gall-bladder, appendix, genitourinary tract, etc. The absorptions of toxins from the intestines in cases of intestinal stasis is a rather frequent cause. Syphilitic and tuberculous infection have been known to cause this condition. Therefore, the first therapeutic aim should be the discovery and removal of the source of toxemia. In cases of neurotic origin, which includes the rather numerous group of cases caused by fright plus trauma, diet and rest often effect a cure.

Certain hygienic measures are very useful in treating cases of hypersecretion of the thyroid. Good nursing; pleasant, quiet surroundings; warm, fresh air; two sponge baths daily, with plain or salt water, and the application of an ice bag to the thyroid and the heart, are all quite important. Absolute mental and physical rest is a necessity in the treatment of all but mild cases. The administration of much water, especially the imported Vichy, is of real value.

A suitable diet is most beneficial. Due to the excessive catabolism which occurs in these cases, a very nutritious diet is necessary to overcome this catabolic loss. This diet should consist of milk, buttermilk, cream, butter, cheese, eggs, plenty of bread, vegetables, soups, stewed fruits, cereals and a simple dessert, such as custard or rice pudding. All meats should be omitted, as Falta has found that a diet rich in proteins increases the thyroid secretion. On the other hand, Rudinger has found that a diet of carbohydrates tends to decrease the secretion of the thyroid. Alcohol, tea and coffee are also harmful. Vichy water administered in considerable quantities will neutralize with its sodium bicarbonate whatever phosphoric acid the blood may contain.

Medical measures constitute an important part of the treatment. These measures have for their object a diminution of thyroid secretion and an upbuilding of the body tissues. The best agents for the inhibition of thyroid activity are the vasoconstrictors, of which ergotin and the salicylates are probably the best. The neutral hydrobromide of quinine is also a favorite vasoconstrictor, as well as a stimulus to phagocytosis. Ergotin is given in one grain doses, three times daily. The quinine and the salicylate are given in about ten-grain doses, three times daily. Pituitary extract, adrenalin, scopolamine, and sparteine also constrict the vessels. Belladonna and hyoscyamus are of value when the tremor is troublesome. The bromides and chloral are helpful in relieving the nervousness and insomnia. Likewise, is Sumbul sedative worthwhile. Arsenic, in addition to its tonic effect, depresses the functions of the thyroid. Sodium phosphate, one dram to a glassful of warm water on retiring and arising is valuable, Kocher having found that thyroidectomized dogs become cachectic when sodium phosphate and magnesia are removed from their food. Another class of remedial agents is composed of those preparations which tend to restore to the nerve cells their functional constituents which have been more or less destroyed by the thyroid hormone. Lecithin in one teaspoonful doses, three times daily; thymus gland desiccated, grains five t.i.d., which contains phosphorus laden nucleins, and sweetbreads are the most important. In most cases, iron is of value. Several sera have been tried, some users finding them helpful, others finding them useless. Rogers and Beebe have prepared a serum by injecting into rabbits two proteids —a nucleoproteid and a thyreoglobulin—which serum has helped to counteract the toxemia. Another serum, obtained from thyroidless goats, has been praised. Antithyroidin, a German product, intended to neutralize the toxemia, is given in doses of 10 to 30 minims, once or twice daily. Rodagen, another German preparation, obtained by precipitation from the milk of thyroidectomized goats, has not been satisfactory. Likewise, thyroidectin, a reddish-brown powder precipitated from the blood of thyroidectomized sheep, was without effect.

The *x*-ray is a most excellent agent for depressing the excessive secretion of the thyroid. *X*-ray therapy is painless and easy; it leaves no scar; it causes no fatalities; when given in conjunction with proper medical treatment its results are excellent. The results of *x*-ray therapy are first, a feeling of improvement; later, the tremor diminishes, the tachycardia subsides, and there is a gain in weight. The question of dosage is most important and is to be determined by the skilled radiologist. Knox reminds us of several precautions to be taken in giving *x*-ray treatment, such as a careful estimation of dosage on each occasion, small doses given frequently, adequate filtration, the use of a penetrating ray and the use of secondary filters of leathers, loofah sponge, or any material which will absorb the soft rays. The thymus also should be *x*-rayed each time. Radium when given properly and in sufficiently large quantities will produce equally as good results as will the *x*-ray. Radium may succeed where *x*-rays fail, and vice versa. The technique may be faultily applied in both instances. When properly employed, radium gives rise to no reaction and produces excellent therapeutic results. Neither the *x*-rays nor radium should produce a dermatitis.

Injections of boiling water into the thyroid gland have been employed by Porter, resulting in some improvement. However, there have occurred three deaths from this proceedure. Watson has used injections of quinine and urea hydrochloride with encouraging results.

The surgical treatment has been purposely considered last, as this form of therapy, in the writer's opinion, should be resorted to only after the other lines of treatment referred to have failed. Surgical treatment has been the form of therapy most often used, probably because the average physician considers the statistics in the wrong light, e.g., the mortality from thyroid operations when done by Kocher and the Mayos is practically nothing—which means the deaths resulting from operation, and not the cures. Judd and Pemberton of the Mayo Clinic have shown that eight years after operation not more than 45 per cent. of cases are cured. It is evident, therefore, that the mortality rate of the average surgeon is 5 per cent. or more, and that the percentage of cures will hardly reach 30. When the other forms of treatment have failed, surgery is in order. When pressure symptoms develop or malignant degeneration of the thyroid occurs, surgical intervention is necessary. It seems that the chief rôle of surgery in the future therapy of hyperthyroidism will be in removing causes of the hypersecretion.

If, then, after finding and removing the cause or causes of this affection, we use proper hygienic, dietetic, medical and radio-therapeutic measures we will secure, without having to resort to thyroid surgery, a large proportion of cures.

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1010 CANDLER BUILDING.

SOME FUNDAMENTAL PRINCIPLES UNDERLYING INTESTINAL AND RECTAL SURGERY.

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SEVERAL recent studies have tended to indicate that human beings may be divided into groups or types according to their structural organization. Bean, who has studied racial types extensively in several parts of the world, has laid particular stress on the thin epithelial type and the robust connective tissue type. The first, or hyper-ontomorph, is a lank individual found to possess a long vertical stomach, short small intestine, and a long large intestine; the second, meso-ontomorph is fat and broad in general appearance with a large transverse stomach and a small intestine and short large intestine. Each type, Bean believes, may be prone to a particular disease which occurs only rarely in the other type.

Stockard, studying fron an entirely different standpoint, believes two chief types of individuals exist and that the one group differs from the other on account of having undergone its early postnatal development under a different complex of the internal secretions. The two types in the end correspond with Bean's—the hyper-ontomorph being an individual that has had a high physiological thyroid bringing about early differentation of organs and parts without excessive growth in size. The meso-ontomorph as a child had a low active thyroid, grew large in size, particularly in width, but its organ differentiation was slow. There are a number of correlated characters presented by individuals of characters shown by the other type.

Therefore a hyper-ontomorph, or high thyroid type, would be mentally precocious and physically frail. He would have a vertical stomach; the small bowel would be subject during early childhood to alimentary diseases. Certain ones of this type would have an acute costal angle; a long narrow chest; and a very active nervous system. On the contrary, a low thyroid type, or meso-ontomorph, would be physically well developed; have a transverse stomach; the small bowel would be very long and the large bowel very short. He would have a good digestion and metabolism. Between the two we have the hypo-ontomorph. The following history prepared by Professor Stockard is helpful in the classification of patients:

PERSONAL HISTORY.

Name..... Age..... Sex.....
Date of Birth.....Place of Birth (in mts. or not).....
F., Nationality.....Place of Birth.....
M., Nationality.....Place of Birth.....
B.....Place in Family.....

S.....Place in Family.....
Fam., Wt.....Ht.....
Growth and Development after Puberty:.....
.....
Sudden Changes in Wt. (10 lbs. or more) and dates:.....
.....
Shape of Head and Face.....
.....
Interpupillary Distance.....Vision: Hypermet.....
Size and Shape of Nose.....Hypomet.....
Prognathous Jaw.....Size of Lower Jaw.....
Larynx: Size.....Pitch of Voice.....
Trunk (Length).....Extremities (Length).....
Body Hair .....Age of Appearance.....
Skin: Texture .....Pigmentation.....
Periodic Crying and Nervous Spells in Mother.....
Idiosyncrasies..... Digestion.....
Bowel Habit .....
Urine Variation under Emotional Stress.....
Physical Strength.....Endurance.....
Sex Function in Female.....Menstruation: Age.....
Onset.....Pain..... Duration.....Interval.....
Amt.....Temperament (Moods).....
Pregnancies (Toxem., Labors, Breasts, Lactation).....
.....
Sex Function in Male.....Puberty.....
Degree of Impulse.....
Nervous Control.....Inhibitory Reflexes.....
.....
.....
.....

The importance of this classification has a direct bearing on some of the surgical problems with which we are confronted.

The procedure so largely in vogue during the last ten years, of fixing organs in certain positions to make them conform to a conceived anatomical standard, is in our opinion, a mistake in the light of our present knowledge of the great variation in size and position in different types. It is obvious that it would be incorrect to try to place the organs of a hyper-ontomorph in the position occupied by those of a meso-ontomorph. Now this is exactly what some surgeons have been trying to do by plication and other mechanical methods.

It is apparent that if a patient has a long narrow chest and an acute costal angle the most suitable position for his stomach is vertical, and any surgical alteration will be unfortunate. It is, therefore, fundamentally incorrect to try to convert this congenital type into something altogether different. This applies, with equal force, to the position of the colon. Plication, here, would be just as ineffectual as in the matter of the stomach. In fact, fixation of organs that should be movable is a surgical error. On the other hand, the fixation of movable organs that belong fixed, is surgically correct.

The cecum and sigmoid are two of the most variable organs in the body, and, when over developed, are responsible for many digestive disturbances often referable to the stomach. A large movable cecum, using the appendix as a suspensory ligament, causes reflex stomach symptoms that might be mistaken for ulcer or chronic appendicitis. So, also with a long sigmoid. In the former case, the appendix may have to be removed, even though it is not diseased, and if an elbow deformity of the ascending colon accompanies a large non-fused cecum, with a mobility of 180 degrees, it may require a developmental reconstruction for its correction.

Another problem of importance in these operations, and particularly in removal of the colon, is the question of the action of the ileocecal valve and the behaviour of an intestinal stoma. Not all animals possess the ileocecal sphincter.

I am firmly convinced, in the absence of proof, that the various segments of the alimentary canal are capable of initiating peristalsis; and this is borne out by the perfect functioning of a new stoma after the removal of part of the colon. I am further convinced, if the necessity arose, as it might in the case of multiple adenomata of the colon, with beginning malignancy, that the colon could be removed and function restored by attaching the ileum to the anus.

It is my firm opinion that in cases of movable cecum and anchored appendix a low grade infection starts in the appendix, and gradually ascends to the cecum and ascending colon, resulting in chronic appendicitis, perityphlitis, and colitis.

I have recently removed a colon of this kind, and the report of the pathological examination, by Professor Ewing is as follows: "Severe old chronic catarrhal enteritis and colitis. Hernias of cecal mucosa and wall. Marked chronic productive perityphlitis with adhesions and partial constrictions. Section shows chronic catarrhal colitis with extensive pigmentation of stroma cells."

Nonspecific and specific purulent infections of the colon, continuous, discontinuous, and segmental, are becoming increasingly common, and I feel that a great many of them originate in the cecoappendix. I believe the colon bacillus is frequently the offending organism. We have had five cases in all where the colon bacillus was the only organism found. Three of these were relieved by vaccines alone; two required operation because of complicating strictures. It is interesting to note in connection with these cases that all complained of indigestion and all were quickly relieved by vaccines or operation.

The remarkable gain in weight, particularly after a stoma, brings up the interesting question of the influence of any irritation—whether infection or tumor—on digestion. The wide distribution of sympathetic impulse in contradistinction to the localized influence of the central nervous system, together with the loss of tone engendered by local irritation, may offer some explanation of the symptoms accompanying this disorder.

One of the fundamental surgical principles involved in the treatment of infections of the colon is that when an infection has passed beyond medical treatment it can be cured by placing the stoma cephalad to the infection. There is a widespread misconception as to the inconveniences caused by a stoma, and the number of operations that have been devised to overcome these so-called inconveniences shows that there is some misconception, or lack of understanding, of the principles involved. The simplest method is always the best. And in my experience the bringing out of a loop and suturing it in position is entirely sufficient, regardless of whether the stoma is a temporary or permanent expedient.

In not one of the cases in which we have performed this operation has the patient complained of any inconvenience, and very seldom if ever, do they use any mechanical appliance other than a piece of gauze to protect against accidents.

The sympathetic nerve supply to the bowel is more or less segmental, and it may be that each segment of the bowel has a potential sphincteric control; so that when a segment becomes terminal

by operative procedure, a functional change gradually occurs and there is a slowing of the current as it approaches the end. Certain it is that some change takes place which permits the individual with a stoma to reassume control. In cancer, a stoma is of value only when used at the earliest possible moment after the tumor is discovered to be inoperable, and it is not of value when the patient is moribund.

Too often the surgeon delays till the bowel is obstructed and then such procedure merely hastens the end. The operation per se is one of the simplest in surgery, and except in fat people, can be performed under novocaine anesthesia.

One would think, from the multiplicity of methods that have been suggested and carried out, that an artificial anus functioned most unsatisfactorily; when, in reality, it functions perfectly. I frequently find that after an artificial anus has been made, a tumor, previously supposed to be inoperable, may be successfully removed on account of its diminution in size and the great improvement in the condition of the patient.

The small bowel is usually described as separated from the large by a valve—the ileocecal valve. Elliott has proved that this is not a valve but a sphincter muscle which contracts upon stimulation of the superior splanchnic nerves; and that its excitor cells are situated in the superior mesenteric ganglion. Langley and Anderson have demonstrated that the internal anal sphincter contracts on stimulation of the inferior splanchnic, and its motor nerves are situated in the inferior mesenteric ganglion.

The question then arises, what can surgery do to restore function in ileocecal insufficiency? The operation so far devised is conceived under a false impression of the anatomical mechanism and physiological function of this barrier between the small and large bowel. If the insufficiency is due, as it is in most cases, to a lack of sympathetic control, or perhaps suprarenal insufficiency, then no mechanical device known to surgery can avail. It is therefore conceivable that adhesions or an inflamed appendix, situated close to the ileocecal sphincter, interfering with its proper contraction would cause a loss of tone. Under these circumstances surgical interference for the removal of the appendix or of adhesions would allow the muscle to functionate properly and return to a normal state.

This is the only condition where surgery in ileocecal insufficiency can be considered justifiable.

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ENCEPHALITIS LETHARGICA.*

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DURING the latter part of 1916 and the earlier part of 1917 there appeared in Vienna a pandemic which was first reported by von Economo and called by him "Encephalitis Lethargica." A like epidemic in Australia in 1917 was reported by Breinl as the "Mysterious Disease." In the earlier months of 1918 France and England were invaded. Its appearance in the United States was noted in the latter months of 1918. The paucity of the literature on the etiology, sympomatology, pathology, diagnosis, prognosis and treatment of this "Mysterious Disease" was a source of great annoyance and chagrin to the writer early in 1919. Even unto the present day there is little to be found in our literature on this subject tending to enlighten the internist in the treatment and outcome of these cases. With less than two hundred cases of the disease reported in the United States, in our medical literature, we are led to believe the disease in not as common as the reports in the lay press would indicate. Considering it a duty one member of the profession owes to all other members, when new questions arise, we place before you the history of an authentic case of "encephalitis lethargica."

*Read at the twenty-first annual meeting of the American Therapeutic Society, May 7 and 8, 1920.

Mrs. M. A. C., aet. 58, came to Colorado in 1890 with persistent cough. Examinations of sputum were then infrequent so we cannot say bacilli were found. Family history not good, mother, brother, and sister have died of pulmonary tuberculosis. Father living and hale at 92. Health improved and was pronounced well of cough after one year. Has enjoyed good health for 28 years with the exception of tonsillitis. Had tonsils removed twelve years ago. Gave birth to a healthy child twenty-two years ago. Menses ceased at 54 years. Felt exceptionally strong during 1918, weighed 152 lbs., blood pressure 145 mm. Hg. Took much interest in war work and knitting for the Red Cross. Started to Florida on pleasure trip January 10, 1919. Spent time while there in central and western portion of the State. Weather damp and cold while in Florida. Returned home on February 9. Travel home was on crowded trains with many returning soldiers. Contracted an infection of upper air passages on way home. This infection was not accompanied with fever, chills, or aching characteristic of influenza.

Exercised but little for several days after return home as she always felt the effects of altitude after being at sea level for a time. On February 14, went out during the afternoon to a social club. On the morning of February 15 she had double vision which persisted for forty-eight hours. Had no headache or nausea, but felt depressed. Sat with eyes closed to avoid seeing double. With the return of normal vision on February 17 a somnolent condition came on. Talking to or reading to her would not keep her awake. She slept well at night; would arise and dress herself in the morning, eat, and be asleep in a few minutes. She kept her eyes closed but it could not properly be called a pathological ptosis for she could voluntarily open them normally when she desired. This condition continued for ten days. She was put to bed with a nurse in attendance.

Realizing that we had a case of the "mysterious disease" to deal with we called in consultation internist, Dr. W. H. Swan, alienist, Dr. F. T. Stevens, oculist, Dr. J. R. Robinson, and bacteriologist, Dr. M. E. Staines. During the sleeping period, when aroused, she complained of severe pain in the lumbosacral region, inside of left thigh, and calf of the leg. The right leg did not hurt her. Her tongue became heavily coated and appetite obtunded. Her temperature varied from normal to 103°. Respirations normal. Pulse 90 to 100. By the end of the sleeping period there was a well defined paralysis of the right side of the face. Dreams disturbed her and held over from one sleeping interval to another.

Physical examination revealed the following conditions in the beginning of the second week: No tenderness of scalp; inability to wrinkle right forehead; vision normal; no disturbance in movements of eyes or changes in the fundus; pupils slightly larger than normal and they react to light and accommodation but do so rather tardily; profuse lacrymation with overflow of tears on right side. Sensation normal on right side of face; muscles inactive; cannot pucker lips; no abnormal condition on left side of face. Right side of face responds but slightly to faradic current but decidedly to broken galvanic current. Hearing normal;

tongue protruded without deviation; taste destroyed in right front quadrant of tongue; pharynx normal; swallows without difficulty. Heart sounds normal. Abdominal reflexes and others throughout body and limbs normal. Small dull area in lower portion of upper lobe of right lung; moist crepitant râles in base of both lungs on deep inspiration. Urine negative; 54 oz. in twenty-four hours, sp. gr. 1014, solids 52.16 gms., no albumin, no sugar. Blood: hemoglobin 94 per cent., red corpuscles 5,500,000, leucocytes 10,000, polymorph 66 per cent. No spinal puncture. Has one devitalized tooth, first upper left molar; recent *x*-ray showed no pus at root; gums in good condition. Muscular tremor in extended hands.

At the end of the third week all the foregoing symptoms were intensified. Mastication and the retaining of food and fluids in the mouth were more difficult owing to the biting of the inside of the right cheek and inability to control the lips in closing the mouth. Instead of ptosis the right eye could not be closed and to protect the cornea it had to be closed and bandaged most of the time. Lacrymation and tear overflow were increased. The whole face took on the mask-like expression, the eyes were sunken, and the skin smooth and waxy in appearance. The temperature ran lower, 99° to 100° in the afternoon. Blood pressure fell to 100 mm. and the pulse became very weak.

Pain continued in back, left thigh, and leg and was the only discomfort complained of. Speech was slow and voice changed. Mental condition very similar to that of typhoid fever in the third week. Delirium when half conscious. Urine voided voluntarily and frequently. Patellar reflex on left side increased. This was the most alarming stage of her illness. She continued in about the same condition until the fifth week of her illness.

Almost imperceptibly she began to show increased vitality in the fifth week. Intervals of normal mentality became longer; anorexia less marked; sleep more natural. Tachycardia was maintained. Complained of general muscular tension and could not get relaxed. Blood pressure increased and a steadier pressure maintained. Mental depression, in the form of the thought of impending dissolution and fear of injury to the family, was quite marked.

Feeling that recuperation would be hastened at a lower altitude (Colorado Springs being 6,000 ft. elevation) it was determined to take her lower. On April 10 she started for Excelsior Springs, Mo. She arrived there in fairly good condition. The hotel life seemed to excite her and a few days later she was taken to St. Luke's Hospital, Kansas City, and placed under the professional care of Dr. William F. Kuhn. While in the hospital tachycardia continued; temperature normal to 99.5°; tongue coated; leucocytes 10,000 to 11,000; polymorph. 68 per cent. to 74 per cent; hemoglobin 90 to 95 per cent.; urine negative; weight 126 lb.; mental disturbances about the same.

After two weeks she was taken to her old home in Ohio. Being slow in improving and recognizing the superiority of institutional treatment over home care, she was taken to Oxford Retreat, Oxford, Ohio, and placed under the care of Dr. R. Harvey Cook. Here she gradually improved, and her mental illusions and hallucinations disappeared. The leucocyte count remaining high, the conclusion was reached that the dead tooth ought to be extracted and, as there were but four teeth remaining in the upper maxilla, it was thought best to remove them all. This was done under local anesthesia. The devitalized tooth had quite a little necrosis at its apex. The cavity was thoroughly curetted.

She returned to Colorado on June 15. At that time she still had extreme weakness in the lumbosacral region and down the left leg accompanied with more or less pain. She walked with the attitude of one with stiff trunk muscles. Her tongue now cleaned off for the first time during her sickness. Her condition has gradually improved during the past eight months. The chief inconvenience now is the sense of exhaustion on moderate exertion. The paralysis of the right side of the face has gradually improved but is still in evidence. It gives no inconvenience except in the thought of its presence. The various organs of the body function normally. She now takes an interest in domestic affairs and plans for the future. Her brain functions normally and she is interested in reading. Her memory for past events is good except for the happenings during the first three months of her illness. This period is as a dream to her. Present blood pressure 128-70 mm., leucocytes 6,000, hemoglobin 90 per cent., polymorph. 75 per cent.

Recapitulation.—History: Family tuberculous; patient came to Colorado thirty years ago for health; good health for years past.

Condition at time of attack: Had been in Florida for a month; season cold and damp; crowded, unsanitary conditions on train returning from Florida; train congested with soldiers from southern camps; acute infection of nose and nasopharynx on arrival home; devitalized tooth.

Initial symptoms: Sixth day after arrival home arose in morning with diplopia which ended in forty-eight hours; no chill or sharp rise in temperature; no cephalalgia; no suboccipital pain; no general aching. Ate as usual and kept eyes closed on account of diplopia.

Later symptoms: Temperature rose gradually and reached 103° on fifteenth day and then gradually declined to 97° to 100° where it remained for ten weeks. Tachycardia persisted throughout the course of the disease and well along through convalescence. The assumed ptosis of diplopic period became pathological after the first three days and continued so for ten days. This was followed by opthalmoplegia in orbicularis and tensor tarsi muscles causing the right eye to remain open with profuse tearing and inability to wink the eye. No photophobia; no anesocoria; pupils slightly larger than normal, reacting sluggishly to light and accommodation; fundus normal throughout the whole course of the disease. Somnolence not profound; respiration regular and normal; no dyspnea; no dysphagia at any time. Mastication slow and difficult owing to inability to hold food and liquids in mouth due to paralysis of masseter and orbicularis oris muscles. Loss of sense of taste in portion of tongue supplied by fifth nerve. Parkinson's or leontiasis facies well marked and continued for several weeks. Disoriented for some time. Rosenbach's sign not present; Babinski's normal; Kernig's absent. Pain in lumbosacral region, adductors in left thigh and left calf constituted the chief inconvenience to patient and was most persistent. Tremor of limbs and feeling of rigidity in muscles continued well along in convalescence. Mental hebetude or psychomotor retardation was very marked during the height of the disease. Anxiety neuroses were marked, the patient required constant reassurance that she would recover. The psychoses manifested were delirium, hallucinations, and mild demonstrations such as we meet in athenic diseases. There were no periods of excitation or exhilaration. The blood examinations never showed impoverishment of the erythrocytes or hemoglobin. Numerous leucocyte counts showed from 10,000 to 11,000; this noted increase may have been partly due to necrosis about the root of tooth. Polymorphonuclear counts 68 to 74 per cent. Blood pressure normally 145 mm. fell to 100 mm. and went back to 128 mm. and is now 128-70 mm. Urine negative during whole course of the disease. Sputum showed streptococcus and pneumococcus.

Treatment: In general terms the treatment was symptomatic. During the first ten days rest in bed, salol, nutritious, non-stimulating diet, and an occasional laxative. When somnolence passed off and the patient became more or less restless sodium bromide, strontium bromide, and asafetida were given. The latter remedy proved to be the most effective, regardless of the fact that it is said to be an inert remedy and its therapeutic effects nil. Hot applications in various forms were beneficial for relief of the lumbosacral and leg pains. When pains were very severe, codeine was resorted to and during the course of the disease morphine was given three or four times. When asthenia became pronounced and blood pressure fell strychnine was tried without perceptible benefit and adrenalin was given hypodermically with good results. Hexamethylenamine was given, but results were questionable. Spinal puncture as a diagnostic measure was not deemed necessary, as the diagnosis was easily made from the symptoms and its use as a therapeutic agent could be only temporary. As the patient was very appre-

hensive, making the puncture would, quite likely, do more harm than the temporary good therefrom would justify. Care, kidness, reassurance, and pleasant surroundings proved the most efficacious general treatment. During her convalescence she had taken the syrup hydriodic acid and an elixir of pepsin. How much the former has had to do with clearing up the detritus in the brain or lesions left there it is difficult to determine. The elixir of pepsin proved a pleasant vehicle and since it contains 15 per cent. of alcohol was a mild stimulant. Much of the time since returning to the high altitude she has taken twice daily a cactus compound pill on the supposition that she would do better to have a mild cardiac stimulant after so severe an illness. It might be said the extraction of the teeth was a therapeutic measure. It is well to remove or eliminate any source of suspected or known infection.

Conclusions.—To make deductions from the study of one case is absurd. Having this case under observation led us to read all the literature we could secure. Several points have impressed us; (1) The etiology of the disease remains undetermined. Most probably it is originally an infection in the nasal passages. The fact that it follows in the wake a pandemic of influenza, or follows an attack of influenza, leads us to believe the specific infection is very closely indentified with, or is the same as that of influenza. (2) There is no well-defined syndrome of symptoms. From the large number of people who suffer from extreme weakness and significant nervous conditions after an attack of influenza we are led to believe there are cases of encephalitis lethargica that are so modified as not to be recognizable. (3) Facial paresis in the distribution of the motor branches of the fifth nerve and the portio dura of the seventh is common. (4) The acme of the disease is in the third week and is characterized by asthenia, weakness of cardiac muscles, and in fatal cases coma and death. (5) There is no specific treatment. All literature delineates the multiple symptoms but no one speaks in certain terms on the treatment. In this chaotic condition the treatment has to be left to the judgment of the attending physician. (6) The mortality rate is very high and should stimulate physicians in the investigation and treatment of the disease. (7) Epidemics of the malady as si infrequent that the study of the disease is practically limited to one or two years in the one generation of physicians.

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AN ACCURATE AND SIMPLE METHOD OF TESTING THE COAGULATION TIME OF BLOOD.*

By GEORGE R. LOVE, B.S.,

CHICAGO.

In a recent article, King and Murray[1] called attention to the fact that none of the current methods of testing the coagulation time of blood can be relied upon. They devised a method whereby the average coagulation time of normal blood was determined to be ten and one-half minutes, but with a variation of from eight and one-half to fifteen minutes. Cohen[2] has summarized the literature on the coagulation time in diseases as reported by several observers who used various methods. It may be noted that in the majority of cases the results are conflicting. This is due in part to the indefinite end-points and to the finger-stab methods, whose results one cannot hope to duplicate in a series of experiments, and, as King and Murray have demonstrated, may be misleading.

A method has been devised and has been used by this Department for the past year by which the coagulation time can be determined within twenty seconds. The end-point is definite and is entirely independent of the judgment of the operator. The method here described employs capillary tubes and resembles in principle McGowan's[3] capillary tube method. We have used this method only in venipuncture work, having abandoned finger stabs as of little or no value.

Preparing the Capillary Tubes.—Cut five millimeter glass tubing (lumen diameter 3.5 mm) into five-inch lengths. Heat the middle two inches of these tubes over a fish-tail burner until the glass is soft enough to sag into the burner by its own weight. Remove from the flame and immediately draw out until the whole is thirty to thirty-four inches in length. Break the tubes in the middle so as to form two equal-sized capillary tubes. The lumen must be from 0.3 to 0.5 mm in diameter.

Procedure.—Paraffin some short test tubes. Leave the test tubes and the capillary tubes in the room where the test is to be made until they are at room temperature. The temperature of the room must be constant and must be known within one degree.

The blood is procured in the usual manner by applying a tourniquet above the elbow and puncturing the median basilic with a short 15 to 18 gauge needle from above downward. The first few drops of blood are discarded and then one to two cubic centimeters are collected in the paraffined test tube. The capillary tubes are filled by dipping the drawn out ends into the blood and sucking it up rapidly to the shoulders of the tubes. The time is recorded when the blood first enters the capillary tubes. Two or three tubes are filled and the time noted when the blood enters each tube. The tubes are now laid flat upon the stand alongside a thermometer. At two minutes before coagulation should occur normally (*vide infra*), about two centimeters of the first tube are broken off and the separated part is held before transmitted light and broken between the fingers in such manner that the proximate ends may be drawn apart parallel to each other without injuring the thread of fibrin. This process is repeated at intervals according to the accuracy desired until the end-point is reached. The end-point comes when a thread of fibrin will stretch seven to ten millimeters across the break. The second and third tubes are not used if the end-point is reached in the first tube, except as a general check on the final end-point.

The time that the blood remains in the paraffined test tube before drawing it up into the capillaries must not exceed two minutes. Repeated experiments have been made which show that if the blood flows from the needle into the test tube in a stream, there will be no changes in the blood for two minutes which will affect the coagulation in the capillary tubes.

Addis[4] was the first experimenter who recognized the effect of temperature upon the coagulation time

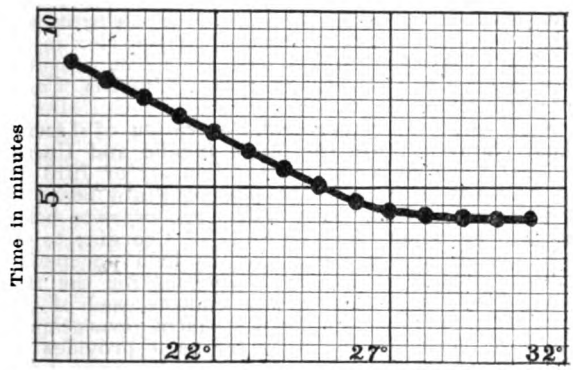
*Contribution from the Department of Chemistry of the Hahnemann Medical College of Chicago.

in capillary tubes. The temperature must be recorded or the whole test is valueless. The following chart gives the average coagulation time computed from a series of tests on twenty-six healthy dogs at different room temperatures. No appreciable variations were observed in the time of the coagulation of the blood from the different dogs.

TEMPERATURE COEFFICIENT

Temperature Centigrade	Normal Coagulation Time
18°	8′ 40″
19°	8′ 00″
20°	7′ 30″
21°	7′ 00″
22°	6′ 30″
23°	5′ 55″
24°	5′ 30″
25°	5′ 00″
26°	4′ 40″
27°	4′ 20″
28°	4′ 12″
29°	4′ 10″
30°	4′ 08″
31°	4′ 08″

After the temperature is recorded the chart is referred to and the coagulation time is translated into terms of 25° Centigrade.



Graphic representation of the Temperature Cofficient

In the illustration the foregoing data have been plotted, the regularity of the curve indicating the accuracy of the method employed. The curve seems to change its form at 29°, as though some new factor entered here. The general form shows that the coagulation of blood follows the law for ordinary chemicals reactions, an increase of 10° doubling the rate of the reaction.

In a series of experiments the author has had physicians, medical students, and nurses duplicate his tests, all the operators drawing from the same blood but working independently and with separate stop watches. The widest variation of all these duplicates was thirty seconds. These variations occurred only on the first attempts, the author's test always requiring the least time. This fact shows that the only skill necessary is in the process of breaking the tubes in such manner that the proximate ends may be drawn apart without injuring the thread of fibrin. Accurate results can be expected only when these instructions are followed exactly. The author has made repeated tests on the same animals at a constant room temperature and has calculated the normal coagulation time for each animal. In all these tests the greatest variation was less than fifteen seconds from the normal of that animal.

The advantages of this method over such a method as that described by King and Murray are obvious. The end-point is sharper and any poor technique in testing for the end-point before it is reached will in no way affect the final end-point. The marked effect of temperature is given by a chart and graphic representation. The method gives consistent results with inexperienced operators.

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SPONTANEOUS CLOSURE OF LARGE VESICO-UTERINE FISTULA.*

BY GEORGE L. BRODHEAD, M.D.,

NEW YORK.

THE patient, 37 years of age, a sextipara, was admitted to Harlem Hospital on March 20, 1920. The woman said she had always enjoyed good health, and had previously given birth to five children without instrumentation. The puerperium had always been normal, and she has had no vaginal or abdominal operation. The last pregnancy began about June 25, 1919, and was uneventful up to the last two months, when the patient commenced to feel weak and had a profuse yellow vaginal discharge, with no odor or pain.

Labor began at 3 A.M., March 14, 1920, the membranes having ruptured at 11 A.M., two days previously, and her baby was born at 9 A.M., normally, after a six-hour labor. About ten minutes before the birth the woman was given a hypodermic injection, probably of pituitrin, and the patient states that she never had had such a severe pain as her last pain in the second stage.

For three days following the birth the woman stated she was well, and passed urine in the usual way. On the fourth day she "felt like a balloon," as if she was "going up"; probably caused by full bladder, or distended intestine, and she also complained of a hard swelling in the lower right abdomen, not painful to the touch. From this time on she had fever and chills, until she was admitted to the hospital on March 20, 1920.

For two days before admission she stated that she had passed urine in small amounts, but on the day of admission she had passed none, so far as she could judge. Upon admission the woman was found to be mildly septic, and she had a moderate, irregular rise of temperature and pulse for about four weeks, when she became normal. When the first examination was made at the time of admission a few clots were expressed from the vagina, and the cervix was found to admit two fingers, with more blood clots felt in the cervix. During the next twelve hours the patient was incontinent, and when she was taken to the operating room a blood-stained fluid escaped from the cervix. Further examination revealed a large opening, easily admitting the finger, leading from the region of the internal os into the bladder, from which urine freely escaped. The fistula was open for about three days, then closed and remained closed.

On April 19, 1920, Dr. Cherry of the Harlem Hos-

*Presented at a meeting of the Section on Obstetrics and Gynecology of the New York Academy of Medicine, May 18, 1920 (see p. 455).

pital visiting staff made a cystoscopic examination of the patient and gave me the following report:

The bladder capacity is normal, with normal bladder mucosa, and the ureteral openings are normal. On the posterior surface in the median line there is a contracted, retracted scarred area 1.5 cm. in diameter, surrounded by a slight area of congested mucous membrane. The fistula had closed. A solution of methylene blue injected into the bladder did not appear on sterile gauze, which had been placed in the cervix.

Vesico-uterine fistula is rare in itself, even following operative delivery, but occurring after a normal labor is practically unheard of.

The fistula may have been caused by a small rupture of the uterus following pituitrin, but, according to the statement of the patient, she passed urine normally for three days following delivery.

The closure of such a large fistula was remarkably rapid, especially in the case of one who had had a mild sepsis.

50 WEST FORTY-EIGHTH STREET.

SUPERNUMERARY BREASTS IN THE AXILLÆ (ANATOMICAL NOTE).

BY GEORGE B. LAKE,

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MAJOR MEDICAL CORPS, U. S. ARMY.

MRS. S. W., housewife, aged 23½ years, presented herself April 15, 1920, complaining of pain and swelling in the left axilla. She was then about five months pregnant and gave a history of having had a similar swelling during a former pregnancy. Examination revealed a soft elastic non-inflammatory mass the size of a small egg in the left axilla, with very little pain or tenderness. Expectant treatment was advised and the patient was requested to procure a statement from the physician who had attended her during the previous pregnancy.

On May 22 she made the second visit, with a letter from her physician stating that she had suffered from an acute axillary abscess, which was incised and treated along recognized lines.

Family History.—Mother and father and two sisters living and well. Four children in family dead; two were premature, one sister died of "paralysis" at eleven years, one brother killed in accident. Patient is youngest child.

Personal History.—Had the usual diseases of childhood; none since. Menstruated at 13 years. Menses normal and regular, every twenty-four days. No sign of swelling under arms at time of catamenia. She was married in 1916 and became pregnant in December of that year. A child was born at 7 months and lived but 4 hours. One month before confinement (in July, 1917,) she noticed a slight swelling under the right arm and another more pronounced under the left. She noticed what looked like milk exuding from both axillæ, and this continued until October, 1917, after which the discharge ceased and the swelling subsided. Two days before her confinement the mass under the left arm, being large and tender though not inflammatory, was incised by the attending physician, liberating a considerable quantity of what looked like milk.

History of Present Trouble—In November, 1919, the patient became pregnant for the second time. A swelling appeared under the left arm early in April, 1920, and under the right about the middle of May. These masses are slightly tender, but the patient feels perfectly well in every way.

Physical Examination.—May 22, 1920. Normal breasts, large and well-formed from which colostrum is easily expressed. In both axillæ are soft irregular, elastic masses the size of a flattened egg, which have the consistency and feel of mammary tissue. There is no inflammatory reaction, and very slight tenderness. Pressure upon these masses produces a flow of fluid from openings high up on the anterior axillary folds on both sides. This fluid is microscopically identical with the colostrum expressed from the normal breasts. The accessory nipple on the right side is 3 millimeters in diameter, slightly prominent, and shows distinct nipple tissue; that on the left is smaller—scarcely more than a dimple or fissure in the skin.

In all other respects the patient appears to be a normally developed and robust woman.

Medicolegal Notes.

False Statements to Medical Examiner as to Medical Attendance.—Where an applicant for life insurance covenants in his application that the statements made to the medical examiner are true, and these statements are made a part of the contract of insurance and form the basis of the contract, the Georgia Court of Appeals holds that any variation in any of them which is material, whereby the nature or extent or character of the risk is changed, will void the policy, whether the statements are made in good faith or fraudulently. Generally, the question of whether any such variation is material or whether the nature or extent or character of the risk is changed is a question of fact to be determined by the jury. Irrespective of whether an osteopath who attended and treated the insured about a year prior to his death was a physician under the statute law of Georgia, the materiality and truth of the negative answers of the insured to the questions in his application: (1) "Have you consulted a physician within the past five years?" and (2) "Have you now or have you ever had epilepsy?" were, under the facts of the case, held to be questions for the determination of the jury, since the evidence was in sharp conflict both as to whether the insured in fact had ever had epilepsy and as to whether he knew the osteopath treated him for epilepsy rather than some slight temporary ailment which the law does not consider in determining what constitutes attendance by or consultation of a physician.—Southern States Life Ins. Co. v. Morris (Ga.), 102 S. E. 179.

A State Statute Authorizing Revocation of License Without Notice and Hearing Held Invalid and Unconstitutional.—Section 14 of the Georgia act of 1913 entitled "An act to abolish the present State board of medical examiners and to establish a composite board of medical examiners for the State of Georgia; to define its duties and powers," etc., is held unconstitutional and void in so far as it provides for the trial and conviction of a licensed physician accused of certain specified offenses, and the consequent revocation of his license. The section, in so far as it provides for such trial and the penalty upon conviction, is violative of the due process clauses of the Federal and State Constitutions, in that no provision is made in that section or elsewhere in the act for due notice to and hearing of the accused. A licensed physician was tried and convicted under the section, and appealed to a jury in the Superior Court, where he was again convicted, and then sued out a writ of error to the Georgia Court of Appeals, where the conviction was sustained. It is held that he could subsequently attack the judgments of conviction in the Superior Court and before the board of medical examiners, and, upon proper petition to a court of equity, prevent the enforcement of the penalties imposed by the act upon conviction.—State Board of Medical Examiners v. Lewis, Georgia Supreme Court, 102 S. E. 24.

Hypothetical Question as to Insanity Produced by Narcotics.—In a homicide case, where the accused claimed he killed the deceased while temporarily insane from using narcotics and intoxicants, the accused testified that he took three quarter grain morphine tablets, one about 6 A.M., one about 11 A.M., and one about 3.30 or 4 P.M. A witness saw him take two. His wife said she saw him take the one early in the morning. A medical witness testified that the taking of three quarter grain morphine tablets, each accompanied by a drink of whisky, would not cause temporary insanity, and that if the tablets were taken at intervals of three or four hours their effect could only be to make the accused sleepy. It was held that the hypothetical case was sustained by the evidence.—Cundiff v. State, Texas Crim. App., 218 S. W. 771.

MEDICAL RECORD.

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ACTION OF IRON IN CHLOROSIS.

DESPITE the efficacy of iron preparations in chlorosis and other anemias we know as yet little or nothing of the modus operandi and Professor Nägeli of Zurich seeks to throw some light on the subject in *the Schweizerische medizinische Wochenschrift* for July 29, i, 31. It was Niemeyer who introduced the iron treatment of chlorosis into practice and he regarded the problem merely as one of adding iron to the hemoglobin molecule. But gradually it was shown that simplicity of explanation is not coterminous with truth and von Noorden sought to show that iron acts in these cases by stimulation of blood-making. This view in turn was antagonized by Meyer, and also by Morawitz and the arguments in favor of their position were numerous. It is easy to render animals anemic and then to study the action of iron on them, although chlorosis cannot be produced artificially. Incidentally it was discovered that rats can be completely freed from iron without the production of anemia. This fact harmonizes with another, that chlorosis is not necessarily attended with lack of iron. It is also realized that chlorosis is better considered as *sui generis* and not as form of anemia.

The author has studied a great number of chlorotic and anemic subjects while under iron medication, and finds that even by the second or third day there may be a pronounced reaction in the bone-marrow, as shown by the dominant number of young erythrocytes in the blood. In the case of a girl of 21 who for the past six years had developed marked chlorosis in the spring and fall, the myelic reaction in the blood was especially marked and in 3½ weeks all the chlorotic symptoms had vanished. The bone-marrow had shown a "stormy" activity and this initial activity subsided with the return of the subject to normal conditions. The leucocytes showed the same behavior as the erythrocytes. The phenomenon is akin to that seen when a blood toxic substance is administered and when bone metastases of malignant tumors occur. Evidently the old erythrocytes cannot be fed more iron and the cure comes about by engendering new blood cells with normal facility for taking up iron. The principle of curing anemias by iron is the same. There are old chlorotic subjects, however, who do not in the least respond to iron in small dose, nor to any form of organotherapy. But if these subjects receive very large doses of iron the results are brilliant, as is also the case in some secondary anemias; thus in the intense anemia of ulcer of the stomach the hemoglobin may be brought up to 100 per cent, transforming the appearance of the patient. Iron is then a specific stimulant of bone-marrow.

This line of research is continued in a second paper by Adler, an association of Nägeli, who deals especially with the matter of dosage. A number of favorite preparations of iron were tested in large dosage, comprising reduced iron, Blaud's pills, and compound tincture of iron. The dosage was such that half a gram of metallic iron was ingested every 24 hours under hemoglobin control. Naturally one begins with a much smaller dose and the large one is to be given only as indicated. A case is cited in which after Blaud's pills failed, ferrum redactum succeeded brilliantly; such experiences are not uncommon, so that not only large dosage but different preparations of iron should be tested. The case reports show many aspects of treatment. Several of the patients took an organic arsenical along with the iron. In most cases Blaud's or reduced iron pills were begun in small doses and the dose increased steadily until it was found that with a fixed dose the hemoglobin continued its increase to the desired point.

ATHLETICS AND INCREASING HEART DISEASE.

THE newspapers have given much space to the International, so-called "Olympic" games, at Antwerp during the past month, and each morning provided a first page story describing the various events in detail. This is significant as indicating the widespread interest of all Americans in athletics. We are, indeed, a sport-loving nation not only, but a sport-participating one as well. We love events which take place in the open. The huge crowds, the horse play, the unbounded enthusiasm of the spectators at the games, college or professional, appeal to us. We love the excitement and the noise. It must surprise the foreigners who visit our shores to be summarily carried to some stadium to see their first game of baseball. The meaning of it all is very bewildering at first, but soon they catch on to the rules of the game and begin to share its joys. Our soldiers introduced the national game in France and we are told that it has found a ready place in the list of events played out-of-doors in that country. England, too, has been partly converted to baseball and seems to like the innovation.

But to revert to the contests in Belgium, one finds a certain charm, almost a classic animadversion in the revival of the athletics of ancient Greece and Rome. Such words as discus, decathlon, pentathlon, and marathon take us back to the first-form period of our school days and revive memories, pleasant or otherwise, according to our scholastic talents or industry in pursuing roots and rules of

syntax. So much for the human interest side of the matter. But there is another side which appeals to the medical man, especially so if he happens to be interested in gymnastics or physical exercises carried out with the purpose of improving the health, or laying the foundation in boyhood of a sound body in which a sound mind can possess a fitting temple throughout the span of coming years. It is one thing to carry out strenuous exercises for the sake of one's own increase of physical endurance; it is quite another thing to enter into a competition where every nerve and sinew is strained to the breaking point for the sake of defeating a rival from another country. The contest of 1920 seems to have been productive of overexertion to the point of actual injury. In one of the newspaper reports we read the following: "Rudd collapsed just as he crossed the finish line. Campbell caved in fifty yards from home. He was out fully five minutes. He was attended by a physician, who had to resort to artificial respiration before he recovered sufficiently to leave the field."

Now, under such a strain all vital organs are severely taxed, but most of the work falls upon the heart, using up its reserve. The right heart cannot empty itself quickly enough, the lungs are filled with blood which cannot be properly oxygenated, the inhibitory action of the vagus is reduced to its lowest terms, and the heart runs wildly away. The heart muscle is strained permanently, and there result both dilatation and hypertrophy—the so-called athlete's heart.

Modern civilization is making great demands on the heart, greater than many physicians even can realize. In this city we have an Association for the Prevention and Relief of Heart Disease which has compiled some very surprising statistics. For instance, during the year 1916 there were in this city 10,682 deaths from organic heart disease alone, while the deaths from tuberculosis were 9,622, and from cancer 4,702. Investigation clearly indicates that much heart disease is distinctly preventable. Accidental infections by way of tonsils, adenoids, and teeth can be greatly reduced and thus the body can be spared the great struggle with bacteria and their toxins in so far as these foci are concerned. If this be true of infections which may cause cardiac disease, how much more is it true of violent and excessive exercise carried far beyond the line of reserve. There is a great deal of falsity about the assumed value of exercise in the open air. In moderation, that is within the individual limits prescribed by bodily limitations fixed by Nature for each person, nothing is better. Proper exercise is as essential as food or air, but the growing boy in his excess of enthusiasm and knowing no limits to his endurance greatly oversteps his bounds in many cases and invites disaster. It is a common sight at twilight on summer evenings to see boys and young men clad only in the lightest of togs running along the line of Central Park or even around it "if the wind holds good." These excursions are often looked upon as endurance tests, and are centered upon time and distance rather than upon speed. They make very urgent and prolonged demands upon the heart, and are beyond doubt very damaging to many. It is a mistake to assume that civilized man can perform and endure like the uncivilized. Centuries of inbreeding and adaptation to environment have changed the human machine into a stronger mental and a less strong physical mechanism. In other words, the bodies of most men are better adapted to demands of a mental nature, such as quickness of decision, constructive planning, etc., rather than to tasks demanding mere brute strength. There are, of course, those among us who still possess the latter to a remarkable degree, but their number is probably diminishing. A little more insistence on this point by physical examiners and instructors might bring about much good to the youth of the land.

PNEUMONIA WITH DIARRHEA.

PNEUMONIA will undergo its evolution in most cases (90 per cent. according to Triboulet's statistics) without the occurrence of diarrhea, nevertheless diarrhea may arise at the time of defervescence as a critical phenomenon of the same nature as diuresis, but in these circumstances the intestinal disturbance cannot be regarded as an abnormal symptom. In some cases of pneumonia, the diarrhea, instead of occurring only at the time of the crisis, may be prolonged for several days and be quite rebellious to treatment. It is no longer a good sign announcing the advent of convalescence, but on the contrary becomes an almost certain symptom of pneumonoenteritis whose results are always to be feared. The diarrhea, although not serious in itself, nevertheless possesses considerable value from the viewpoint of prognosis. It appears to be closely related to the evolution the disease will follow and from this standpoint it has an interest of the highest order. In frank pneumonia, the lung alone should be involved, the intestinal mucosa remaining intact, so that every unusual phenomenon occurring in the bowel should lead the physician to fear a dissemination of the pneumococcus in the organism, as well as a special virulence of the bacterium in question. It has been noted by good clinical observers that when diarrhea occurs in pneumonia before the advent of defervescence some complication, such as otitis, purulent pleurisy, or suppurating arthritis, is prone to arise.

If the loose stools are examined they will be found to give a distinctly acid reaction to litmus paper. The sublimate-acetic acid reagent, as used by Triboulet, will give valuable data. In subjects with an intact intestinal mucosa, the liquid bathing the deposit in the lower part of the test-tube is cloudy and offers a pink hue. In the case of infectious pneumococcal diarrhea, the liquid is almost limpid or hardly cloudy, while the deposit, instead of being pink, is grayish and occasionally putty colored.

During measles, especially in hospital patients, it is not uncommon for secondary infections to arise—otitis, empyema, etc.—many of which are due

to the pneumococcus. This association of diarrhea and secondary infections due to the pneumococcus in measles has been clearly demonstrated by Triboulet by systematic studies of the stools. Rilliet and Barthez years ago stated that diarrhea is much more common in abnormal measles, and if to the pulmonary inflammatory processes an enterocolitis becomes added, the case will end fatally. It is not probable that the diarrhea in measles is the awakening of a former attack of enteritis and it would seem logical to admit that there exists a relationship between the diarrhea and the gravity of the pneumonia, and that the appearance of this complication denotes a peculiar gravity of the affection.

THE SURGICAL TREATMENT OF CHRONIC GASTRIC ULCER.

CHRONIC ulcers of the body of the stomach—and among them ulcers of the lesser curvature—should be individualized as much from the clinical and pathological viewpoints, as from the standpoint of the surgical therapeutics to be employed. A symptomatology peculiar to them will allow them to be diagnosed clinically, while a radiological examination admits of a certain number of diagnostic data belonging properly to them. Their evolution is very frequently rebellious to any kind of medical treatment which neither relieves the patient nor prevents the development of gastric deformity that these ulcers invariably bring about sooner or later. The most frequent of these deformities is that which results from a midgastric stenosis of a progressive tendency ending in gastric biloculation. A bilocular stomach, the result of ulcer, does not constitute a complication dependent upon the cure of the extinct lesion. While in some cases the midgastric stenosis is of a purely cicatricial nature, there are hosts of others in which the lesion—ulcer—is still active. The symptomatology of this process depends quite as much on the ulcer itself as upon the midgastric stricture that results from it.

Chronic ulcer of the body of the stomach and gastric biloculation resulting from it are amenable to surgical treatment having in view the removal of the lesion. Palliative operations give only uncertain and rarely prolonged results in cases of gastric ulcer and gastric biloculation. Annular excision of the midgastric segment—the seat of the ulcer or that of the stenosis resulting from it—should be the treatment of choice for these lesions, even when they are adherent to the surrounding viscera, but only when they are not too extensive transversely. Very extensive ulcerative lesions, with or without biloculation, and those coexisting with a pyloric ulcer, should be dealt with by still more extensive resection, pylogastrectomy, followed by Billroth's second method of suture.

The general condition—frequently very precarious—of subjects with inveterate lesions is alone responsible for the still high mortality of these radical interferences. If an early operation is resorted to, that is to say as soon as a fair trial of medical treatment has shown it to be futile, the operative mortality will be reduced in notable proportions. Resort to gastroenteroanastomosis and jejunostomy will save patients who are in a cachectic state but later on, when an amelioration has taken place, excision of the lesions should be undertaken, since the improvement resulting from the palliative operation will merely be temporary.

MEDICAL TREATMENT OF ILEUS.

DOCTOR ESCOMEL of Arequipa, Peru, contributes the leading original article in *El Siglo Medico* for June 12, 1920, lxvii, 3470, dealing with the above subject. He reports five cases which ended successfully without operation. The first patient was an old lady with an irreducible umbilical hernia with eventual intestinal obstruction. Operation was out of the question by reason of organic heart disease. Beginning at 8 A. M. the patient was given a spoonful of liquid vaseline every half hour. At 2 P. M. the obstruction disappeared spontaneously, the hernia having reduced itself, and all of the symptoms subsided. In the second case the patient was also an elderly woman with right inguinal hernia. Strangulation developed suddenly at night, with symptoms of ileus. Liquid vaseline was given every quarter hour with the best of results. The third patient was likewise an elderly woman with a reducible umbilical hernia which developed symptoms of incarceration and ileus. The treatment and result were the same as in the preceding case. The fourth patient was an old man with malaria, who developed while under treatment symptoms of ileus. There was no hernia. The diagnosis was intra-abdominal invagination, and the treatment and result were as in the other cases. The fifth patient was a middle-aged woman with symptoms duplicating those of the fourth case, and the treatment and results were as already stated. The author has had sixteen such cases, all told, but it is not necessary to cite further examples. In some of them he gave injections of pituitrin. It is sometimes stated in literature that hot, strong coffee is used by Spanish people as an emergency remedy in irreducible hernia, but Escomel does not allude to it. In his summary he advises the use of liquid vaseline before proceeding to operate, and he would wait about five hours to give this resource a fair test. Naturally in hernias he would make use of a mild taxis and would inject pituitrin into the muscles on theoretical grounds.

WAS THE "LEPER" OF GRÜNEWALD A VICTIM OF ERGOTISM?

PROBABLY no work of art commemorating a physical disease has caused greater interest in the profession than a supposed leper painted by Matthias Grünewald about 1509. Thibièrge discusses it exhaustively in the *Annales de dermatologie et de syphiligraphie* for June, 1920, vi, i, 3. The subject of the picture is the "Temptation of Saint Anthony," the patient being one of numerous figures. By an odd coincidence Thibièrge reached the conclusion that the disease depicted was ergotism, a condition not at the time known to exist as a mass food poisoning, but which was most commonly known as Saint Anthony's fire. This opinion was

also published long ago by Huysmans, but the coincidence of the person of the saint and the malady known by his name is apparently not thought to have been a factor in including this figure in the scene. Keller and Virchow thought the disease was syphilis, while many, including Charcot and Meige, have regarded it as leprosy. Thibièrge sums up the lesions in the afflicted man as follows: Pustules over a considerable area, subcutaneous suppuration suggesting gummata, ascites, and mutilations of the extremities. From what is known of this painter's art he used a model to paint this figure, and the model doubtless presented many if not all of the lesions depicted. The suppurations and subcutaneous lesions, as well as the ascites, were doubtless secondary, and due to the cachectic state of the subject, but as for the nature of the mutilations the author, after comparing them with numerous illustrations of gangrenous ergotism in the magistral work of Ehlers, is forced to conclude that the case could not have been leprosy or syphilis and by consequence was probably ergotism.

The Throat in Botulism.

Vernieuwe of Ghent has had occasion to study a series of cases of botulism which he reports in the *Revue de laryngologie, d'otologie et de rhinologie* for June 15, 1920, xli, 11. As a result of study of this material he found paralysis of the velum palati associated with the visual disturbances reported by authors, and great muscular weakness and prostration. This triad of symptoms points strongly to botulism, but it becomes necessary to exclude postdiphtheritic paralysis. In one case cited the young woman spoke in the accents of velum paralysis and incidentally remarked that she "saw as through a fog," and could not read or sew. The author at once thought of postdiphtheritic paralysis, and put the question, getting the reply that one month before her infant had suffered from that malady. The author was now convinced, but learned the next day that the patient's brother also presented the same symptoms. The sister developed later a special dryness of the throat comparable to the action of atropine. The brother complained of extreme thirst and crises of dyspnea. The author does not inform us as to just when and why he changed his diagnosis, but it was learned that the two patients and six others had partaken together of raw ham. All eight patients developed, in consequence of the extreme dryness of the throat, necrotic ulcers. All eight had accommodation paralysis, but only four had velum paralysis. The cases were of mild type, and all ended in recovery. In discussing the nature of botulism the author cites authority to show that it is a form of ptomaine poisoning because the *Bacillus botulinus* forms a poison known as ptomaatropine. Most authorities make a distinction between botulism and ptomaine poisoning proper.

"Bankruptcy of German Science."

In an editorial in the *Journal de médecine de Bordeaux* published last winter attention was called to the fact that a recent German book on bacteriology had deliberately suppressed all reference to French and American authorities. The Medical Record, in its issue of May 15, expressed the opinion that the German in question may have been unable to secure access to recent works of the Entente nations. An Austrian was cited who under similar circumstances had apologized for failure to cite foreign authorities. We suggested that under the circumstances it might be just to give the Teuton the benefit of the doubt rather than to look upon the omission as new propaganda. Professor Cruchet, editor of the *Journal de médecine de Bordeaux* for June 10, 1920, xci, 11, courteously dissents from our stand and holds that the suppression of mention of our authorities was deliberate. He devotes his editorial page to the justification of his position with the above mentioned caption. He is certain, apparently, that a new propaganda is already in operation. There is a strong motive for one, because German science has nearly gone bankrupt as a result of five years of isolation, while conversely France has made notable gains in prestige. For fifty years Germany sought to force French science into the background, and there is no doubt that she will seek to renew her machinations in the years to come. Hence in any case of failure to mention the work of its old antagonists, the presumption, Cruchet thinks, is not unreasonable that such suppression has been calculated.

News of the Week.

Child Labor Safeguards.—In its preliminary report the permanent Committee on Standards of Physical Fitness for Children Entering Employment, appointed by the Children's Bureau of the United States Department of Labor, a minimum age of 16 years for entrance into industry is recommended, on the ground that the period immediately preceding this age is a time of special strain for the child. Complete physical examinaton before a child is pronounced physically fit for the particular occupation contemplated, reexamination when changing occupation, and further scientific study of the effect of different kinds of work on the physique of boys and girls in their teens, are some of the recommendations made.

Bubonic Plague in the Turkish Army.—According to press advices four cases of bubonic plague have been discovered in the Turkish government barracks at Scutari, across the Bosphorus from Constantinople. The Allied Sanitary Commission has forbidden the landing of boats at Scutari.

Strike of Spanish Physicians.—Physicians and surgeons of Saragossa, Spain, are reported as having refused to treat any cases of sickness among Communists.

Valhalla Neurological Hospital.—Arrangements have been made for the formal opening on October 1 of this institution for the exclusive study and treatment of diseases of the central nervous system, under the auspices of the King Solomon Hospital Association. The hospital is situated on the site of the old Quaker School in Valhalla, Westchester County, N. Y. It covers twenty-five acres of wooded hillside and eighteen buildings, a tennis court, croquet, and athletic grounds are ready for use. A drive for $500,000 is to be conducted for the maintenance of the institution.

General Hospital No. 1 Destroyed by Fire.—The sixty-one unoccupied frame buildings at Bain-

bridge Avenue and Gun Hill Road, the Bronx, which constituted General Hospital No. 1, also known as Columbia and Williamsbridge Hospital, were completely destroyed by fire last week. The buildings, which were abandoned as a hospital six months ago, had been sold to a contractor, who had commenced their removal. The loss was placed at $50,000.

United States Denounced by Russian Reds.—At a recent meeting held in Madison Square Garden, New York City, under the auspices of the Soviet Medical Relief Committee, this country was roundly denounced by some of its citizens as well as its undesirable alien guests for refusing to permit medical aid shipments to Russia. Secretary of State Colby subsequently took the trouble to cite instances, in rebuttal, of shipments of medicines and relief supplies sent by this country to Russia which were confiscated by the Soviet military authorities, consequently never reaching the civilian Russians for whom they were intended.

Eviction of Clinic Denied.—The newspaper story to the effect that the Children's Orthopedic Hospital Dispensary in Brooklyn had been ordered by the Brooklyn Association for Improvement of the Condition of the Poor, which owns the building, to vacate or buy the premises by September 10, is denied by the director of the association and the circumstances explained.

Memorial to Gorgas.—Señor Don J. E. Lefevre, chargé d'affaires of the Panama legation, Washington, D. C., announced on August 22 that the government of Panama would give $1,000,000 to St. Thomas's Hospital for the establishment in Panama of an international institute for the study of tropical diseases. The matter will be taken up with the Rockefeller Foundation.

Dr. George Chaffee, formerly of New York City, has opened his office at 100 Hawley Street, Binghamton, N. Y.

The High Cost of Complexion.—"According to the figures," the women of the United States pay a luxury tax of 10 per cent. on cosmetics to the amount of $750,000,000 a year.

Professor Wilhelm Max Wundt, German physiologist and philosopher, died at Leipsic August 31. He was born in 1832, studied medicine at Tubingen, Heidelberg and Berlin, and served as lecturer at Heidelberg and professor of philosophy at Zurich and Leipsic. In Leipsic he founded an institute for experimental psychology. He was a voluminous writer on philosophic subjects.

Obituary Notes.—Dr. GEORGE L. MILLER of Omaha, Neb., who gave up the practice of medicine many years ago to enter the journalistic field, died Aug. 28, at the age of eighty-nine.

Dr. FREDERICK CLARK BRADNER of Englewood, N. J., died suddenly Aug. 30, at the age of forty-six. He was graduated from the College of Physicians and Surgeons, New York City, in 1899, specializing in surgery. He was a member of the American Medical Association and of the State Society.

Lieut. JOHN H. WEAVER, U. S. M. C., who had been on duty at Quantico, Va., died in the Naval Hospital at Savannah, Ga., Aug. 27, from injuries received in an airplane crash. Lieut. Weaver, who was twenty-five years of age, entered the Air Service in 1917.

Correspondence.

ALL GERMAN, AUSTRIAN, AND TURKISH SURGEONS EXPELLED FROM THE INTERNATIONAL SURGICAL SOCIETY.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—All right-minded American physicians and surgeons will heartily approve of the clear and decisive action taken by the International Surgical Society, which held its triennial Congress at Paris, July 19-22 of this year, under the presidency of the distinguished Dr. W. W. Keen of Philadelphia (its first meeting since April, 1914); the following is from the *Gazette des Hôpitaux* of July 31, 1920:

"The official languages of the Society shall be French, English, Italian, and Spanish (the latter taking the place of the German language, which has been dropped). The Society ratifies unanimously the expulsion of all German, Austrian, and Turkish members, and adopts, also unanimously, the following motion:

" 'The International Surgical Society, basing its work upon the application of methods of pure science, deplores the fact that men of supposed wisdom and information so stultified their consciences as to sign the German manifesto of Oct. 4, 1914, a statement full of erroneous and lying affirmations; that their reason was not able to preserve them from such an outrageous, dastardly action (*vilénie*); and that their hearts have not dictated the slightest retraction *after* the falsity of their statements and accusations has become evident and proven. This deplorable renunciation of methods of discussion and of scientific control leads the International Surgical Society to strike from the list of members of the Society the names of all members from the Central Powers and of all other surgeons who have united (*solidarisés*) themselves with them.' "

Clear, concise, to the point, and easily understood. A splendid action!

CHARLES A. POWERS, M. D.

DENVER, COL.

THE NATURE OF CANCER.

To the Editor of the MEDICAL RECORD:

SIR:—I hardly think there is any reader of my article, "The Cancer Enigma," which appeared in the MEDICAL RECORD of February 28, who will view the reference to this article by Dr. Edward Percy Robinson as a fair criticism. He lumps up in an unusual manner, without much reference to the context, certain statements I have made, and describes them as "gunshot" in character. Well, I can hardly agree to this definition, as my agent is not a gun, but rather a spray of printer's ink, resulting in an array of words by which it is my aim to give expression to a little common sense with which to gain entrance to the minds of my professional brethren. I do not employ a gun which is dependent upon an explosive compound, usually to a large extent made up of "nitrate of potash," for I have known of this salt being employed mixed up with molasses as an old wife's cure for cancer ever since I can remember, and without any apparent beneficial result, so far as I could ascertain.

No, cancer is a blood disease which has resulted

from persistent autotoxemia. Thus healthy cell metabolism has been gradually replaced by cell metamorphosis, which has resulted in these metamorphosed cells departing from physiological control, and assuming the character of fungi. These grow *upon* and not *within* the tissue, as benign tumours do. Moreover, these are able to exist and thrive only upon a vitiated soil, which in this instance is the blood. I may remark that fungi likewise are able to exist only upon a polluted soil.

Now, so long as the thyroid gland is in a healthy condition healthy cell metabolism will continue; but this can only be the outcome of this gland and every other gland being supplied by non-toxic blood. Otherwise its functional activity will be reduced, and so we invariably find that hypothyroidism is in existence. Moreover, there also coexists atrophy of this gland in cancer subjects.

Does Dr. Robinson believe that "the cause of cancer is an excess of salt"? Does he imagine for a moment, that the blood is such a futile colloid that it would tolerate, for an hour, an excess of salt, or the kidneys be accessory to the act? If so, I should have been a victim of cancer long ago. No, Sir, in the presence of cancer we must fortify the functional activity of the partially, or perhaps it would be more correct to say the seriously, disabled condition of the thyroid by supplementing its functional capacity by thyroid therapy. Dr. Robinson forgets to state that the patient he refers to was turned out of one of our largest hospitals, suffering from extensive cancer of the stomach, and given two months to live, and yet recovered under dietetic, hygienic, and thyroid treatment. And I could relate several similar happy results.

Dr. Robinson states that my article "is interspersed with remedial agents, and in no one instance gives a logical reason for their use in the treatment of cancer, nor what a cancer is, or on what theory he works to bring about his cures." In reply, I would aver that the days of "theory" with me have long since passed. I work upon a definite plan, which has for its foundation definite practical results. I have already in this communication stated —what I have, beyond doubt, proved—what "cancer is"; and I know that its incidence is due to two principal factors: First, a deficiency of vitols and organic salts in the form of colloids—not chemical salts—due to living so largely upon *devitalised* material, which has also had these organic vegetable salts removed from it by ignorance of the conservative method of cooking, where cooking is thought to be necessary. And second, to persistent constipation, resulting in a constant influx of decomposing and offensive toxic material into the blood stream, by which every cell of the body is bound to suffer in its functional duties, and therefore in its character. Hence it becomes cancerous.

ROBERT BELL, M.D.

15 HALF MOON STREET,
MAYFAIR W., LONDON.

ARTIFICIAL PNEUMOTHORAX.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—I have been requested by Prof. U. Carpi, of Lugano, Switzerland, the general secretary of the International Association of "Pneumothorax Artificialis," to translate the following circular and to cause it to be published in as many of the American medical journals as will be willing to give it space. May I ask you to extend to it the hospitality of your esteemed paper.

S. ADOLPHUS KNOPF, M.D.

INTERNATIONAL ASSOCIATION OF "PNEUMOTHORAX ARTIFICIALIS."

The International Association of "Pneumothorax Artificialis," of which the work was paralyzed during the long war, desires to resume its activity by inviting all former members of the association to renew their subscription and all other physicians interested in artificial pneumothorax to send their names and addresses to Prof. Umberto Carpi, Lugano, Switzerland, and to become members. The purpose of the association is to spread all practical and scientific information concerning artificial pneumothorax. Although induced pneumothorax for therapeutic purposes has become remarkably prevalent, it has remained a therapeutic procedure applied only by physicians specially trained and experienced in this operation. For the convenience of the patients who may be obliged to change their residences, to know the names and addresses of physicians who practise artificial pneumothorax is of great value, in order that the patient may continue the treatment by periodic refilling. A complete list of physicians practising artificial pneumothorax will be published in *Pneumothorax Thérapeutique* for 1920-1921, edited by Carlo Forlanini. This list will be sent to all the members and to the most important medical societies, medical academies, and similar institutions of the different countries. In the journal will be enumerated and discussed all the world's literature on pneumothorax. The association will continue its labors under the policy indicated by the illustrious master and creator of artificial pneumothorax therapy. As soon as the finances of the society will permit the renewal of the publication, the editor will put himself in communication with the editors of such medical journals of other countries as are publishing articles on artificial pneumothorax. For the present these are "die Sonderhefte des Tuberkulose Centralblattes ueber Lungenkollapstherapie" and the collected monographs in the journal "La Tuberculosi," which appears in Rome. [I trust that our very excellent *American Review of Tuberculosis*, edited by Prof. Allen K. Krause, of Baltimore, will be included in this list. S. A. K.]

The subscription price of 5 francs should be sent to the general secretary, Prof. U. Carpi, Lugano. The subscriber is entitled to receive the journal with the list of names. Those who desire to receive the monographs of the journals indicated should make a request for them to the general secretary, who also has an international exchange office for all publications appertaining to artificial pneumothorax. Summaries in English, French, and German on any topic relating to artificial pneumothorax will be gratefully received and published.

DE SENECTUTE.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Your editorial on this subject is pleasing and correct, so far as it goes, but there is one omission which I wish to supply. To my mind, the greatest happiness as one touches the end, is still, if possible, to be useful. And that is, or should be, the crowning glory of the good physician's life. So long as life lasts, if he preserves his mental grasp, he can still counsel, advise in a way that, if heeded, will bring health and happiness to many. In that is his great comfort and joy. And just there is the wide gap that separates the good old practitioner of former days—and alas! a very few at present—from even the renowned specialist of to-day.

B. R., M. D.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, August 13, 1920.

The London Hospital's Need.—Lord Knutsford, chairman of the London Hospital, explained on August 7 last to a representative of the London *Times* the situation of the London Hospital at the present time. He said that its position was so critical that unless some superlative philanthropist would endow it to the extent of £2,000,000 or more the alternatives were Government aid or the closing of the hospital. He had already made written representations to the Chancellor of the Exchequer without success, but the matter was now at his further request, receiving the consideration of the Ministry of Health. They could not go on as they were. There was enough money to carry them over to the end of November of this year. The appeal made in the *Times* last May had resulted in subscriptions amounting to £40,000, the King's Fund had granted £35,000, and £12,000 had been received from the Hospital Sunday Fund. A "lucky legacy" recently also benefited the hospital to the extent of £10,000, which sum, however, would probably not be available within a year. The estate owned by the hospital was worth from £12,000 to £16,000 annually, but all securities were pledged to meet the debt to the bankers now amounting to £100,000. Last year patients in the wards and their friends between them contributed £10,000 to the funds. Now force of circumstances had compelled the fixing of a charge on all patients of twenty-one shillings a week toward their maintenance. But the hospital under modern conditions had to face an expenditure of a quarter of a million to £300,000 annually. The wages bill had increased from £40,000 to £80,000. There were 700 nurses and 200 more would have to be added when the bill providing for a nurses' forty-eight-hour week became law. It was not that the public was less generous. High prices alone were responsible for the present situation. With regard to state assistance, he said it was absolutely essential if the London Hospital, and, indeed, all the great hospitals were to remain open. What his committee wanted was to be enabled to run the hospital on its own lines as heretofore with a sufficiency of funds guaranteed by the Government. If it were said that the country could not afford to give this support, was it not better to pay in that way rather than in the myriad of evils to which the neglect of thousands of sick people would give rise?

National Health Insurance.—A memorandum dealing with some of the medical aspects of the British National Health Insurance Act drawn up by Sir Thomas Mackenzie and the staff of the St. Andrew's Institute for Clinical Research has been issued as an appendix to the report of the Inter-Departmental Committee appointed to consider and report upon the form of medical record to be prescribed under the terms of service of insurance practitioners contained in the Medical Benefit Regulations for 1920. In previous London Letters reference has been made to the methods for prevention of disease devised by Sir James Mackenzie, and it may be said that the memorandum has been compiled with the intention of indicating the principal defects in medical knowledge which exist at the present time and which impair the success of the act and also to point out certain means which can be taken to remedy them. The following is a summary of the memorandum: (1) The present phase of medical knowledge is defective, because the classification of disease is largely based upon pathological changes discovered after death, which bear little or no relation to the clinical manifestations of ill-health and no relation to the early symptoms of disease which occur before structural changes can be recognized; (2) advance in knowledge along the right lines can be effected only by making use of the opportunities of the panel doctor; (3) encouragement must be given to the panel doctor to make use of his opportunities for improving medical knowledge by: (a) encouraging him to keep brief records of his cases and of the symptoms presented on the lines indicated; (b) issuing to him from time to time notes upon the mechanism and the significance of symptoms; (4) by improvements in medical education in affording some instruction on clinical medicine as studied and treated in general practice as apart from its study under hospital conditions; (5) in view of notes of cases kept by a practitioner as indicated certificates of fitness or unfitness for work should be accepted apart from a definite diagnosis in the numerous cases in which a true diagnosis is not as yet attainable; (6) by the co-ordination of workers, clinical and laboratory, the progress of medicine can be favored, and the more skillful treatment of panel patients facilitated.

Discussion on Industrial Efficiency and Fatigue.—The Congress of the Royal Sanitary Institute was held in Birmingham July 19 to 24. In the Section of Industrial Hygiene, which took place on Tuesday, July 20, Professor E. L. Collis, a member of the Industrial Fatigue Board, read an admirably instructive paper on the subject. He pointed out that while the human body may be considered as a machine which requires fuel in the form of food to enable it to perform work, at the same time it is a living machine, the structure of which is in a constant state of metabolic activity, building itself up and breaking itself down; that the internal activity of building up—so-called rest—is a direct incentive to the external activity of breaking down or work; that work is even more necessary to health than rest; that fatigue, the result of sufficient work, is a healthy phenomenon, the forerunner of healthy rest; but that without sufficient rest over-fatigue results which manifests its presence as ill-being, physical and mental, a lowered capacity for work and for resisting sickness, associated with bad temper and discontent. Physical work which is performed by the muscles is directed by the brain; both muscular and mental activity steadily increase with practice which, if uncontrolled, would bring the organism to a state of excessive exhaustion. This state is guarded against by the mechanism which transmits messages to the muscles; here, in the synapse in the spinal cord through which the efferent impulses must pass, a block arises; the

coming into existence of this block, while both muscular and mental activity may be increasing through practice, constitutes the onset of fatigue. Over-fatigue lowers industrial efficiency and the standard of well-being; thus the objectives of maximum production and maintained health depend on its avoidance. The interests of national productivity and of national health are in this matter the same, the avoidance of over fatigue. When output is increasing hour by hour during the day, and day by day throughout the week, there can be no accumulation of fatigue; ill-health is then kept at arm's length. When output is falling off as the day lengthens, and as the week progresses, fatigue is accumulating, the *joie de vivre* is diminishing, and discontent is appearing.

Much could be done to improve efficiency and prevent over-fatigue. Labor turnover, an economic waste which in factory employment alone places upon industry a yearly burden of some 40 million pounds, due to the rolling stones of labor trying to find proper holes to fit into, is productive of much unnecessary inefficiency and over-fatigue. It can, according to Collis, easily be reduced 70 per cent. and probably more by medical and psychological selection of workers for work, instead of adhering to haphazard, come-and-go-as-you-please methods of engagement by trial and error. Workers should be fitted to their work, taught their work, clothed for their work, provided with suitable food, and stimulated to personal hygiene. Work should be fitted to the worker; ventilation made effective; lighting made adequate; tables, benches, tools, and machines constructed to suit each worker, periods of work and of rest scientifically planned. What is required is a right understanding of work in relation to the human machine and attention to this machine, its possibilities and reactions, its medical and psychological aspects. Then well-being and contentment, skill, and production will be increased, while chronic fatigue and discontent, inefficiency and poverty will be decreased.

There is no doubt that industrial hygiene is almost if not quite the most important branch of preventive medicine. In an industrial country as is Great Britain, it is the most important branch. It means everything to maintain the worker in good health and spirits and, of course, one goes with the other. Professor Collis well summarized the position of knowledge with respect to industrial hygiene of to-day, although, perhaps, he did not dwell so much on the evils of monotonous toil as he might have dwelt. A great deal of the highly skilled labor of the present time is deadly monotonous. Machines and engines constructed on the standard principle leave little to the initiative or ingenuity of the artisan. As a rule the work is the same day after day and his chief incentive is to get through as much as possible to earn big wages. Monotony of labor ranks almost with over-fatigue in its deleterious effects and should be counteracted as earnestly as over-fatigue.

As another speaker at the congress, Miss A. M. Anderson, Principal Lady Inspector of Factories, pointed out the question of industrial hygiene is international; and it may be noted that in the field of research this era is dawning, for the Comité d'Hygiène of France, the American Committee on Fatigue, and the British Research Board are in close touch, M. Langlois and Professor Lee both attending a recent meeting of the board in London.

Obituary.—Dr. Francis John Harvey Bateman died from heart failure a few days ago when about to leave his residence to take a vacation. The deceased medical man was fifty-one years of age and the son of Sir Frederick Bateman, M.D., of Norwich. He was educated at Norwich Grammar School and Pembroke College, Cambridge, and received his medical training at Edinburgh and Paris. After graduating M.B.C.M. at Edinburgh University in 1898 he held resident posts at Edinburgh Royal Infirmary and at the Leith Hospital. He took his M.A. Cambridge in 1890 and M.D. Edinburgh in 1905. For a time he resided in Paris and acted as resident medical officer to the Hertford British Hospital, and worked while there at the Pasteur Institute and at other French hospitals. Dr. Bateman was a vice-president of the Medical Society of London, a Fellow of the Obstetrical Society, a member d'Alliance Franco-Brittanique and a J. P. for the county of London. Among his appointments were those of medical officer to the Blackheath and Charlton Hospital, the Belmont Home for Ladies, the Dartmouth Home for Crippled Boys, Blackheath, and the St. Dunstan's Annex for Blind Soldiers, Blackheath.

Progress of Medical Science.

Boston Medical and Surgical Journal.

August 26, 1920, clxxxiii, 9.

1. The Phenolsulphonephthalein Test and the Non-Protein Nitrogen of the Blood in Chronic Nephritis. Reginald Fitz.
2. Chronic Intestinal Indigestion in Children Over One Year Old. Philip H. Sylvester.
3. Dislocation of the Carpal Scaphoid. William Pearce Coues.
4. Note on the Uncomplicated Fracture of the Zygomatic Arch, with Report of Two Cases. Frederick W. O'Brien.

2. Chronic Intestinal Indigestion in Children Over One Year Old.—Philip H. Sylvester confines his attention to those cases which do not digest the average amount of the average kind of suitably prepared foods. Clinical experience and opinions crystallized from the study of many cases of chronic intestinal indigestion have shown that seldom is more than one component of the food primarily at fault. It is thought expedient, therefore, to consider each component separately, and to speak of "fat indigestion," "carbohydrate indigestion," and "protein indigestion." The writer purposely refrains from mentioning the use of medicines or the active digestive substances borrowed from animals, in the discussion of the treatment of the different phases of chronic intestinal indigestion in children. There is nothing more fascinating than to watch starch fade to sugar, and meat disappear, under the action of these digestants in a test tube. There is nothing more disappointing than to see the same old food particles appear in the stools, and the same old symptoms continue, after giving children ounces of these digesting substances, even though they are chemically treated so as to be protected from the stomach juices. There is no such high road to success. *Each case must be individualized.* It is probable that all will be somewhat improved upon careful regulation of the diet based upon general principles, but few will really get well.

New York Medical Journal.

August 28, 1920, cxii, 9.

1. On the Use of Benzyl Benzoate in Some Circulatory Conditions. D. I. Macht.
2. The Early Signs of Tabes. Burton Peter Thom.
3. Administration of Salvarsan by Rectum in the Form of Enteroclysis. V. William M. Wright.
4. The Schick Test, Its Control, and Active Immunization Against Diphtheria. Arthur I. Blau.
5. Nephritis (*Concluded*). Hyman I. Goldstein.
6. Seven Generations of Physicians. George Schuyler Bangert.
7. New Therapy in the Light of New Physiology. John J. McNulty.

2. The Early Signs of Tabes.—Burton Peter Thom reminds one that tabes, like its congener, paresis, is an insidious disease. It is therefore most difficult to diagnose at the onset, but it is at this period when the damage done is still slight that it offers the best, if not the only, opportunity for arrest. One of the first of the premonitory symptoms of tabes is impotence. Another early symptom is slowness in emptying the bladder. Failing vision, which cannot be helped by glasses, or the gradual or sudden appearance of scotoma, central, homonymous or heteronymous, should always cause suspicion of beginning tabes. An ophthalmic examination should be made at once to determine the presence of choked disc, although there may be considerable choking of the disc without impairment of vision. Smallness of the pupils—spinal myosis—may precede the classic Argyll-Robertson pupils for a considerable period, and this condition of the eyes should always arouse suspicion. Diplopia or double vision is sometimes encountered in early tabes, as well as the slow and painless development of paralysis of the external muscles of the eye. A symptom which is highly suggestive of beginning tabes is loss of bone conductivity as exemplified by Egger's test with the tuning fork. It is not infrequently the very first symptom of the disease. Sudden deafness is also a sign of beginning tabes. Sudden or gradual loss of hearing in a middle aged man where no other cause can be assigned should cause a suspicion of tabes. The so-called lightning pains which are present in the early as well as the later stages of the disease are very often mistaken for rheumatism or sciatica. The character of the pains is significant. The pains of tabes are described as agonizing flashes which come and go with the rapidity of lightning. The pains of tabes are not definite in so far as any particular nerve distribution is concerned. When they leave, the skin over where the pains have been is sore and tender to the touch for some time after. Spots of purpura not infrequently follow these attacks where the pains have been. Sometimes there is a herpetiform eruption not unlike that observed in shingles. Loss of patellar reflex is one of the early signs of tabes, but the writer calls attention to the fact that the first reflex to be lost is that of the tendo achillis, or the ankle reflex. The various so-called crises are sometimes present in the beginning of the disease. Perforating ulcers of the soles of the feet, likewise, may be a premonitary sign. All forms of cardiopathies are to be noted, aortic lesions predominating. Any individual in whom tabes is suspected should have a Wassermann test of the blood and of the spinal fluid. A cell count and the globulin reaction and the reducing power for Fehling's solution should also be ascertained of the spinal fluid. Salvarsan intravenously and intraspinally in this early stage will arrest and in not a few instances cure the disease.

Journal of the American Medical Association.

August 28, 1920, lxxv, 9.

1. Total Hysterectomy in Fibroid Tumors of the Uterus: A Plea for This Procedure in Parous Women When Operation Is Necessary. John Osborn Polak.
2. Gentian Violet in the Treatment of Purulent Arthritis: With a Discussion of Allied Problems. John W. Churchman.
3. Experience with Luminal in Epilepsy. Julius Grinker.
4. The Value of Postmortem Wassermann Reactions. Stuart Graves.
5. Mild Chronic Nephritis in Children. Lewis Webb Hill.
6. Umbilical Concretions: Report of Case. Miles F. Porter.
7. A Case of Cerebellar Abscess Diagnosed Postmortem. Abraham Lobell.
8. Observations on the Salt Content of Human Milk. Warren R. Sisson and W. Denis.
9. The Program of the American Red Cross. Erwin A. Peterson.
10. Death from Apothesin Spinal Anesthesia: Report of Case. W. S. Duboff.

1. Total Hysterectomy in Fibroid Tumors of the Uterus: A Plea for This Procedure in Parous Women When Operation Is Necessary.—John Osborn Polak. See MEDICAL RECORD, May 22, p. 889.

2. Gentian Violet in the Treatment of Purulent Arthritis.—John W. Churchman presents the histories of six cases of the three groups of arthritis (staphylococcus, pneumococcus, and gonorrheal), all acute and all purulent, treated according to the technic previously described (*Jour. A. M. A.*, April 13, 1918, 1047). He considers that the conclusion that pyogenic arthritis, due to *Staphylococcus aureus* or pneumococcus, may be cured by lavage and staining according to this method, is warranted by the facts. It is also clear that normal mobility may thus be retained. Whether the joint in this type of infection should ever be opened, unless the infection has become largely extra-articular, seems more than doubtful. The evidence for these statements, he says, while slender in quantity, is of such quality as to justify them. Concerning gonorrheal cases, somewhat more cautious statements must be made. And yet, making due allowance for the mild character of the cases treated, which were not selected cases, and for the fact that complete bacteriologic proof of cure could not always be obtained, the satisfactory clinical course warrants the belief that lavage and staining offer a method of controlling this disease. Such bacteriologic evidence as it has been possible to obtain strengthens this conviction.

4. The Value of Postmortem Wassermann Reactions.—Stuart Graves, Acting Assistant Surgeon, United States Public Health Service, states that for nearly six years the Wassermann test has been performed almost as a routine on the blood of subjects coming to necropsy in the pathologic laboratory of the University of Louisville medical department and of the Louisville City Hospital. The findings are summarized and the following conclusions drawn: 1. In ninety controlled cases there were flat discrepancies between antemortem and postmortem Wassermann reactions in only two. 2. In 124 cases showing evidence of syphilis, postmortem or clinical, 137, or 90.5 per cent., gave a positive postmortem Wassermann reaction. 3. The reliability of the Wassermann test depends to a considerable extent on the care used in obtaining and keeping the blood. 4. Cholesterinized antigens are the most delicate and do not give false positive reactions if properly used and controlled. 5. Observation of more than 15,000 reactions as correlated to clinical evidence substantiates the belief that the Wassermann test is the most delicate single test for syphilis. 6. The postmortem Wassermann test is practically as reliable as the antemortem test if the serum is properly taken and shows nothing unusual in the serum control tube.

5. Mild Chronic Nephritis in Children.—Lewis Webb Hill. See MEDICAL RECORD, May 15, p. 850.

8. Observations on the Salt Content of Human Milk.—Warren R. Sisson and W. Denis. See MEDICAL RECORD, May 15, p. 849.

The Lancet.

August 7, 1920, cxcix, 6.

1. Horace Dobell Lecture on Bacterial Intoxication. F. H. Teale.
2. The Croonian Lectures on the Psychology of the Special Senses and Their Functional Disorders. Arthur F. Hurst.
3. The Normal Basal Metabolism in Man, and Its Relation to the Size of the Body and Age, Expressed in Simple Formulæ. Georges Dreyer.
4. On the Significance of Blood and Soluble "Albumen" in the Stools. Robert Cooke.
5. Observations on Two Actions of Alcohol. W. Burridge.
6. The Art of Healing. Prof. A. Keith.

1. Bacterial Intoxication.—F. H. Teale discusses some recent experiments on bacterial intoxication, dividing his observations into two parts: (1) Those dealing with the bacteria themselves: (2) Those dealing with the symptomatology of bacterial infection in animals. From this study he thinks it can be regarded as probable that the toxin is apparently not due to (*a*) proteolytic degradation of the bacteria by the antibodies; (*b*) autodigestion of the plasma; (*c*) preformed spe-

cific endotoxin; but (*d*) is due to some interaction, the nature of which is as yet obscure, occurring between the tissue and to a lesser extent the free antibodies and the infecting bacterial protein; and according to the intensity of the interaction more or less intoxication occurs. The type of intoxication which suggests itself as occurring during the interaction is considered as closely paralleled by the autopoisoning produced from damaged muscles during wound shock.

4. On the Significance of Blood and Soluble "Albumin" in the Stools.—Robert Cooke holds that whenever a lesion of the alimentary canal is suspected an examination of the feces for blood and for soluble "albumin," provided the tests are adequately controlled, is frequently of immense value in diagnosis and prognosis, and may give useful indications of the progress or otherwise of treatment. The writer gives a few practical points concerning the technique and the value of the tests to the ordinary clinician, who too often wholly associates fecal examinations with complex chemical analyses only possible in a laboratory. Examination of feces for blood is fallacious unless previous diet and medication have been suitably regulated. The test for soluble albumin in the feces is probably even more important than that for blood (though both taken together are specially valuable); it indicates either failure of digestion and absorption of food albumin (a very rare condition), or the existence either of hemorrhage or ulceration of the gut. It is almost always associated with some serious condition. The presence of both albumin and blood in the stools indicates (*a*) hemorrhage with or without ulceration not very remote from the anus, or (*b*) a severe hemorrhage higher up the gut. The presence of blood alone indicates hemorrhage. The nearer the bleeding is to the anus, the less significance it has. The presence of albumin alone usually indicates serous exudation, without bleeding, probably near the anus, and presumably the further the lesion from the anus the larger the exudation must have been. More rarely it indicates a failure of digestion and of absorption of food albumins. Lavage of the large intestine, with investigation of the fluid so obtained, often gives valuable help in localizing a gastrointestinal lesion.

British Medical Journal.

August 7, 1920, ii, 3110.

1. Diabetes in Relation to the Ductless Glands. W. Langdon Brown.
2. A Few Points in Relation to the Treatment of Venereal Diseases in Women. Morna Rawlins.
3. The Treatment of Syphilis in Infancy and Childhood. Leonard Findlay.
4. Laparotomy for Ruptured Uterus: Cæsarean Section in Placenta Prævia. Sir John Byers.
5. The Relations of Disease and Injury. A. McKendrick.
6. Meat Diet in Sprue. Philip Conran.

1. Diabetes in Relation to the Ductless Glands.—W. Langdon Brown advances the following generalizations: 1. The sympathetic mobilizes the sugar into the blood by means of the endocrine glands, for purposes of defence, while the parasympathetic stores it in the tissues as a reserve. 2. Ordinary diabetes shows no other signs of endocrine disease, while endocrine glycosuria betrays other evidences of that origin. 3. (1) Organic origin, with structural changes in the endocrine glands leading to (a) overaction of adrenal, thyroid, pituitary, or (b) underaction of the pancreas. (2) Sympathetic origin, with no evidence of structural changes in any endocrine gland, but producing a functional (a) overaction of adrenal, thyroid, pituitary, and (b) underaction of pancreas. Brown has long felt it a mistake to look upon diabetes merely as a disturbance of carbohydrate metabolism. But one must remember that carbohydrate represents at least 70 per cent. of an ordinary diet, and that the carbohydrates are the most readily mobilized of the foodstuffs. If the metabolism is only slightly affected, it will, therefore, be most apt to show this in relation to carbohydrates. There may be a stage in which, although the power of dealing with sugar as such is impaired, the power of converting it into fat is not. Consequently, rather than permit the escape of valuable food material, the body converts it into fat. Hence the glycosuria associated with obesity. As the disease proceeds fat metabolism is also impaired, and diacetic acid appears. Further, it has been shown that protein metabolism is involved, and even the metabolism of inorganic salts. Diabetes is, then a sign of exaggerated metabolism, evoked through the sympathetic and the associated endocrine glands, which first asserts itself in relation to the most abundant food material, but as it advances expresses itself in relation to all. The recent advance in the treatment of this disease by alimentary rest supports this view.

2. A Few Points in Relation to the Treatment of Venereal Diseases in Women.—Morna Rawlins emphasized the following points: 1. Treatment of those cases intolerant of arsenic and mercury. 2. Points in the treatment of antenatal syphilis. 3. The need of collaboration and "team work" to produce accurate figures as to the results of treatment in certain specified conditions. In the management of patients who are intolerant of treatment by arsenic or mercury the writer relies on sulphur, either alone or combined with iodine. The sulphur is given in the form of intramine, either by intramuscular or intravenous injection, or by the mouth in the form of collosol sulphur or combined sulphur. In dealing with the treatment of antenatal syphilis it is urged that cases giving a history of miscarriages and stillbirths, even with a negative Wassermann reaction, should be treated with mercury and potassium iodide. Too much stress is laid on the importance of the Wassermann reaction, and more reliance should be placed upon the clinical signs and history. Intravenous injections of arsenic can be given safely up to the end of pregnancy. The syphilologist in venereal clinics requires the cooperation of his colleagues in the eye, throat, skin, and nervous diseases departments. In treating gonorrhea in the female care must be taken that no infected part is overlooked, otherwise many disappointing results will be obtained. In ordinary subacute cases the drug treatment varies with the requirements of the individual. The most useful agents in the writer's experience have been the silver salts, such as protargol 10 per cent., eucalyptus oil in olive oil, 40 per cent., and picric acid in glycerin, 50 per cent. Many cases improve with vaccines. Skene's ducts and the ducts of Bartholin, when infected, can be fairly easily washed out by means of a syringe with curved blunt pointed needle, and if this fails the duct can be incised and treated with iodized phenol or protargol, or it can be destroyed by an electric cautery. Urethritis usually clears up readily by the application of picric acid locally and urinary antiseptics by mouth.

American Journal of Medical Sciences.

August, 1920, clx, 2.

1. The Major Trigeminal Neuralgias and Their Surgical Treatment Based on Experiences with 332 Gasserian Operations. (First Paper.) The Varieties of Facial Neuralgia. Harvey Cushing.
2. Number of Radiograms and Roentgen-Ray Burns. W. D. Witherbee.
3. Comparative Studies of the Toxicity of Arsphenamine and Neoarsphenamine. Jay F. Schamberg, John A. Kolmer, and George W. Raiziss.
4. A Brief Experience with Appendicostomy and Cecostomy for Intestinal Stasis in Epilepsy and Neurasthenia. Franklin W. White.
5. Neuroblastoma Sympathicum: Report of One Case. P. C. Gunby.
6. Influenza in the Tuberculous. Maurice Fishberg and Ernest P. Boas.
7. A Chemical Study of Blood Changes Following Roentgen-Ray Treatment of Leukemia. Charles L. Martin, W. Denis, and Martha Aldrich.
8. Chronic Lung Disease Following the Influenza Pandemic of 1918-1919. Morris J. Radin.
9. Pneumonia at a Base Hospital, 1918-19. Henry J. John.
10. A Further Study of the Relation of Housing to Pulmonary Tuberculosis. Report on 18,891 Cases. Frank F. D. Reckford.

1. The Major Trigeminal Neuralgias and Their Surgical Treatment Based on Experiences with 332 Gasserian Operations.—Harvey Cushing, in this first paper, dealing with the varieties of facial neuralgia, describes five types of facial neuralgia capable of being mistaken for trigeminal neuralgia, namely: those ascribed to the sphenopalatine ganglion; those secondary to zoster; those attributed to the geniculate ganglion; those accompanying certain cases of convulsive tic, and, lastly, those due to an involvement of the trigeminus by tumors. There are also described what are considered

minor trigeminal neuralgias as distinguished from major trigeminal neuralgias, for which the Gasserian operation is unquestionably the proper therapeutic procedure. He points out that it is, of course, only a question of degree, but it is important to have some basis for separating them. In the case of the five types of pseudotrigeminal neuralgia which may be mistaken for trigeminal neuralgia there is every reason to refrain, if possible, from a trigeminal neurectomy.

4. A Brief Experience with Appendicostomy and Cecostomy for Intestinal Stasis in Epilepsy and Neurasthenia.—Franklin W. White has had the opportunity in the last year or two to observe a small group of patients—two with neurasthenic symptoms and two with epilepsy—who had a considerable degree of intestinal stasis and in whom appendicostomy or cecostomy was done with subsequent washing out of the large intestine for a period of six to twenty-six months. The operation was done on the theory that delay in the passage of the contents of the colon and possible absorption of toxic material was responsible for some or all of these symptoms, and that the patient would be relieved by keeping the bowel well cleaned out. All the patients were glad that the operation was done. One neurasthenic patient was definitely and permanently improved and one was not. In both epileptic cases the immediate results were fair or good (two to eight months without attacks). The late results were unsatisfactory. The writer has hesitated to advise operation in later similar cases in both groups. Constipation is so frequent in neurasthenics and epileptics that one is tempted by the theory that their symptoms are due to intestinal stasis and toxemia. On the other hand, it is too much to expect that one can change the character of these patients by operation and lavage without help on their part. One may remove a contributing cause, but not a primary one. One will always have difficulty in selecting patients for such operations, because one will often be in doubt as to which condition is primary, the stasis or the nervous condition, and one usually advises operation to break into a vicious circle and to remove a contributing cause. The question of when to close the colotomy is also difficult to decide. The writer feels quite doubtful about extending surgical treatment to any nonobstructive colon stasis case (unless there is stasis of one hundred hours or more). If he does, the operation must not be risky and must give relief without troublesome complications. Such operations are largely experimental at present.

New Orleans Medical and Surgical Journal.

August, 1920, lxxiii, 2.

1. Importance of the Early Recognition and Treatment of Glaucoma. D. T. Atkinson.
2. Spastic Constipation. J. M. Perret.
3. Leprosy in the United States. Isadore Dyer.

2. Spastic Constipation.—J. M. Perret, in showing the necessity of making a correct diagnosis, if one wishes to effect a cure, emphasizes the importance of the spastic type of constipation, which is not often enough borne in mind, with the result that these cases are often missed. With the more frequent use of the *x*-ray, however, more of these cases are being discovered. When an *x*-ray examination is not practicable, in a suspected case of spasmodic constipation, the therapeutic test with antispasmodic drugs should be tried. The best of these is the tincture of belladonna. Spastic constipation may be due to marked local vagus stimulation or to an increased irritability of the neurones supplying the intestinal muscles. Reflex causes are diseases of the eye, lungs, appendix, stomach, liver, gallbladder, kidneys, etc. The stimulus is carried by means of the vagus nerve, hence the value of drugs of the belladonna group which antagonize its action. Liquid albolene is a useful adjuvant. Surgery should be resorted to when indicated.

Long Island Medical Journal.

July, 1920, xiv, 7.

1. Spina Bifida. Arthur H. Bogart.
2. The Diagnosis of Internal Cancer. Otto V. Huffman.
3. Impotence in the Male. Augustus Harris.
4. Home Prophylaxis for the Prevention of Pyorrhea and Decay. John L. Kelly.

2. The Diagnosis of Internal Cancer.—Otto V. Huffman holds that in any case a patient suspected of having internal cancer should be given the benefit of: (1) A test-breakfast and gastric analysis: According to Smithies and the Mayo experience the free hydrochloric acid is diminished in quantity or absent in about 85 per cent. of the cases of gastric cancer. The Rehfuss fractional analysis of gastric secretion and the examination for occult blood in both in the expressed gastric contents and in the feces should be done. The Salomen and the Wolf-Junghans tests for serum albumen should be made. Vomitus should always be examined; blood, debris of retention, lactic acid, and Boas-Oppler bacilli, although evidence of advanced cancer naturally are of interest in making the diagnosis of advanced cancer. The feces should be examined, too; blood, pus, necrotic material—all may help in recognizing cancer, but one must not think of these as early signs. (2) A complete *x*-ray study, especially the fluoroscopic examination following an opaque meal or an opaque enema. (3) An exploratory operation if there is no restoration of health at the end of one month of symptomatic treatment, inasmuch as the alternatives from which cancer should be differentiated require operation as well and because as soon as the diagnosis would be absolutely certain it is too late to operate.

Brazil-Medico.

May 22, 1920, xxxiv, 21.

Thalamic Syndrome in Cerebral Arteriosclerosis.—Teixera Mendez relates the following case: A woman, aged 63, 15 years before had begun to show symptoms comprising hot hands (which led her to plunge the members into cold water) and a marked sense of heaviness and debility, so that work became impossible. The symptoms persisted despite all treatment, but apparently there was no marked change for the worse. The sensations became distinctly worse on the right side. The author found a woman well nourished, who walked with a gait suggesting hemiplegia. There was marked arteriosclerosis of the radials. Endocrinic disturbances were not in evidence save that the affection seems to have begun about the menopause. Neurological examination was largely negative. There were no symptoms referable to the cortex. The Babinski reflex and its variants were absent, the patellar and Achilles reflexes were exaggerated. The diagnosis of arteriosclerosis and thalamic syndrome was justified by the following: Age of patient, habit of wine drinking, slow evolution of the disease, initial disturbance of sensations of heat and weight, inability to work, insomnia, cardiovascular symptoms, hemiparetic and hemiataxic gait, spontaneous pains worse on the paralyzed side, disturbances of deep sensibility and of stereognosis. The picture differs in some respects from that outlined by Déjérine and others, as there were no choreoathetotic movements, no hemianopsia, etc., but enough symptoms were present to establish the diagnosis. The picture is by no means constant, for either sensory or motor phenomena may predominate greatly, while in other cases we may speak of a mixed type. Various authors also speak of a pure syndrome, a mixed syndrome, and a status thalamicus.

Schweizerische medizinische Wochenschrift.

June 3, 1920, l, 23.

Appendicitis Season of Year and Weather.—Dubs, assistant to Professor Stahelin, refers to the antiquity of the belief that appendicitis, or as it was then called, perityphlitis, had a tendency to appear at certain seasons of the year or weather crises. Some of these were the close of summer, the beginning of autumn, and the Christmas holidays. This belief, which was held about the middle of the last century, seems to have died out completely. The author has therefore sought to submit the matter to a statistical test. Thus far we have a few statements based on statistics that the affection is more common in the summer months, that cases appear in accumulated incidence at certain periods, etc. Scattered statements are found that there is a sudden increase in January over December, that there is a

wave of increase in midsummer, that east winds and much dust favor cumulation, etc. Some Russian hospital statistics kept over a decade show maxima and minima of incidence, but these do not correspond, different hospitals showing different cumulative periods, even for the same city—Petrograd. The author consulted the figures for certain Swiss institutions and plotted curves for each year, with the result that a maximum was found to appear in March-April and minima in February, May, and September, respectively. In addition there are waves of increased incidence in the summer period, June-August and in November. These figures contradict those from other parts of Switzerland, so that mere season of year may be excluded as a general factor. There remains the possibility of a weather factor and there is some evidence that changes in the weather plays a definite rôle, together with excessive precipitation; in other words, if there is unusual rainfall plus sudden changes of temperature, we may expect more appendicitis than in dry, stationary weather.

Hygiea.

May 31, 1920, lxii, 10.

Case of Pheochromocytoma of the Suprarenal Gland with Hypertrophy of the Left Myocardium.—Bergstrand first briefly enumerates the different forms of tumors which develop in the adrenals. He then describes a growth which began in the medullary portion of one of these bodies and consisted of polygonal epithelioid cells of variable size characterized especially by containing chromaffine collodial granules. The tumor weighed 200 grams, and lay in the upper part of the right adrenal, invested by a connective tissue capsule which included residues of adrenal cortical tissue. Despite the differences in the size of the individual cells and the disparities in appearance they were all of the same nature. Nerve elements failed completely. The cells lay in the meshes of a capillary reticulum. The larger vessels showed a peculiar build and the predominant type, the walls of which consisted of a fibrohyaline elastic connective tissue lined with flat endothelia, doubtless served as arteries. Based on a study of the finds of others is the author's opinion that the tumor was a pheochromocytoma—so named by Pick. It was a chance find in the course of an autopsy on a woman of 50, dead of influenza. The heart was hypertrophied, weighing 500 grams, as the result of notable enlargement of the left ventricle. In the absence of other causal factors for this enlargement the author is inclined to accuse a state of hyperadrenalemia due to the presence of the tumor.

La Presse Médicale.

May 29, 1920, xxviii, 35.

Opotherapy in Pediatric Practice.—Apert refers to the experiments performed on lowly organized vertebrates in which after the thyroid body has been destroyed thyroid feeding may cause such remarkable transformations as to amount to a mutation of species. Animals in the larval state have even developed sexual apparatus the author says, and reproduced themselves as larvæ. We know less of the adrenal but in the growing subject the internal secretion of these bodies plays a role in sexual development as seen in tumors of the adrenal cortex. Young girls in such cases are transformed into pseudo-male types developing a beard, with hypertrophy of the clitoris and suppression of the menses, retraction of the vagina, and profound mental changes. They leave the sewing needle for rough boyish sports, become rough and brutal, take to tobacco and alcohol. In certain cases they develop hairiness of the chest and growth of the musculature. An anomalous feature is the development of obesity which stands in some relationship with the hirsutism. Occurring in fetal life this excess of adrenal secretion may give rise to pseudohermaphrodism of the ordinary types. In other adrenal tumors in which there is a deficiency of internal secretion progeria may develop. In tumors of the hypophysis in the young we see supervene conditions embraced under gigantism, acromegaly, and infantilism. Naturally in these conditions of excess nothing much can be done by direct opotherapy but in converse states of maldevelopment everything can be done. Thyroid feeding is indicated in practically all kinds and types of arrested development, adrenalin in asthenic and apathetic states. in all cases of excessive growth and slenderness and in feministic makeup of male youth, and pituitary extract in the broad and "stove in" types, the hirsute, and the obese.

Le Bulletin Médical.

June 12, 1920, xxxiv, 30.

Treatment of Icterus by Sweetened Urotropin.—Weil refers to a report made by him in 1915 on the treatment of typhoid fever by adrenalinized sugar given by the drip method. This was pronounced superior in results to the Brand method. Later the author tested the same remedy in the pneumonias. The constant drip method appeared to secure diuresis with lowering of temperature and pulse. The author has therefore made some use of the method in all infections. Among these only dysentery showed itself beyond control. Incidentally the drip method has been used in thirty cases of icterus of various types. In this affection, however, he added to the sugar urotropin and apparently omitted adrenalin. One liter of tepid boiled water received the addition of 45 gm. of sugar and 1.5 gm. urotropine. The method of exhibition appears to be the Murphy drip, which the author terms the "drop by drop" method. The amount infused into the colon is progressively increased, beginning with half a liter, increased to 2 and 3 liters in as many days. Under this management the urine clears up promptly, while the feces resume their natural hue. After the subsidence of the symptoms the drip is continued for a stated period, and despite the marked diuresis weight is gained. The superior results are naturally seen for the most part in cases of simple catarrhal jaundice, whereas in the secondary forms symptomatic of severe organic disease the benefit is only casual and may be absent outright. The author takes to himself the credit for the systematic routine use of the Murphy drip, for his predecessors, Murphy and Chauffard, used it rather for special occasions in which something urgent was demanded.

Journal de Médecine de Paris.

June 5, 1920, xxxix, 11.

Dementia Precox and Tuberculosis.—Laignel-Lavastine has reason to believe that certain precocious dements owe their condition to a tuberculous substratum. The classification of Kraepelin naturally gives no room for this supposition, being wholly symptomatic. The older view of Morel recognized an acute dementia which particular form the author thinks he has seen in candidates for tuberculosis. It is possible that consumption masks these cases which tend to end at an early date from that disease but the author has seen dementia in fibroid phthisis as well. The cases are very complex, with history of parental alcoholism and syphilis, while clinically any of the forms of Kraepelin may be represented. Cases are cited from the writings of various alienists and from the author's own material. Thus one young man, the son of an alcoholic father who was probably also syphilitic, developed mental weakness characterized by failure to realize his condition, affective indifference, disorientation, apathy, perseveration of attitudes, grimaces, etc. He was found to have chronic pulmonary tuberculosis of the right apex. In another group were two young men, both of whom were red headed and tuberculous, who showed paranoid symptoms. In a third group the subject had tabes and amaurosis due to the same, with phthisis and paranoid dementia. Autopsy showed the coexistence of tuberculosis and metasyphilis. A fourth group was represented by a young man of phthisical habit who after a delirious episode exhibited marked mental failure. Hence the mental state which develops in chronic, nonprogressive cases and in mere candidates for phthisis cannot be due to any acute course pursued by the disease, although such a view seems to have been entertained in some quarters.

Book Reviews.

A STUDY IN THE EPIDEMIOLOGY OF TUBERCULOSIS, with Especial Reference to Tuberculosis of the Tropics and of the Negro Race. By GEORGE E. BUSHNELL, Ph. D., M.D., Colonel, United States Army (Medical Corps) retired; Honorary Vice-President and Director National Tuberculosis Association of the United States; Member American Climatological and Clinical Association. New York: William Wood & Company, 1920.

So few authoritative works have been published on this important subject that the present work by Colonel Bushnell will be welcomed by all students in our own as well as in the tropical countries. The mere enumeration of the titles of the 13 chapters will give an idea of the thoroughness with which this difficult subject has been handled in a remarkably concise and yet complete work. The chapters are headed: "The Pro-Kochian Era," "The Modern Era," "Tuberculized Races," "Non-tuberculized Races," "Modes of Infection," "Pathology and Pathological Anatomy," "Diagnosis, especially Tuberculin Diagnosis," "Prophylaxis of the Non-immunized," "Treatment of Tuberculosis in the Tropics," "Tuberculosis of the American Negro and of the American Indian," "Epidemics of Tuberculosis," "Some Practical Considerations," "Summary and Conclusions."

The book not only shows the wide reading of the author but also his own vast experience as an army surgeon. In the chapter on Tuberculin Diagnosis it is interesting to see an authority like Col. Bushnell admit its uncertainty. He says: "The cutaneous tuberculin test is of value in diagnosis if the result is a positive reaction. It is, however, likely to be negative in the class of cases which most require elucidation. The reaction is also usually negative in the cachexia of advanced disease, including tuberculosis, and is often absent or weakened in acute infectious diseases."

To the physician not practising in the tropics the subject of tuberculosis of the American Negro and the American Indian is particularly interesting and many a one will be surprised to learn that the Colonel takes exception to the oft-repeated statement in textbooks on tuberculosis that "the Negro of the United States was free from tuberculosis so long as he was a slave but became tuberculous to an alarming extent when he came in contact with civilization." One must study the preceding chapters to see the cogent reasoning for the refutation of this statement. Interesting also is the author's assertion, which is borne out by other observers, that climatic influences are negligible factors in comparison with the presence or absence of immunization against tuberculosis. A wealth of information is contained in the chapter on Practical Considerations. It should be read and reread, not only by the tuberculosis specialist but by the general practitioner as well.

In this chapter the following statement is made: "One of the most dangerous doctrines relating to prophylaxis is that good health prevents tuberculous infection. It is true, no doubt, that good health will prevent tuberculous infection from becoming tuberculous disease, but good health has nothing to do with the reception of the tubercle bacillus into the body. We have seen the evils which ensue when the consumptive comes in contact with an unprotected race." The Colonel evidently does not believe in the phagocytic property of the white blood corpuscles, the doctrine taught by Metchnikoff. It would not do to popularize this statement because the ordinary layman is not able to appreciate the distinction between tuberculous infection and tuberculous disease. On the other hand, the reviewer is delighted to see the strong and sensible directions which are given to prevent the susceptible infant and child from becoming infected by the tuberculosis carrier.

Of great interest are two conclusions in the summary of this remarkable book: "Modern civilization brings with it inevitably a tuberculization. There appears to be no escape from this without more radical changes in our mode of life than can be reasonably anticipated, so long as the cow continues to play a prominent part in supplying the daily food. There is, however, no reason for alarm in the fact that the modern world is a tuberculous world. . . . The consumptive, much to be dreaded as he is at close quarters for the uninfected, is indispensable in the present era because he unwittingly provides for that immunization which prevents our race from perishing as so many other races have perished when thrust unprepared into the midst of infection. Whether a correction is needed here because the healthy bacillus-carrier could perform this function unaided is a doubtful question, the answer to which can only be obtained by much investigation. However that may be, should we not look forward to the time when nature's methods of tuberculization, so terribly wasteful of human life, shall be replaced by a thoroughly scientific method of artificial inoculation in which no life will need to be sacrificed?"

The careful perusal of the book will repay every student of the tuberculosis problem. His views will become larger and the optimistic conclusions of the author will not leave with him an unpleasing impression but will urge him on to further investigation and study tending to help in the combat and ultimate victory over the great white plague. The book is well printed and well bound, and henceforth no library on tuberculosis will be complete without it.

DIE REIZTHEORIE UND DIE MODERNEN BEHANDLUNGSMETHODEN DES DIABETES. Von Priv-doz. Dr. R. KOLISCH. Berlin and Vienna: Urban und Schwarzenberg, 1918.

IT is Kolisch's belief that sugar is not directly utilizable in the body, but must first enter into molecular union with the protein before it can become a source of energy. Only in the disintegration of this combination is the sugar liberated in a form suitable for oxidation, and the protein component of these highly complex molecules acts as an accelerator in the combustion of the sugar. In diabetes this continuous cleavage of sugar from the protoplasm and tissues is increased through toxic or nervous stimulation so that the hyperglycemia and glycosuria are to be regarded as the results of this abnormal overproducion of sugar. On the basis of this theory Kolisch develops a highly interesting and suggestive discussion of the symptomatology and treatment of the disease, laying especial stress on the value of undernutrition and on the reduction of the protein intake. This demands a study of the nutritional requirements in each individual case, and he criticises the indiscriminate resort to starvation as a routine procedure.

DIE MEHLFRÜCHTEKUR IM DIABETES MELLITUS. Von Prof. Dr. W. FALTA. Vorstand der III medizinischen Abteilung und des chemischen Laboratorium des Kaiserin Elisbethpitals in Wien. Berlin and Vienna: Urban und Schwarzenberg, 1920.

IN this interesting volume on the use of cereals in the treatment of diabetes Falta discusses the subject of carbohydrate cures in general and describes a method of employing a mixed cereal diet which he has found valuable. Using von Noorden's oatmeal cure as a starting point, he investigated a long list of cereals in regard to their suitability for a similar mode of treatment and came to the conclusion that when used in the same way they were equivalent in effect and no less useful than oatmeal. In order to avoid the monotony of being obliged to subsist on only a single form of cereal the experiment was tried of giving the patients a mixed diet consisting of a number of cereals, and it was learned that this did not influence the effect of the treatment. The next step was to try these cereals not only in porridge form, but also to some extent prepared in different ways to make them more palatable, and small amounts of vegetables were added. Again it was found that the result was as satisfactory as before, and it is this form of the diet that is considered most advantageous by Falta. The details of preparing such a diet, the indications for its use and the management of complications are fully discussed, and the appendix to the volume contains full protocols of a large number of cases.

The questions here brought forward and discussed are all of much importance and the book deserves the attention of any physician with more than a passing interest in the treatment of diabetes.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, Held March 23, 1920.

DR. LILLIAN K. P. FARRAR IN THE CHAIR.

Bacillus Aerogenes Septicemia with Methemoglobinemia, Following Abortion.—Dr. C. S. B. CASSASA reported these two cases. He said that all cases of aerogenes septicemia with methemoglobinemia resulted from wound infection. The occurrence of this condition in a woman without obvious wound should direct attention to the uterus. Following abortion the open sinuses and the placenta offered a favorable site for the introduction of the infection through an infected catheter. In the presence of this infection there was absence of inflammatory reaction in the uterus, hemolysis occurred, and hemoglobin was changed into methemoglobin. The methemoglobin passing into the skin caused a reddish-brown, copper-colored pigmentation. This substance also passed into the kidneys and into the urine. During the change of the hemoglobin into methemoglobin there was a rapid accumulation of carbon dioxide in the blood, which explained the clinical features observed in aerogenes infection. The *Bacillus aerogenes* produced gas which was shown by the crepitation in the superficial veins. The first case reported was that of a woman, twenty-three years of age, who died seventy-two hours after inserting an infected catheter into her uterus to produce an abortion. When an infection of this nature was suspected it was important to take specimens of blood and urine for spectroscopic examination, and also to make bacteriological and cultural examinations. The organisms were found in the blood of this patient after death. There was the characteristic pigmentation of the skin, kidneys, and urine, and an increased leucocytosis in both cases.

Dr. FARRAR asked if it were possible by clearing out the uterus to increase the chances of fighting the infection.

Dr. OTTO SCHULTZ said that once the blood current was infected with the *Bacillus aerogenes* there was not much hope of being able to do anything by means of local treatment. In the case reported, the infection spread more rapidly after curettage, and a further rise in temperature and pulse rate ensued. In regard to bacteriological examination, in the case he had reported pure cultures of *B. aerogenes* were obtained from the spleen. The particular feature about this bacterium was not only the hemolytic change it caused, but the very definite change of hemoglobin into methemoglobin. Dr. Schultz cited the case of a man whose legs were crushed by an elevated train. The tissues of his legs became emphysematous, and by palpating his veins direct crepitation could be detected. The man was copper-brown and died the following morning. In a case of attempted abortion the first thing the physician should do when he saw the patient was to remove the catheter, if it was still in the uterus, and to use hydrogen peroxide. By this means it might be possible to release enough oxygen to control the *B. aerogenes* in loco. As far as the bacilli in the blood were concerned, he thought the serum Dr. Jablons had reported on should be used. The great difficulty seemed to be that by the time the infection was recognized it had advanced to a stage where antiseptic or surgical treatment no longer availed and the only hope for the patient was in antitoxin treatment. Spectroscopic examination of the urine was not simply the proposition of recognizing absorption bands, but involved the coefficient of the absorption of light in the particular band in question, so that it was a matter requiring expert knowledge. As regarded the channels of infection, the most common was through the lymphatics with general peritonitis; less commonly the infection was carried by the blood vessels and there was a thrombophlebitis. It was well to remember that women with this infection were septic and rarely showed a positive culture so far as the blood was concerned. The examination of the urine was an important point and should not be overlooked where there was a possibility of this type of infection. Other poisons like chlorate of potash, ferrocyanide of potash, nitrobenzol, antifebrin, and others were capable of producing a change of hemoglobin into methemoglobin, but they did not produce hemolysis with skin pigmentation. This pigmentation occurring so rapidly and being so characteristic was an absolutely pathognomonic sign on which the diagnosis could be made.

Dr. B. JABLONS spoke of his experience overseas with wounds infected with gas gangrene. A great many of these cases were not infected by the *B. welchii* alone, but were polybacterial infections, and it was sometimes difficult to identify the organism mainly responsible for the infection. Many people assumed that the *B. aerogenes capsulatus* was the organism that always produced gas, but cases were frequently encountered in which the effects of bacterial toxines overshadowed those of the gas. Again, many cases were diagnosed septicemia which later were found to be aerogenes infections. The question of hemolysis was important. It had been found that the *B. aerogenes* produced two varieties of toxin, one a hemotoxin which produced this lysis of blood cells, and the other a neurotoxin which was responsible for death. Against this particular toxin, hematoxin, Ford had produced an antiserum which seemed to be fairly potent. In *B. welchii* infections good results had been obtained with this antiserum, which was now produced at the Rockefeller Institute. The trouble was that they were dealing with a polybacterial infection, and while they were able to neutralize the hematoxin of *B. aerogenes*, they were unable to neutralize the others. It was only by the use of a triple antitoxin that good results were obtained. Culturally, it was possible to make the diagnosis in twelve hours after inoculation into the appropriate culture medium, if the organism was present in the blood, but sometimes it did not pass into the blood stream. Occasionally the *B. welchii* localized in a phlebitis, which could be controlled by an antiserum. Another feature of this infection was the putrid odor. For a long time it was thought that the *B. aerogenes* was capable of producing putridity, but now it was known that it did not break down protein. When the uterine discharge showed putridity this was usually due to associated organisms. These were dangerous in that they increased the virulence of the *B. aerogenes*, and this should be kept in mind in making cultural examinations.

A Case of Unusual Ectopic Gestation.—Dr. GEORGE GRAY WARD reported this case. He stated that the patient, a woman about thirty years of age, came under observation in a condition of profound shock, with all the signs of internal hemorrhage. She gave a history of spotting for five or six weeks, but suffered no pain of any particular moment. She had been going about her usual vocations and did not consider that she was sick. She had had an operation several years before at which the appendix and the right tube and ovary were removed. The onset of her illness began while she was at lunch, apparently perfectly well, when she was seized with a very violent pain in the lower abdomen, followed by immediate collapse, so that the physician thought she was about to die. When Dr. Ward saw her the pain was distinctly on the right side, which seemed strange in view of the fact that the appendix and right tube and ovary had been removed, and as the patient presented a picture of ruptured ectopic. On examination nothing definite could be made out on the left side; the right side was tender and full and there was evidently blood in the abdominal cavity. A further point of interest in the history was that the patient had had several attacks of gallstone colic definitely diagnosed as such. It seemed that the diagnosis must be ectopic, that it must be that either an interstitial pregnancy was present, or that a stump of the tube had been left which had become impregnated. The patient was removed to the hospital and operated upon. On the right side at the stump where the tube had been removed was a ruptured ectopic. There was about half an inch of the stump left, which was the seat of the ectopic gestation and had ruptured. The ovary on the right side had been removed so that the ovum must have come from the left side. The gallbladder was explored and found to be absolutely normal. The patient made an uneventful recovery.

Dr. HERMAN GRAD said that the interesting question in this case was how the ovum got into that remnant of a tube. Was it open at its end? If so, then the ovum from the left ovary had to migrate there; or did the ovum reach the tube in another way? That was an interesting question. Usually Fallopian tubes that were resected did not remain open. Dr. Grad said he had occasion to open the abdomen in several cases in which he found the free end of the tube closed. Whether that was always the case he did not know, but in three cases he could positively state that the tube was not open, and yet it was known that in many cases the tubes had become patent when they were tied off for the purpose of sterilization. Cases were reported in which the tubes were reopened after having been tied and conception occurred. Very likely in this case the tube was open, and the ovum simply remained in the remnant of the tube which had had its mucous surface damaged by a previous infection, preventing the ovum reaching the uterine cavity.

Dr. HAROLD BAILEY said that Dr. Ward's case brought to mind a case of Dr. Cole's in which a patient had an ectopic gestation in a tube and had an old ectopic near the horn in the same tube, meaning that there must have been a migration of the ovary from the other side.

Some Immediate Effects Following the Use of Radium for Non-Malignant Uterine Bleeding.—Dr. WILLIAM B. GRAVES, who was to have read this paper, was absent, but the following discussion of the subject took place:

Dr. WILLIAM S. STONE said that in thinking of this subject the first thought that came to him was the tremendous amount of pathology that the words "uterine fibromata" implied. These tumors, small and large, underwent nutritional changes and sometimes became infected so that one might meet with pyosalpinx, hydrosalpinx, and bleeding to the extent that the patients were on the verge of exsanguination. Then the thought also came that all this pathology had been revealed by the surgeon at the operating table, and not by the pathologist, and that brought one to the main thought that he wished to emphasize, which was that in the use of physical agents in the treatment of these conditions we had a terrific undertaking, as there was a great deal of pathology to be thought of. In the use of radium and the *x*-ray the first and most important thing was to establish the diagnosis—to make sure that one had a fibromyoma, and to make sure that it was not complicated by any nutritional disturbances, and that there were no collections of pus in the pelvis. In the vast majority of instances this could only be done under an anesthetic. Dr. Stone cited a case he had seen the day before which illustrated a good many points in the use of radium. This patient, thirty-seven years of age, had had a child six or seven years before without any complications at all. About a year and a half ago she began to bleed irregularly. Nothing was done until a year ago, when she was curetted. Examination of the curettings established the diagnosis as fibroid. The bleeding stopped, then recurred, and there had been more or less persistent bleeding during the past year, so that when she came under observation a few years ago, though a stout woman in good general health, she was very anemic. The blood count showed the red cells to be 2,500,000 and hemoglobin only 49 per cent. With this low blood count he was, of course, loathe to do a major operation if any other procedure would be effective. Under anesthesia it was found that the uterus was enlarged symmetrically to the size of the fifth or sixth month of pregnancy. On exploration of the interior of the uterus no particular irregularity was found. There was a small amount of smooth, grayish material curetted which was characteristic of hypertrophic endometrium. One thousand millicurie hours of radium were used. Dr. Stone said he was sure that woman's bleeding was going to stop and that the uterus would decrease in size, but he was not sure whether menstruation would stop entirely. As the woman was thirty-seven years of age, it did not make a great deal of difference if menstruation did stop. The point was that possibly six, seven, or eight months hence she might start to bleed again, and her uterus might not with this one treatment decrease in size to any great extent. If she went to another surgeon then he might operate and think the radium had been infective. Dr. Stone said if he found that a fibroid had become polypoid he would hesitate to rely entirely on radium because of the necrosis that might possibly occur in polypoid fibroids. He had seen cases of uterine cancer which had been treated both by Dr. Bailey and by himself in which complete retrogression had taken place, and there was no gross evidence of the tumor. The uterus treated by radium decreased as a rule to the size it normally was at the menstrual period, and often times at the end of a year scarcely a trace of the uterus could be found. In treating the case just referred to he used platinum over the radium, which shut out the more superficial caustic rays. If the rays were filtered in this way destruction of the uterine mucosa was not so likely to occur, and there would not be so much discharge after the treatment. Some cases of uterine fibroids treated by radium were followed by a large amount of leucorrheal discharge which was quite persistent, and it was quite an advantage to avoid that. It was extremely important to select cases carefully for radium treatment. Neither radium nor the *x*-ray was going to supplant operation *in toto*, but it was going to supplant operation in a large number of instances either as a curative measure or in temporary emergencies. The case cited exemplified this, as a hysterectomy might have been done and the patient might have recovered; at the same time, with the low hemoglobin, an operation was something of a risk, and the radium tided the patient over, so that if a subsequent operation was necessary the woman would be in better condition to stand it.

Dr. HAROLD BAILEY said he was interested in coming here to listen to the paper of Dr. Graves, because it dealt with some of the immediate effects following the use of radium. He was very anxious to hear what those effects were. One could conceive of several occurrences immediately after radiation, but they were very infrequent in his experience. In the first place, there was the possibility of lighting up an old pyosalpinx, and in his experience of five years he had had only one such case, which resulted in death, in either malignant or non-malignant uterine bleeding. That case on autopsy showed, as far as one could tell, an absolutely normal uterus; that was, the wall showed no slough or ulceration, but there was an old pyosalpinx bound up in the lower part of the pelvis and it had lighted up and the woman died of a septic infection. Another peculiar case that Dr. Bailey recalled was one in which the diagnostician had not been clever enough to exclude other conditions besides the uterine one. That was the case of a large fibroid in a woman who was very anemic, and at autopsy, after a radium application, it was found that she also had tuberculous peritonitis, and there was considerable sloughing over the peritoneal surface of the uterus and also of the abdominal wall next to the area where the applicator had been. Other immediate effects were possible, such as stricture of the uterine canal. In all their cases, over 500 in number, they had had only one such instance, and that was in a cancerous tumor of the cervix, in which there was a stenosis and pyometria. At that time the tri-weekly application of moderate amounts was used, 100 milligrams, and as he recalled it, during the third week the woman returned and the pus was evacuated. He did not recall the end results. Stricture had been guarded against, especially in those cases of fibroid where reapplication had to be made, and it was important not to put the capsule back in the same place where it had been the first time; and in cancer of the cervix it certainly was not necessary to put the radium capsule in the same area, since the capsule was only three centimeters long at the most and could be placed above or below the first point of application. If it was placed in the same spot (and he had had considerable experience in placing it in the same spot in bygone times, because in trying to get the dose out in the parametrium with the single capsule he placed them every week for three weeks in the cervix), it led to a necrosis which was very deep; it actually did, however, take the dose far out into the pelvis, but he thought it a very poor method of placing the radium. Aside from those effects, one heard occasionally of mild bladder trouble. He was discussing this with a house surgeon to-day, who said that if you asked the pa-

tients directly if they had any trouble in passing urine, they said they had none; but not a few of them, if you led up to the answer, would say that they had had some frequency. He had seen a case in which there was frequency and also pain following a very small dose placed in the body of the uterus. This woman undoubtedly did have irritation of her bladder, which necessitated treatment. Another effect which was more or less immediate was the discharge. There was for perhaps the first week a watery discharge in a few of the cases, and in not a few there was a tenacious, yellow, foul-smelling, mucous discharge which persisted for months. This was one of the meanest complications that one could have in the treatment of these fibroids, or fibrosis cases. So far as he knew, there was nothing to do for that condition. He had used douches and even intrauterine injections of argyrol, but had seen no results. These were the only immediate effects of the small doses which were used for fibroids or for fibrosis. Dr. Bailey said Dr. Stone had brought out a very important point, and that was that the diagnosis could not be made without an anesthetic. You must have complete relaxation over the whole pelvis with the woman under an anesthetic, and this was the time when the curette must be used even with the fibroid cases. One should palpate over the inside of the uterus, as there might be a polyp present, as Dr. Stone had brought out. As regarded the dose and its application, it made no difference how the applicator was filtered, providing one knew the filter and allowed for it. When platinum was used, the dose that Dr. Stone said he used yesterday—1,000 millicurie hours for a fibroid—he thought was the exact dose to bring on the menopause and to stop the bleeding. He had used in quite a number of cases a smaller dosage, with the idea that following the cessation of menstruation the menstrual periods might return after eight or nine months. In most cases in which he had used doses of 500 hours or under, the dose had to be repeated. He had one case, sent by Dr. Grad, in which the dose mentioned produced cessation of menstruation which lasted over a year. But if the filter was platinum, the dose would have to carried to 1,000 millicurie hours. If silver was used, or a combination of brass and silver, the dose should be cut down to 750 millicurie hours. These fibroid cases gave a rather peculiar history, especially as it was generally believed that the effect of radium was to kill the dividing cells in the follicular portion of the ovary, and it was rather strange that the woman was almost invariably bled at the next period after the administration of the radium. It was difficult to reason that out, and not infrequently following the administration of radium there would be a little show of blood and a watery discharge at the second period, and then there would be no menstruation for a number of months. In a number of fibroid cases irregular bleeding had started up again and he had taken out the uterus, and he now regretted it, because he found a firm, hard uterus and he felt that another dose of radium would have relieved the bleeding.

Dr. GEORGE GRAY WARD, Jr., said that he was very much interested in the immediate effects of radium. He had had the use of this agent for only a little over a year. On looking up the radium records of the Woman's Hospital, 52 cases of fibrosis uteri or fibromyomatous growths were found which had been treated with radium; these were exclusively of the malignant cases. Of these, 32 were what we ordinarily designated as fibrosis, that was to say, there were no demonstrable fibroids that could be palpated, and where there was a symmetrical uterus which in spite of curettage persisted in bleeding, and which hitherto could be relieved only by hysterectomy. Those cases were all satisfactorily relieved by radium. They had treated a number of cases of fibroids, mostly small, but there had been one or two large growths complicated by anemia where an operation was not considered advisable. In looking up the records on these 52 cases to find what the immediate effect of the radium was, it was found that 22 had pronounced nausea and vomiting, or a little over 44 per cent. Eleven of these cases had pronounced pain, requiring morphine; that was, about 22 per cent.; 18 of the 52 had no symptoms. As to the question of pain during the application of radium, one would almost suppose that the pain complained of would be due to the fact that a foreign body was placed inside of the uterine cavity, and radium, being a foreign body, the uterus would try to expel it, thus causing a certain amount of uterine colic; however, we had to bear in mind that the use of intrauterine stems in dysmenorrhea caused very little pain. In fact, he was surprised when he had a case of pain with an intrauterine stem, although it might be cast out, showing that the uterus had been contracting, yet the woman seemed scarcely aware of its presence. Therefore, it was open to question whether the pain was due to the presence of a foreign body. The question of leucorrhea was one of interest and was often a troublesome feature, due to the length of time it persisted. In their cases at the Woman's Hospital they had observed astonishingly little of that. In the follow-up clinic they rarely heard patients complain of leucorrhea. He wondered whether the reason of that was that in all the radium applications they had made they had followed the technique of Dr. Viol, the physicist of the Radium Company, which was to filter with a millimeter of brass, in addition to the silver capsule and the pure rubber protector in which the radium was encased. A number of observers did not use the brass filter, but only the platinum or silver container with the rubber cover. Possibly that was one of the reasons their cases at the Woman's Hospital had had so little leucorrhea. The point that Dr. Stone brought up was very important; that was the need of a careful diagnosis, and that one could not make it without the aid of an anesthetic. He considered that the diagnosis was not complete unless a diagnostic curettage was made. To give one instance of that: A woman had a history of bleeding for twelve to fifteen years, and an obvious multiple fibromyomatous uterus which filled the pelvis and was nodular. She had been under the care of many gynecologists and they all had diagnosed it as fibroids. In that case a diagnostic curettage was not done because the woman had a hemiplegia and her general condition was poor. She had the radium inserted into the uterine cavity without an anesthetic, which was easy to do in her case. She came into the speaker's office about four months after the application of the radium perfectly delighted that she had had no more bleeding. Examination revealed a node on the cervix, which broke down on palpation, a very evident carcinoma. The pathological report indicated that it had originated in the fundus and had extended to the cervix. The woman undoubtedly had had carcinoma of the fundus associated with fibroids. If a diagnostic curettage had been made with the first radium application, the carcinoma would probably have been discovered and they would have considered the removal of the growth before it reached the cervix, even though the woman had hemiplegia. So far as the ultimate results were concerned, in non-malignant cases, he knew of nothing that was more satisfactory.

The Balance Between the Endocrines and Each Individual Endocrine.—Dr. SAMUEL WYLLIS BANDLER read this paper. (See MEDICAL RECORD, April 17, 1920, xcvii, 16.)

Stated Meeting, Held May 18, 1920.

DR. HAROLD E. BAILEY IN THE CHAIR.

Inaccessible Vesicovaginal Fistula (Lantern Slide Demonstration).—Dr. JAMES A. CORSCADEN presented this report. The patient was an unmarried woman, fifty-two years of age, without occupation. She had passed the menopause three years before admission. Eight months before admission she had vaginal bleeding at irregular intervals, there being a pink, watery discharge, also dragging pains and increased frequency of micturition. The patient lost weight, there was no respiratory or alimentary disturbance. The woman was referred for radium treatment, and a preoperative diagnosis was made of carcinoma of the body of the uterus. A curettage was done and suspicious fragments were taken away. Radium was applied in tubes to the uterus in dosage of 1,200 mg. An adenomacarcinoma of the uterus was found at operation and a complete hysterectomy was done with double salping-oöphorectomy. The uterus was removed without dissecting the ureters. There was an irregular thick-

ening of the inner surface of the uterus due to the radium. The bladder was opened. The postoperative course was smooth, except that urine was passed by vagina. This continued until the second operation six months later. At this time a senile condition of the genitalia was found with a vaginal orifice admitting the little finger. The second operation was done in the lithotomy position with a Suchard's incision through the peritoneum. The bladder could not be freed with safety because of the adhesions between the bladder, rectum, and small intestine. Eversion was impossible. A cuff was made of the vaginal mucous membrane and the edge of the fistula was dissected off. After the operation the patient was kept in the prone position six days. The catheter was used five days. There were severe bladder spasms. In all cases of bleeding after the menopause, the possibility of carcinoma or epithelioma should be excluded.

Spontaneous Closure of a Large Vesico-Uterine Fistula.—Dr. GEORGE L. BRODHEAD reported this case. (See page 437.)

Dr. J. RIDDLE GOFFE said that he was interested in this work on fistulas of the bladder. He had had the same experience. The case was a very interesting one and very instructive. The Suchard incision was a good one in a narrow and contracted vagina. It made the tissues accessible. The closure with three layers of suture gave a good result. Years ago he thought that failures were due to the fact that there was a very small puncture hole. The vesical end of the fistula contracted very much and drew in the tissue of the vagina so that there was a crater leading into the fistula. These cases were very difficult. Results failed because the tissue was not denuded deep enough to reach the vesical mucous membrane. The method of surrounding the vaginal end of the fistula with a circular incision was advised, and then dissecting up the mucous membrane toward the fistulous canal, bringing the vesical mucous membrane into view, so that the interior of the bladder could be reached and a favorable result secured. He was not sure of the usefulness of the prone position, flat on the face. Other workers had used the Trendelenburg position in cases where the fistula was low down. This avoided passage of the urine and satisfactory results were claimed. In Dr. Brodhead's case finally there seemed to be a tearing away of the vagina from the uterus. The finger passed through the internal os into the bladder from the cervix.

Dr. HIRAM A. VINEBERG of New York said he had had experience with these fistulas and had witnessed the operation just described, which the doctor considered easy and successful and one which made the fistula accessible; still it seemed a very severe operation for something which might be done in a different way. Years ago a technique was published in the *Centralblatt für Gynäkologie*, which was hard for the operator, but easy for the patient. The patient was put in the knee chest position and the parts viewed with the Syms speculum. A small incision was made round the vaginal mucosa and sutures passed through the edges of the fistula; stay sutures were carried out through the ureter and drawn then everted. This gave uniformly good results even in cases operated on previously eight or nine times. This procedure required a good deal of technical skill, but left the woman in good condition afterward. It needed care and experience to get the parts in good apposition.

Dr. L. K. P. FARRAR said that the best plan was to cut deeply and obliquely, curving round the anus, thus avoiding the rectal structures and the vessels. It gave good healing and it was hardly possible to see the scar afterward. Did Dr. Corscaden mobilize the bladder at all?

Dr. JAMES CORSCADEN, in closing the discussion, said that the only way to mobilize the bladder was from below; it was too near the small intestine to do it any other way; that was why they used the rectum instead of everting the bladder.

Dr. H. BAILEY of New York said that he wished to speak on the supposed origin of this fistula. He thought that instead of using radiation the uterus should have been removed as early as possible after the diagnosis was made. He thought thickening was due to the radium, but the speaker did not think so, because the thickening was due to sclerosis of the vessels, leading to general fibrosis. That could not occur in a week. One might get a plastic inflammation of the uterine wall near the radium applicator, but as in that case it was near the body of the uterus it did not seem likely that it was near where the fistula was made. The closure was satisfactory. One should ask what more after removal of carcinoma of the uterus by hysterectomy? This might cure in a proportion of the cases, but not in all. Something more could be done, especially in a hospital where there were many advantages one could make use of. The repair of fistulas was a very interesting question. One saw many following radiation, but in cases of advanced cancer it was almost impossible to repair the fistula because the whole tissue of the pelvic floor was sclerotic. He had seen an interesting case in which the patient died the eighth day postoperative. At autopsy it was found that there was recurrent cancer of the uterus, not entirely removed. The first year there was absence of clinical signs, but the second year there was a well marked mass in the pelvis and bladder wall. Radiation was repeated and the whole bladder floor dropped out and a large hole was made in the rectum. This went on for fifteen months, then a colostomy was done and the patient urinated through the rectum. She became toxic and at autopsy both kidneys were found full of pus.

Dr. BRODHEAD said that if a curved incision was made round the rectum few vessels were cut, there was very little hemorrhage, and the patient did not seem shocked at all. It was important to mobilize the bladder freely from its attachment.

Dr. VINEBERG asked if he meant freeing around the fistula, and was told "yes."

Dr. CORSCADEN said that he had used the rectum and bladder instead of using the bladder on both sides. The incision only took a minute and very few blood vessels were touched. There were no important structures attached and no vessels to tie. In regard to the etiology, he could not speak with authority. They had had 300 cases. He thought the maximal irritating effect with radium was reached in ten days. He did not think this was connective tissue thickening, but it was due to radiation. They got the impression that the uterus was congested after the radium had been inserted. The bleeding was more profuse at that stage. To learn anything about the treatment of cancer took ten years.

Dr. FARRAR said her hospital experience was the same. It was difficult to operate on congested tissues. Dr. Ward had noted contraction of the fibrous tissue.

Induction af Labor by an Unusual Method.—Dr. GEORGE L. BRODHEAD reported this case. The patient was a young woman of twenty-four years, in her first pregnancy. She was suffering from supposed toxemia of pregnancy and had marked edema of the vulva, so that she was obliged to sit up in bed. She had dyspnea and was considerably distressed. She went to full term, l.o.a.; fetal heart normal. The edema was such that she could not bring her thighs together. There were signs of mitral disease and râles in both lungs. She appeared so seriously ill that it was decided that pregnancy should be terminated. Multiple punctures of the labia were made and the edema decreased. Labor pains then set in immediately after and she was delivered of a seven pound boy.

Missed Abortion.—Dr. ABRAHAM RONGY presented this communication. He said this condition was difficult to diagnose. The average woman paid very little attention to slight irregular discharges. Two things should be noted carefully: the time of quickening and the time of expected birth, but these were not usually exactly determined by the average patient, who was usually told not to worry about the matter. There was a paucity of literature on the subject, but it was an established fact that the death of the fetus took place much more often than was supposed. The term "missed abortion" could be used to describe the intrauterine death of the fetus before viability. It was often difficult to tell when death occurred. Cessation of growth was a definite sign of fetal death, the duration of the pregnancy not corresponding to the size of the fetus. If this was watched for three or four weeks, and no growth occurred, a diagnosis of missed abortion was justified. Three or four weeks later still active interference was indicated. The dead fetus could be looked

upon as a foreign body and the danger of peritonitis should be considered. The reasons for missed abortion were very speculative. Often it occurred in women of good health, and the idea that it was due to metabolic disturbance seemed to have little foundation. It was more probably due to endocrine imbalance, and physiological disturbance in ovarian function would interfere with pregnancy. Lutein extract would often carry a woman safely to term. There were three types of abortion: (1) the acute, with large blood clot and unmacerated fetus; (2) the nonacute type, where the patient complained of discomfort, spotting, and the placenta showed hemorrhagic infarcts with a macerated fetus, showing death some time before, and (3) the type where the product of conception died and was retained without symptoms, death having taken place in the fetus or the cord. Treatment should be carried out with care, as the uterine wall was friable in these cases. Catheters with packing of the cervix were indicated. Sometimes the uterus was strong enough to expel the fetus, and might do so sooner or later if left alone, still it was unsafe to leave the dead fetus there after the diagnosis was clear.

Dr. R. H. POMEROY said that he could not elaborate what Dr. Rongy had stated. He had discovered this condition in twenty-two cases. The cases were intermittent and one was apt to forget the salient points that made the diagnosis. One wondered why abortion started or why it occurred, but one must regard it as having a hemorrhagic basis—in other words, the fetus did not perish from direct damage. One could find no reason as to why the uterus should empty itself because it had a foreign body to dispose of. Such a theory had many gaps in the reasoning. One could pack the uterus with gauze, but it did not attempt to get rid of the gauze. There must be impulses that originated contraction and retraction. There might be cases in which the muscular structure of the uterus was not capable of retraction. In one patient who went for a long time after the supposed atypical fibrosis uteri developed. The speaker said he did not think he would attempt to empty the uterus in missed abortion by any other method than vaginal or fundal section. He would hesitate to add another foreign body.

Dr. VINEBERG said that a few cases were seen every year. He used to think they should be left alone. If watched carefully, usually it would be found that there was a little staining about the time the fetus died. He now agreed with Dr. Pomeroy that these cases needed surgical intervention. He had seen one case of a doctor's wife, in which the fetus had undergone degeneration. The uterus was apt to undergo fibrosis in these cases. He did not understand why the patient was asked to come back two months later for observation.

Dr. HERMANN GRAD said he had seen a few cases. He had had one case of missed abortion in which there was considerable difficulty. This was the fourth pregnancy, and the woman developed albuminuria. She began to stain. She was put to bed and the diet changed. The albumin cleared up. Examination a month later showed the uterus the same size. She felt well, but later developed pain. Abortion was advised. A well developed male fetus was delivered. The delivery was dry; there was no fluid. The ovum was intact.

Dr. BRODHEAD said that this condition was more common than was supposed. In some cases an intact ovum was found, but no fetus at all. In many cases the fetus was absorbed. In regard to operative interference, most cases would take care of themselves. Most cases would come away spontaneously if given time. He had been looking for a long time for a calcified fetus, and would like to see one.

Dr. ALLEN said he had not heard a paper on this subject before, although the occurrence of such cases was fairly common. He felt they should all reach the same conclusions as Dr. Rongy, who had had remarkable results. There were no failures in delivery by catheter and no bad results. There was one reason for operative interference. The woman should feel there was something wrong. The periods were missed and the patient would worry as the months went on, and for this if for no other reason interference should be made. No doubt may cases were curetted before the gynecologist saw them.

Dr. BAILEY said that he had had two cases on the Bellevue service. They were not listed under missed abortion, but as death of the fetus. This term applied to the later months of pregnancy. They were all indebted to Dr. Rongy for offering something to fall back upon. These cases were seen every year, and the family usually hesitated to have any interference. In one case seen at the prenatal clinic there was a 7½ months' pregnancy, with the fetus at the umbilicus. A bag was inserted and a macerated fetus delivered without difficulty. No etiological factor could be determined. In one patient, a doctor's sister, who had numerous consultations, was supposed to be at term, the pouch was put in and in seven hours an intact ovum and sac was expelled, filled with foul smelling greenish material. It was preferable in such a case to induce labor. He thought there was a distinction in the terms of missed abortion and death of the fetus; the latter term should be used after viability.

Dr. L. K. P. FARRAR said she had seen one case in which the patient went to the seventh month and was feeling well; then there was a cessation of fetal movement. At the ninth month examination showed a macerated head.

Dr. RONGY, in closing the discussion, said that he disagreed with the advocates of surgical procedure. He had never used anything but the catheter, and he did not remember failure in a single case. Occasionally it was necessary to use it a second time. He used a large rectal tube inserted up to the fundus. Dr. Vineberg was right when he said there was a spotting at the time the child died. An intelligent woman would notice it and tell the doctor, but an unintelligent one would not. Dr. Grad asked why the uterus failed to expel the fetus, but it was not known why; it had never been explained. Toxemia might be the cause of the death of the fetus; it was found that nephritics did not respond to labor induction. He did not believe the cases should be let alone. He had the patients come for routine examination (not vaginal) every two weeks. There was no reason for leaving a foreign body in the uterus. There was very little in the literature. Cases were not studied very carefully. He thought the pathology lay in the fetus and cord and not in the placenta. Regarding the title "missed abortion," he thought it was better than "death of the fetus." The child had been growing and stopped growing and yet there was failure to abort.

SECTION ON PEDIATRICS.

Stated Meeting, Held April 8, 1920.

DR. CHARLES HENDEE SMITH IN THE CHAIR.

Direct Laryngoscopy in Young Children.—Dr. HENRY LOWNDES LYNAH gave a lantern slide demonstration showing the picture presented by laryngoscopical examination in various throat affections in children, and emphasized the advantages of such an examination from the diagnostic standpoint.

Nephrolithiasis in a Girl of Three Years.—Dr. MINER C. HILL and Dr. A. R. STEVENS reported this case which occurred in a little girl, three years of age last November. She had had none of the diseases of childhood and had been perfectly well until she was two years old, when she was not very well and was treated by a pediatrist. He found nothing out of the way except pus and bacilli in the urine. She was treated with alkalies, but with what result they did not know. Last June the child came under Dr. Hill's care. He found that she still had pus and bacilli in her urine. For about two months she was treated with alkalies, then with acid sodium phosphate and urotropin. These remedies seemed to make no impression on the condition. Dr. Stevens was then called in. As the little girl was quite well otherwise, they deferred investigation until last fall. At that time a radiograph was taken which showed numerous calculi in the left kidney. The right kidney at first showed a suspicious shadow, but no stones were found on further examination. Early in January a double ureteral catheterization was done under gas oxygen. A No. 5 cystoscope of French 18 caliber was used and specimens obtained from both kidneys. An intravenous injec-

tion was given to test the function of the kidneys. A wax-tipped catheter was passed up to the right kidney and there was no scratch on the catheter. The right kidney, from the tests made, seemed to be normal. From the left kidney pus and gram negative bacilli were obtained. The urea from the right kidney was 1.2 per cent. and from the left 0.4 per cent. There was about three times as much phthalein from the right kidney as from the left. Inasmuch as there was pus in the left kidney and not in the right, it was deemed advisable to do a nephrectomy. There were six or eight stones present, and even if one removed all these stones and left an infected kidney there would be danger of the opposite healthy kidney becoming infected. Dr. Holt and Dr. Blake, in consultation, agreed that a nephrectomy was indicated. On January 25 this operation was performed by Dr. Stevens, removing a pyonephrotic kidney. The largest stone and one smaller were left in the specimen. Practically all the calyces were occupied with granular masses composed of one-half phosphates and one-half uric acid. On the fourth day following operation the urine was clear and free from pus and bacilli, and had remained so since. Dr. Stevens said one did not hear much about surgical conditions in the kidneys of children, and both Dr. Blake and Dr. Holt said they had not seen a case just like this one. Of 320 cases of kidney stones in children (one-half of these were autopsies) 140 were found in children under one year of age, and only 26 in children from one to six months old. When renal calculi were present in babies, the supposition was that the babies usually died. The writers wished particularly to call to mind the fact that surgical conditions occurred in the urinary tract in children oftener than we thought, and to suggest that if, after two or three months' treatment by ordinary methods, pus could not be made to disappear from the urine it was well to have these cases investigated in order to more carefully locate the source of the pus.

The Suboxidation Syndrome in Childhood.—Dr. CHARLES GILMORE KERLEY and Dr. LOUIS BERMAN presented this paper. They stated that the condition which they had designated as the "suboxidation syndrome" was found with few exceptions in the offspring of the well-to-do. The forebears of children presenting this syndrome were usually those who had lived indoor occupational lives for two or more generations—those who had been occupied with intellectual pursuits and not with manual labor. The child with the suboxidation syndrome was one whose physical functions were habitually below normal. There was a lowered capacity for endurance and his emotional control was defective. As a rule the child was precocious and mentally overactive. There was a tendency to erythema, mild eczema, perspiration was scant, low temperatures were keenly felt. A moderate anemia was felt in most cases. A frequently encountered feature was a tendency to febrile rhinitis and bronchitis. It was rare to find a patient of this type who had not had tonsils and adenoids removed with little or no benefit. Another feature of this syndrome was a tendency to recurrent vomiting. Not all cases showed the identical train of acute manifestations, but in one respect they were very similar; they had a defective metabolism for the hydrocarbons, particularly for cows' milk fat in the amount that they had accustomed themselves during the last few decades to give children. A series of illustrative cases was cited showing that the noteworthy feature in nearly every case had been the improvement in appetite and the marked gain in weight as soon as the fats and sugars which had been given above the capacity of the patient had been removed from the diet. An examination of the urine in a certain percentage of these cases showed a slight but constant acetonuria on an ordinary diet, and those subject to attacks of vomiting showed marked acetonuria during the attack. A study of the blood in a series of 67 cases had shown a hyperglycemia varying from 130 mg. of glucose per 100 c.c. of blood as the lowest, to 280 mg. per 100 c.c. as the highest, the average being 163. The blood sugar of 92 children not belonging to this group was examined and found to vary between 80 and 125, averaging 105. The method used to determine blood sugar was an adaptation of Benedict's modified picric and picrate method to finger blood along the lines followed by Epstein in applying the original picric acid method.

Dr. HERMAN SCHWARZ said he had seen many patients with the syndrome Dr. Kerley described who had eaten very little sugar, and quite a number of cases coming under his observation had not responded to reducing the sugar as such. Personally, he did not see how it could relieve the condition simply to withhold sugar, if the children were having bread and cereal, though there might be an easier absorbability of sugar. When Epstein brought out the modification of the Benedict method of estimating blood sugar, the speaker had made a great many examinations, especially in cases in which there seemed to be intolerance of sugar as shown by an increased number of movements. In these cases he found the blood sugar in the early morning before breakfast perfectly normal. In cases of eczema and so-called exudative diathesis blood sugar was not regularly increased. He had plotted the sugar curves and could not see any difference in the reaction of the blood sugar in these children as compared with normal children.

Dr. HENRY DWIGHT CHAPIN called attention to the fact that in the paper recently published in the *American Journal of Diseases of Children* it was shown that in quite a number of cases hyperglycemia occurred with little or no glucosuria. In the line which Dr. Kerley had studied much might be learned from examinations of the blood. One point mentioned by Dr. Kerley might be given more emphasis, namely, that many tonsils and adenoids had been removed that need not have been removed on the assumption that the troubles of which the child was complaining were due to that source, when, in fact, they were quite often caused by faults in the metabolism or in feeding. He was glad that Dr. Kerley had brought out that point.

Dr. BERMAN said that in reference to Dr. Chapin's remarks, they were interested to see the figures of Dr. Chapin and Meyers, published in the American Journal of Diseases of Children, showing a hyperglycemia in children suffering from recurrent vomiting. They were published when Dr. Kerley and he had practically completed their studies, and they confirmed and were in accord with their own results. However, they were practically all obtained in institutional children. It should be emphasized that their studies were made in private patients, under the conditions of everyday life. Institutional life meant a definite and abrupt change in the régime of the child which must reflect itself in its metabolism. The two sets of results were, therefore, not strictly comparable. The same comment applied to what Dr. Schwarz had said regarding his work on the blood sugar in cases of sugar intolerance. Besides, sugar intolerance and the suboxidation syndrome were not necessarily synonymous. Then he employed Epstein's method, whereas they had used, on the advice of Dr. Benedict, a finger blood modification of Benedict's revised picric acid and picrate method. The figures they obtained with their controls in 92 cases of the most varied conditions, varying between 80 and 125 mg. per 100 c.c. were absolutely comparable with those obtained when one used larger quantities of blood. The only other criticism possible of their results was their relation to meal-time. These determinations were made in the afternoon, at least two and one-half, and in most four or five hours after lunch, which as far as carbohydrate was concerned was the lightest meal of the day for these children. In view of these facts Dr. Schwarz's results could not be compared with theirs. A question had been asked about the relation of the caloric values of the children's diets to the suboxidation syndrome. They had not gone into the question of the exact caloric values of the diets, but it was obvious from the dietetic schedules that the children were being calorically overfed on the foods of the highest caloric value, milk, milk fat and cane sugar. It might be interesting to go into the evidence that justified the use of the term "suboxidization syndrome." The earliest metabolic study of recurrent vomiting, the typical symptoms of the syndrome, was made by Holt sometime in the nineties. He showed that at the height of the attack there was an increase of some

200 to 400 per cent. in the amount of uric acid excreted, corresponding to that found in the crises of gout. Then Rachford of Cincinnati showed a marked increase in the paraxanthin and heterxanthin bodies of the urine in the attack, and he had put down this as well as the increase in uric acid to a break in the chain of oxidation of the nucleic acid molecule. Then Howland and Richards redirected attention to the importance of the suboxidation of the carbohydrate molecule by their finding of lactic acid in the urine at the height of the attack, later confirmed by Underhill and Steele—lactic acid having been definitely established by Lusk as a product of the break in the chain of oxidation of glucose in the organism. They also showed in experimental animals, poisoned by cyanide and chloroform which interfered with body oxidation in general, that with general symptoms of intoxication, including vomiting, there occurred in the urine lactic acid, and an increased neutral sulphur, that was to say oxidized sulphur. Finally Sedgwick of Minneapolis and Mellanby of London showed that at the height of the attack an increased creatonuria, creatin and creatin metabolism did not belong to the realm of certainties, and definitely demonstrated conclusions, but that there was a relation between an increased creatinuria and interference with the course of carbohydrate metabolism many investigators agreed. All the evidence pointed to a suboxidation occurring at least paroxysmally in these children. Their work showing the existence in them of a hyperglycemia when apparently well, proved that there was in them a continuous disturbance of metabolism, which went on to crisis. The fact that between attacks there was a hyperglycemia, was interesting as pointing possibly to the biological value of the attack as an attempt to get rid of suboxidation products. A synthesis of all these findings had been attempted in the term "suboxidation syndrome."

Frozen Milk.—Dr. HAROLD RUCKMAN MIXSELL presented a résumé of the literature on this subject from which he drew certain conclusions. He stated that during the past three years, and particularly during the severe winter of 1917-1918, he had been asked repeatedly by patients about frozen milk and as to whether its use was harmful in infant feeding. In some instances milk delivery was prevented for two or three days by snow drifts, and was accordingly four or five days old when used plus having been frozen. At that time, and indeed ever since, Dr. Mixsell said he had advised against the use of this milk, although he had only a precedent to go by. A review of the literature showed a scarcity of material on this subject and also a confusing difference of opinion about various points which still remained to be cleared up. The first record of the use of frozen milk in commerce which the writer had found in the literature was contained in an article by Duclaux, written in 1896. Duclaux admitted that milk delivered in cold countries in a frozen condition had a changed taste, without the ordinary flavor, and that there was less cream. He believed, however, that with the aid of refrigerating machines these difficulties were not insurmountable. After making analysis of the upper and lower portions of cakes of milk frozen almost instantaneously by the method described by Duclaux, this authority concluded that if frozen milk were allowed to thoroughly melt, and if it was mixed to insure its homogeneity, no particular change in the taste occurred. He found the milk in the upper parts of the cakes more dilute and that in the lower part more concentrated than the original whole milk. C. Mai (Molk. Zeit., Berlin, 191.2 22-No. 18, pages 207-208) obtained rather similar results to those of Duclaux. The bacterial changes that occurred in milk at low temperatures had been studied by various investigators. Among these Pennington (*Jour. Biological Chemistry*, 4-1908, et ibid 16, 1913-1914) conducted experiments upon certified milk and ordinary market milk, the two being run side by side and the results compared. It was found that the bacteria increased markedly in numbers *after the first 48 hours*. Bacterial growth at the end of a week, even in the cleanest milk which contained 300 bacteria to the cubic centimeter, was pronounced. After six weeks it often passed the billion mark per cubic centimeter. In spite of the freezing an enormous increase in the bacteria occurred, and it was found that there was neither odor nor taste to indicate that this had happened. Another interesting point was that the milk did not curd even on heating, and it was not until the putrefactive organisms had multiplied that its use to the casual ooserver was contraindicated. A classification of a chemical basis of the organisms occurring at these low temperatures showed that there were constantly present bacteria which formed acid, and bacteria which acted on proteid. There were also neutral organisms which formed neither acid nor alkali and did not act on gelatin. The acid forming organisms were generally in relatively smaller numbers than were found when milk was kept at higher temperatures, and the liquifying organisms were more numerous. Certain species, such as *B. fornosus*, *R. solitarius* and *B. Ravenel* were especially resistant to cold. Coincidentally with the bacteriological study of milk samples there was made a chemical analysis of the changes occurring in the protein. This showed that the casein was rapidly digested and finally more than 50 per cent. of it was changed to soluble compounds. Caseoses, amino-acids, and probably peptones, increased rapidly at the expense of the digested casein. This was pronounced at the end of two weeks. In more recent experiments Pennington had come to the conclusion that the proteolysis of the casein was primarily of bacterial origin, and that the proteolysis of the lactalbumin was due, primarily, to the native enzymes of the milk. They also determined that milk enzymes and the bacterial flora combined, gave rise to more rapid proteolytic changes than were produced by either agent alone. This involved a breaking down of the true proteins and their passage through peptone and caseose to the amino-acids. The determination of the acidity by the $\frac{N}{10}$ sodium hydrate- phenolphthalein test showed that there was a much higher acid content after two weeks than is ordinarily required for curdling—which seldom happened. Milk having this high acidity, even when placed in an ordinary ice-chest, did not curd even when exposed to higher temperature. In regard to the effect of extreme cold on the carbohydrate constituents of milk very little was konwn. That there was some change was indicated by the quite marked increase in acidity which had been determined by the $\frac{N}{10}$ sodium hydrate-phenolphthalein test. Hepburn had also shown that the lactose content decreased after milk had been frozen. Pennington also conducted a series of experiments on the fat content of frozen milk. She found that the iodine number and the index of refraction of the butter fat remained unchanged, while the Reichert-Meissel number showed no marked change. All the progressive changes noted were caused by the vast increase in bacteria, and were accompanied by the progressive lowering of the freezing point of the milk. In regard to the action of frozen milk on the digestion of an infant or a young child there was a wide divergence of opinion. There should be no reason for the belief that frozen milk elaborated toxic substances which would disagree with the average bottle-fed baby. Kerley spoke in his text-book of having fed many thousand quarts of frozen milk to infants under his care during the past 30 years. The crux of the whole matter seemed to be in insuring the homogeneity of the milk by properly melting and mixing it before it is used. Heineman, however, said that under no conditions was thawed milk exactly the same, in every respect, as unfrozen milk. This, he stated, was due to the fact that the water froze at first at the outside on the wall of the vessel; the solids were forced towards the center, the fat rose and was partially churned when the milk froze. The natural emulsion of fat was never completely restored after thawing, and the casein appeared in flakes rather than in the original collidal condition. The emulsion of fat was destroyed more rapidly than the colloidal condition of the casein. It was probably on account of this that thawed frozen milk might decompose more rapidly than normal milk. It was therefore essential that it should be used immediately if at all. Rosenau also stated

that "Milk cannot be preserved indefinitely simply by the use of cold, since even at freezing some of the bacteria continue to grow and multiply, and putrefaction slowly takes place." . . . for freezing might alter its composition and render it undesirable. The essayist stated that owing to the marked differences of opinion, he had made it a rule in the past to advise the use of either dry milk or unsweetened condensed milk in cases in which the milk has been frozen, especially among young children. He had heard indirectly of cases of severe diarrhea following the use of frozen milk and it was on this account that he recommended the above milk preparations as alternatives. Owing to the divergence of opinion it was better for the pediatrist to substitute a temporary formula of either dry milk or cendensed milk for milk which was frozen, especially in feeding young children.

Dr. HERBERT B. WILCOX recalled that some years ago attention had been directed to this subject and a number of cases reported in which the trouble was believed to be due to frozen milk. Dr. Talbot of Boston had reported twenty or thirty cases, and spoke of the effect of frozen milk as being constitutionally depressing rather than as producing a definite type of intestinal lesion. At Bellevue they had quite a number of cases of gastrointestinal disturbance during the winter, and in investigating the cause found that the milk they had been getting had been frozen in the cans. There were forty-six children affected, varying in age from a few weeks to several months. All but seven of these, before taking the frozen milk, were non-complicated feeding cases. The majority of these children were getting raw milk mixtures, some were getting raw skimmed milk, a few were on boiled milk and a few on Eiweiss milk. Some were taking milk with a high fat content and some were taking fat-free milk. In this series of cases two facts stood out most prominently: one was that the thirty-six children who were worst were the ones taking the whole milk unboiled. Those who were least affected were the ones taking boiled skimmed milk. The most striking symptom in these cases was the appearance of the stools. Diarrhea was present which varied in intensity from two to three to eight or nine movements a day. The stools were light green, non-homogeneous, and covered with a thick layer of mucus. They were all alkaline. Over one-half the children vomited their food and afterward continued to try to vomit until the next meal. The loss of weight was striking. Three of the children in this series were severely depressed and one died. No study of the milk was made except to find the bacteriological count, and that did not vary much from the ordinary count. It seemed that freezing produced a definite effect on the milk so that it caused vomiting and a peculiar intestinal toxemia. From these observations it seemed possible that there was some change in the fats and also in the casein.

Dr. CHARLES GILMORE KERLEY said he thought there was no doubt whatever that a substance as delicate as milk must be influenced by freezing. Dr. Wilcox's observations were very interesting, but the condition of the milk before freezing was not known. It was possible that some other factors besides the freezing might have been involved. The fact was that very little milk reached the city between January 1 and March 1 that had not been frozen before it reached the consumer. Hence it seemed to him that if frozen milk was much of a factor in producing intestinal disturbances in children we would see many more cases that could be traced to this source than we did see. However, they were very much indebted to Dr. Mixsell for having made a study of this subject, and he would be glad to use his work for reference.

Dr. SMITH said it seemed that there were two things pretty definite about frozen milk: First, that some frozen milk certainly poisoned some children and, second, many children took it without any apparent ill effects. It had been his experience that after a cold snap he always received a good many telephone calls from mothers who reported a gastrointestinal disturbance after using frozen milk. If the children were put on barley water the condition cleared up in twenty-four hours. It was well to bear in mind that a great many things might happen to milk as the result of freezing and to have milk boiled after it had been frozen and where there had been undue delay in delivering it. It was not uncommon during a cold snap to see bottles of milk bearing a three-day old label, and that might be one factor in producing results that had been attributed to freezing. There had been some study of what happened to milk that was frozen and thawed, but not of what changes took place when it was frozen and thawed and again frozen and thawed out. Was it not possible that freezing changed the inhibiting qualities to bacterial growth and that milk that had been frozen became toxic more quickly after being thawed than did that that had never been frozen and thawed? It seemed that boiling the milk after it had been frozen did detoxicate it. At the time they had that epidemic at Bellevue they were using Grade B. Milk in cans and that might not have been as good milk to withstand the effects of freezing as some other milk.

Dr. ELIAS H. BARTLEY asked about some cream kept three or four months in cold storage, whether that was known to poison anybody. In April and May when milk was abundant the cream was separated and placed in cold storage. It was not frozen but was kept very close to the freezing point. It was true that such milk and cream did sour very rapidly after being taken out of cold storage. Dr. Bartley said it had once been his duty to investigate a case in which ice cream had caused wholesale poisoning. He found one particular can from one particular farm which had been kept back over two weeks. This was kept in spring water and evidently in this case the long keeping had produced a change in the cream. When kept in cold storage cream did not become poisonous and he judged from what the reader of the paper said that the casein must be changed—that a proteolysis took place, altering the protein constituents. If at the end of two weeks there was a development of amino-acids sufficient to be detected by chemical tests at the end of three months there must be quite a considerable change of that kind in the casein, yet if this was so it was rather surprising that we did not see more cases of gastrointestinal disturbance due to the consumption of such cream.

Dr. J. FINLEY BELL said that it was not so much a question of chemistry as of bacteriology. The lactic-acid producing bacteria were destroyed and spore-bearing organisms left unharmed.

Dr. MIXELL, in closing, said he had nothing to add. He had simply endeavored to review the literature, he had had no experience on the clinical side of the question. He believed it better however, to play safe and to give some other form of milk rather than that that had been frozen. The age of milk and the duration of the freezing were factors to be considered. The concensus of opinion was that milk should be used within forty-eight hours, because up to that time there was no bacteriological change, but after that time there was an increase in the bacteria, and putrifying bacteria increased very rapidly. Putrefactive bacteria were a great factor in the decomposition of milk that had been frozen.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

FLORIDA STATE BOARD OF MEDICAL EXAMINERS.

Jacksonville, June 14, 1920.

(*Concluded from page* 378.)

SURGERY.

(Answer *ten* questions only.)

1. Give differential diagnosis of coma from injury, alcoholism, opium poisoning, apoplexy, and uremia.
2. Define thrombosis, phlebitis, varix. Give causes for each.
3. Give diagnosis and treatment of Pott's disease.
4. Give etiology, symptoms, and treatment of osteomyelitis.
5. What is shock and how would you combat it?
6. Give differential diagnosis between fracture of neck of humerus and dislocation of shoulder joint.

7. (*a*) Describe Colles' fracture; (*b*) Give treatment.
8. (*a*) Give constitutional effects of burns; (*b*) Give treatment.
9. (*a*) Give differential diagnosis between acute appendicitis and renal colic; (*b*) Describe operation for removal of appendix.
10. (*a*) Give causes of intestinal obstruction; (*b*) Give symptoms of intussusception and its treatment.
11. (*a*) Give the most common varieties of fistula; (*b*) How would you operate for the radical cure of complete fistula in ano?
12. (*a*) What are the indications for enucleation of the eye? (*b*) Describe the operation.

ANSWERS.

SURGERY.

1. The following table, from Eisendrath's *Surgical Diagnosis*, gives the diagnosis:

COMA FROM INTRACRANIAL INJURY.	APOPLECTIC COMA.	UREMIC COMA.	ALCOHOLIC COMA.	OPIUM POISONING.
Deep coma; may have history of onset after fall or injury. Evidence of fracture of vertex or base.	Deep coma; sudden onset. If any injury, only a scalp wound.	Deep coma. Slow onset unless convulsions have preceded the coma.	Can be aroused by supraorbital pressure unless very profound.	Can be aroused unless very deep.
Pupil dilated on side of lesion. Choked disc.	Pupils unequal or dilated. Contracted in hemorrhage into the pons.	Albuminuric retinitis.	Pupils normal or somewhat dilated.	Pupils contracted to pinpoint size.
Pulse very slow.	Pulse full and slow, often arteriosclerotic high-tension pulse.	Pulse rapid.	Pulse more rapid than normal, and full.	Pulse rapid, may be irregular.
Respiration slow and stertorous.	Respiration slow and irregular.	Respiration frequent and irregular.	Regular respiration.	Respiration very slow —may be 6 to 8 per minute.
Temperature higher—101°.	Temperature higher on paralyzed side, but lower in rectum.		May be low or normal.	
Urine normal or contains trace of albumin.	Urine contains trace of albumin, but may be same as in uremia.	Urine shows albumin, casts, and low urea percentage.	Normal.	Normal.
Hemiplegia on opposite side to that of injury. If contusion of brain is also present, may have generalized convulsions.	Hemiplegia with convulsions on one side.			

2. THROMBOSIS is the coagulation of the blood in any part of the circulatory system. *Causes:* Changes in the vessel walls, such as injury, inflammation or degeneration; changes in the blood; and diminished rate of the blood stream.

PHLEBITIS is inflammation of the wall of a vein. *Causes:* Injury or pressure, thrombosis, inflammation, microorganisms.

VARIX is a vein which has become permanently lengthened, dilated and more or less tortuous. *Causes:* Weakness in the wall of the vein, irregularity in the arrangement of the valves, prolonged standing, severe exertion, wearing of tight garters, pressure, heavy lifting, strains.

3. *Pott's disease of spine:* "There are three typical signs: pain, rigidity, and deformity; and there may be abscess and paraplegia. Rigidity is the most important of these signs. 1. *Pain.*—In the early stages it may be only of an aching character. Local pain is that felt in the situation of the diseased bones, and tenderness may be elicited by percussion over the spinous processes. Referred pain is produced by pressure on the roots of nerves in the intervetebral foramina, and is felt at their cutaneous terminations. If in the lumbar region pain may be felt in the legs; if in the dorsal region, pain may be felt in the abdomen, chest, or arms; if in the upper cervical region, pain may be felt over the upper part of the chest or back of the head. 2. *Rigidity* is invariably present. In the early stages it is due to muscular contractions to steady the painful part. In an adult it can be demonstrated by getting him to go through various movements while a hand is kept over the suspected area. The limitation of movement is better felt than seen. In a child, it is better to lay it on its face and test the flexibility by grasping the ankles, and so raising the legs and pelvis. If rigidity is present, the whole body is raised instead of the back being curved. In the later stages, when repair has taken place, the rigidity is due to bony ankylosis. Secondary curvatures restore the upright position of the body. 3. *Deformity* is due to falling forward of the upper part of the spine as the vertebral bodies become destroyed, so that cases cured in the early stages present none. Where only two are involved the deformity is angular; where a large number are affected the deformity is a curvature. When the curvature is in the dorsal region, the sternum becomes convex anteriorly, and the intercostal spaces are diminished or obliterated."

"*Treatment* consists chiefly in immobilizing the spine and taking the weight of the body from above the seat of disease by some form of support. The various methods are:

"1. *Rest.*—The patient should be kept on his back on a firm mattress, but never in the prone position, with firm sand-bags on either side to steady the body or neck, according to the seat of disease. If necessary, a plaster, poroplastic, or leather and steel jacket may be applied. Extension applied to the head and legs is of great value in the progressive stages.

"2. *Spinal Supports.*—So that patients may get about when the disease is quiescent, a support is necessary; children, however, require an apparatus which allows them, though still recumbent, to be carried out into the fresh air and sunshine. 1. *Phelps' box* is a wooden trough for the body, with two trunks running off it for the legs. The child is strapped into this, and kept there for two or three years, except when being washed. 2. *Double Thomas's splint:* This may be made with a head rest, to take off the weight of the head. 3. *Jackets* are used when the child is practically well. In adults they may be used after the first few months of rest. The jackets may be of plaster, poroplastic, or leather and steel. If the caries is in the cervical region, a jury-mast should be added, with chin and occiput straps to support the weight of the head. The apparatus should be worn for at least a year after recovery is apparently complete. The general treatment consists of good feeding, tonics, fresh air, and sunshine. Forcible straightening of deformity is not to be recommended."—(*Aids to Surgery.*)

4. *Acute infective osteomyelitis.* Causes: The general vitality is lowered, and there is some focus of ul-

ceration in the mouth or throat, by which organisms enter and circulate in the blood. All that is now necessary is that some part of the bone should have its vitality depressed by a blow, strain, or exposure to cold, and the organisms then attack it. The bacteria most commonly found are the staphyloccocci, but streptococci are present occasionally. The disease usually begins in the new growing bone at the end of the diaphysis, rarely in the epiphysis. The lower ends of the femur and radius, the upper ends of the tibia and humerus, are the commonest seats.

"*Symptoms.*—The disease begins with a rigor, high temperature, and severe pain. The part becomes swollen, infiltrated, and congested, with distended veins over it. The pulse is rapid and small and the tongue dry, and delirium soon comes on. It should be distinguished from acute rheumatism by the fact that the interarticular and not the articular region is affected. Fluctuation can be detected if the bone be superficial, or the abscess may burst on the surface. The bone is then found to be bare over the extent of the abscess cavity. When the bone is deeply seated or the disease confined to the medulla, the swelling is later in evidence, but the pain and toxemia are very severe, and the patient may die from this before local signs show themselves. When the epiphysis is attacked, septic arthritis often quickly follows, and a loose flail joint may result.

"*Treatment* must be very prompt. A free incision must be made through the periosteum and the pus evacuated. In any case, whether pus is found or not, the surface of bone must be gouged away to expose the medulla freely, and any gangrenous tissue scraped out. The cavity must then be washed out and freely drained. The wound in the soft structures is not closed in any part. If symptoms of pyemia occur, it may be necessary to amputate the limb through the joint or bone above, so as to cut off the source of emboli. When a large portion of or the whole diaphysis is necrosed, there are two courses; either to cut short the disease by removing the dead portion at once, or to leave the sequestrum to stimulate the formation of an involucrum. Where there is a single bone, as in the arm and thigh, the sequestrum is left; where there is a double set of bones, as in the forearm and leg, the sequestrum is removed at once. Celluloid, zinc, and ivory rods have been inserted to stimulate osteogenesis. In most cases it is doubtful how much bone is actually dead, so that it is better to open up the cloacæ in the newly formed involucrum to remove the sequestrum. The cavity heals by granulation."—(*Aids to Surgery.*)

5. *Shock* is the name given to a sudden and general depression of the vital powers due to some strong stimulation (such as injury or emotion) acting on the vital centers in the medulla, and producing vasomotor paralysis.

Treatment of shock: Place the patient in the recumbent position, with the head low, apply warmth to the body, administer a stimulant and give a hot saline infusion; morphine hyperdermically, may be necessary for the relief of pain. Adrenalin solution is administered into the arterial system.

In surgical operations *shock may be largely prevented* by reassuring nervous patients, keeping the patient warm, the avoidance of the excessive catharsis and semi-starvation that often prevail before operations, and administration of strychnine and atropine before operation, the avoidance of delay and undue handling of parts during the operation, prompt checking of hemorrhage, and by using the utmost gentleness.

6. In *fracture of the surgical neck of the humerus*, the head of the humerus will be found in the glenoid cavity, but it will not rotate with the shaft; the arm will appear shorter; and crepitus and abnormal mobility will be elicited unless there is impaction.

In *dislocation of the shoulder joint*, the glenoid cavity will be empty, and the head of the bone will be found in an abnormal position; the arm will appear longer; there will be no crepitus, and no abnormal mobility.

7. *Colles' fracture* is a transverse fracture at lower end of radius; it is due to falls on the outstretched palm. The line of fracture is about an inch above the wrist, and runs obliquely downwards from behind. The lower fragment is driven backwards and upwards, and rotated to the radial side, carrying the hand with it into the position of abduction, and leaving the tip of the radius at the same level as, or higher than, the tip of the styloid process of the ulna. The internal lateral ligament of the wrist is ruptured or the styloid process torn off. The fracture is usually impacted, the upper fragment being driven into the lower. The deformity is characteristic, viz.: (1) the hand is abducted; (2) the styloid process is on the same level as, or lower than, the tip of the radius; (3) the upper end of the lower fragment projects above the back of the wrist; on the front is a corresponding depression, while above it the upper fragment projects forward. Union occurs readily, but it is common to get deformity and adhesions about the site of fracture. *Treatment:* Disimpaction and reduction are brought about by grasping the hand by the "shaking-hands" grip, extending and adducing the hand and lower fragment. The arm is then fixed on a splint. It is very important in this fracture to start massage and passive movement not later the end of the first week, to prevent stiffness. Union is firm in three weeks.—(*Aids to Surgery.*)

8. *Constitutional Effects of Burns:* "1. The symptoms of the first stage are intense pain, and shock varying with the extent and severity of the burn.

"2. If the patient survives the shock, fever develops, due at first to the absorption of toxins, the result of destruction of the tissues, and later to the suppuration which follows. There is a marked leukocytosis and polycythemia, and an increase in the coagulability of the blood, which sometimes leads to extensive thrombosis and subsequently to embolism. The internal organs in a severe burn become congested, and actual inflammation of some of the viscera may ensue. Congestion of the brain or lungs is not infrequent, but the viscera most apt to be affected are the kidneys, giving rise to albuminuria and decreased quantity or even suppression of urine, and the gastro-intestinal canal, causing vomiting and diarrhea, and later ulceration, especially in the duodenum (*Curling's ulcer*). Duodenal ulcer is supposed to be due to the irritation of toxin laden bile; it has the same symptoms and treatment as that due to other causes. Delirium or convulsions may occur from congestion of the brain. During this stage, which lasts from two to five weeks or longer, there is active suppuration with the separation of sloughs.

"3. During the stage of repair there may be no constitutional symptoms except, perhaps, weakness or anemia, unless the wounds are very large and freely suppurating, when there will be some fever (hectic), and possibly amyloid disease if the suppuration persists for a long time." (Stewart's *Manual of Surgery.*)

Treatment of Burns—General: If carbonic-oxide poisoning is present, artificial respiration and administration of oxygen. For shock, opium and stimulants. Local.—For burns of the first degree, powder with boracic acid. Puncture blisters, and cover the part with an antiseptic dressing. Burns of deeper degrees than the second must be made aseptic with 1 in 1,000 perchloride of mercury. Carbolic acid is absorbed readily, and must not be used. Antiseptic gauze dressings should then be used. Picric acid (20 grains to 1 ounce of water) is used as a dressing. It lessens the pain, and can be left on two or three days. The continuous bath may be used. If the burn be of any size it should be skin-grafted, as the scars of burns contract very much, and may produce deformities.—(*Aids to Surgery.*)

9. *Diagnosis of acute appendicitis:* "When the three cardinal symptoms of the disease are present—that is, sudden onset of acute abdominal *pain*, followed by *vomiting*, occurring in one previously well; unilateral *rigidity* of the right lower abdominal wall; *tenderness* over the site of the appendix—the diagnosis of appendicitis is warranted in nearly every case. . . . Failures in diagnosis, however, may often be explained by the fact that the initial symptoms were insignificant, were lost sight of, or were obscured by the injudicious use of opium." (Deaver).

In *renal colic*, the tenderness is not localized, the pain radiates to the groin and testicle, there is hematuria, and an *x*-ray picture will often show the location of the calculus.

Operation for Removal of the Appendix.—"An in-

cision is made at right angles to a line (at the junction of the outer and middle thirds) joining the umbilicus and anterior superior iliac spine, one-third being above and two-thirds below it. The cecum is found, and the anterior longitudinal band is traced down to the appendix, which usually comes off from the inner side and runs inwards and downwards. If not found there, it should be looked for in the retrocecal pouch or on the outer side of the cecum. The meso-appendix should be ligatured and cut through, a collar of peritoneum turned back, and the mucous and muscular coat ligatured near the base and cut off. The peritoneum should be stitched over the stump, and then the stump should be invaginated into the wall of the cecum by running a purse-string stitch around it."—(*Aids to Surgery.*)

10. *Causes of Intestinal Obstruction:* Strangulation, kinking, volvulus, intussusception, foreign bodies, tumors in the intestinal wall or pressure due to tumors outside the bowel, fecal accumulation, and stricture.

Acute intussusception "is most common in children. It begins suddenly with severe abdominal pain and vomiting. Blood-stained mucus is passed, perhaps with tenesmus. Collapse soon comes on, and may be fatal in twenty-four hours; otherwise death occurs in a few days from peritonitis. In most cases a 'sausage-shaped' tumor can be felt, usually along the course of the colon, but lower down, or just above the pubis. The right iliac fossa feels empty. A natural cure may follow, but rarely, from sloughing of the intussusceptum, while the peritoneal cavity is protected by adhesions uniting the entering and ensheathing layers.

"*Treatment:* The reduction of the intussusception at the earliest possible moment is the only treatment admissible, and this can only be done with certainty by operation. The abdomen should be opened over the tumor if it can be felt; if not, in the mid-line below the umbilicus. The intussusception is then reduced by squeezing out the entering portion, beginning at the lowest part. The intestine should never be pulled out, for fear of tearing it. If there is any difficulty, the wound must be enlarged and the lump brought out. If, owing to adhesions, reduction cannot be done, the intussuscepted portion must be excised through an incision in the ensheathing layer, but the outlook is bad in these cases. If the bowel is gangrenous, the condition is so bad that nothing more can be done than to bring out the coil and establish an artificial anus. If, owing to any reason, an operation is not possible, non-operative procedures must be tried. These consist of attempting to reduce the invagination by inflation with air, or better still, by fluid. A catheter is passed into the rectum, and fluid poured in from a funnel raised not more than 2 feet. A hand is placed over the tumor to feel when the lump disappears. The objections to this are that after twelve hours reduction cannot be obtained by this method; that valuable time is wasted if it fails; that you cannot tell if the last inch has been reduced (and if it has not, recurrence is certain); that it is no use in the enteric or ileocolic forms; and that the bowel may be ruptured." (*Aids to Surgery.*)

11. FISTULA IN ANO.—*Classification:* There are four varieies: (1) The *complete*, which opens into the rectum internally and on the perineum externally; (2) the *external incomplete*, or *blind external*, which opens on the perineum but not into the rectum; (3) the *internal incomplete* or *blind internal*, which opens into the rectum but not on the perineum; (4) the *horseshoe* fistula, which extends around the rectum and opens on each side. The internal opening is generally between the two sphincters, but may be above the internal sphincter and below the external sphincter. There may be several pockets or side tracts extending in different directions.

Treatment: This consists in "the conversion of the fistula into an open wound so that it may heal from the bottom. A grooved director is passed through the fistula into the rectum, and the overlying tissues severed with a bistoury. The sphincter should never be cut more than once, because of the danger of incontinence. All branching sinuses likewise should be opened, and all fibrous tissue, with undermined skin, cut away with scissors. The bleeding is then checked, and the wound packed with iodoform gauze. If the fistula is lined with mucous membrane it must be completely excised. A blind external fistula may be excised and the wound sutured. A blind internal fistula may be converted into a complete one and treated as above. The bowels are confined for the first three or four days, and the wound dressed after each defecation, being irrigated with creolin and repacked with iodoform gauze." (Stewart's *Surgery.*)

12. The *indications for enucleation of the eye* are: "(1) Injuries of the ciliary region when the eye is completely blind, or the traumatism so extensive that the form of the eyeball cannot be preserved; (2) traumatic iridocyclitis, to prevent or cure sympathetic ophthalmia; (3) severe pain in a blind eye; (4) iridocyclitis, phthisis bulbi, and glaucoma, when accompanied by severe pain or inflammatory symptoms, and when the eye is blind or is certain to become so; (5) malignant tumors, either intraocular or epiocular, if they cannot be removed with retention of the eyeball; (6) anterior staphyloma, if the eye is blind, troublesome, and disfiguring; (7) panophthalmitis, after the suppurative stage is passed; (8) foreign bodies in the eye when they cannot be removed and cause irritation, or the eye is blind." (May's *Diseases of the Eye.*)

Enucleation of the eyeball is performed as follows: "A general anesthetic is generally given. After introduction of the speculum, the conjunctiva is divided all around the cornea, as close to its border as possible, and dissected back as far as the insertions of the recti muscles. A squint hook is passed beneath the tendon of the internal rectus, and the latter is divided with the strabismus scissors close to its insertion; then the other straight muscles are cut in the same way, together with the subconjunctival connective tissue for some distance beyond the equator. The points of the scissors must always be directed toward the eyeball and the latter stripped as clean as possible to avoid any unnecessary removal of orbital tissue. Instead of commencing with a circumcorneal division of the conjunctiva, we may begin with a tenotomy of the internal rectus and then divide the conjunctiva as we pass from tendon to tendon. The hook is passed around the globe to make sure that the attachments of the muscles have been completely divided. The eyeball is then dislocated forward by pressing the speculum backward, and thus the optic nerve is put on the stretch. A pair of enucleation scissors, closed, are passed between sclera and conjunctiva, feeling for the optic nerve; they are withdrawn, slightly opened, and the nerve is divided close to the sclera. The eyeball is held between the thumb and index finger of the left hand, and the oblique muscles, and other unsevered attachments are divided. The orbit is plugged for a few minutes to control hemorrhage, and the conjunctiva is usually closed with a single suture, which is passed through its edge at intervals and tied like the string of a pouch. The eye is bandaged and the patient kept in bed for a day." (May, *Diseases of the Eye*)

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THE ABANDONMENT OF THERAPEUTICS IN MEDICAL SCHOOLS DUE TO NEGLECT OF ITS CURATIVE SUBDIVISION: PHARMACO-ENDOCRINOLOGY.*

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PHILADELPHIA.

YOU will recall that at our last meeting, one of our members, Dr. Spencer L. Dawes, a trained teacher of therapeutics, delivered an address entitled "The Repudiation of Materia Medica and Therapeutics in Modern Medical Teaching," which began with Marc Antony's admonition: "Friends, Romans, Countymen, lend me your ears; I come to bury Cæsar, not to praise him." I have, unfortunately, no classic sentence to convey my meaning so tersely but I might say: "Friends and Fellow Members, I have not come to bury Therapeutics, but to revive it."

Referring you to Dr. Dawes's paper for details,[1] I will merely recall that after recognizing in glowing terms the progress made in almost every branch of medicine, he earnestly deplores the practical abandonment of the teaching of materia medica and therapeutics in our medical schools. "Those who dominate to-day," he said, "require of a graduate two very valuable requisites: they must be able to make a diagnosis and they must know pathology and be able to make an autopsy so as to confirm their diagnosis. But treat disease, cure the sick, relieve pain and suffering—nonsense! What true scientist cares for such rot!" Another fellow member, Hobart A. Hare,[2] has graphically portrayed the evil effects of this attitude of most medical colleges upon the student, the young graduate, the interne, the medical man to whom men and women must entrust their lives and those of their children.

You will agree with me that we should deem it a moral obligation as members of the American Therapeutic Society to protest against any tendency on the part of any of our schools to divert students from their aspiration to serve suffering humanity loyally and honestly as physicians worthy of the name. Yet our obligations involve also the responsibility of inquiring whether there is not some deep underlying cause for this wholesale neglect of therapeutics, and whether it might not be possible to turn the tide.

An unlocated, open seam in the hull of a great ship has sufficed to sink it; personal analysis of the question in the course of seventeen revisions of the entire medical field for an Analytic Cyclopedia has suggested that quite as dangerous a defect exists in therapeutics. To say that there is nothing in this branch of medical science, as does the therapeutic nihilist, is naught else than testimony to his lack of knowledge upon the subject provided palliation of suffering and slowing the destructive trend of disease are deemed the sole objects of medical treatment. But may we compare the *curative* efficiency of our drugs with that of surgery, for instance—or with the wonderful showing of preventive medicine in smallpox. typhoid fever, and other destroyers of humanity?

What I deem the missing factor to be reminds me of Voltaire, the great French cynic, who, by the way, was at heart a religious man. Seeing on all sides churches dedicated to various saints, St. Peter, St. Paul, St. Luke, St. Clement, etc., he concluded that he would depart from the rule by dedicating a noble edifice to the greatest of all divinities, the forgotten One, God Himself. And thus it is with present-day pharmacology; apart from six or seven specifics and vermifuges, most of which were discovered before experimental therapeutics had seen the light of day, symptomatic treatment, very useful when used intelligently, that is to say when not interfering with Nature's own curative means, is the limit of our efforts. What should be our cardinal and paramount object, however, the cure of disease, as Dr. Dawes puts it, "is not even a secondary matter; it is simply ignored." He critically refers to the multiplicity of cults in the remedial field that have sprung upon all sides. Does this not in itself prove that pharmacology has failed in its avowed aim? Would these cults prosper if therapeutics had held its own with scientific progress in other branches of medical science which have had the preservation of life in view?

College authorities overlook a feature of overwhelming importance in this connection. They are undermining the very existence of medicine as a whole. Graduates will soon begin to realize that untrained in the treatment of disease, their calling will not be compatible with the trust reposed in them by their patients and increasingly abandon the field, leaving it open to the unscrupulous of all shades and kinds.

The salvation of therapeutics will depend, it seems to me, upon the degree of curative efficiency it can be made to attain. Were the pharmacologist to concentrate his efforts upon its main purpose, *the cure of disease, by studying the influence of drugs upon our defensive functions*, he would endow his chosen field with an attribute that would stimulate endeavor on all sides instead of repelling the practitioner, as he now does, with laboratory complexities

*President's address, delivered at the twenty-first annual meeting of the American Therapeutic Society, held at Philadelphia, May 7 and 8, 1920.

in which aggressiveness against the pathogenic factor has virtually no place. As Llewellys F. Barker worded it as far back as 1900, "pharmacotherapy is almost moribund"; let *cure* be the paramount aim of pharmacology once for all and its dying embers will be revivified into a bright flame that all medical men will hail as the great white light of their avowed aim.

How can pharmacology meet the needs of so desirable an end?

Over three decades ago, while editing the Annual of the Universal Medical Sciences, I had already realized, as Bichat had said a century before, that drug therapy was "not a science fit for a methodic mind," and, inspired by the doctrine of Confucius, that "undigested knowledge leads to confusion," set to work trying to introduce some order, where chaos already reigned supreme, through the light that clinical medicine, the ductless glands, and other collateral branches might cast upon them.[3]

Two discouraging factors, however, asserted themselves from the start. Even years later, these could be illustrated, by the estimates of well-known observers. Sollmann, our most prominent experimental pharmacologist, for instance, wrote in 1908: "Pharmacology cannot be classed as an art, nor a science, it can only be classed as a confusion." The same has been said by many concerning the prevailing knowledge of endocrine functions. Thus, Prof. Halsted, of Johns Hopkins, wrote five years ago: "It must be evident to everyone that there reigns the greatest confusion on the subject of the functions of the glands of internal secretion." That such is the case anyone can readily verify to-day by glancing through the literature on experimental endocrinology. Briefly, two great confusions were available as sources of knowledge to carry out my purpose! This led me to seek for truth independently, *i.e.* irrespective of conclusions previously reached by others, with what experimental and clinical data had been published up to the dawn of the present century. The product of this labor was published as you well know in two large volumes, the first of which appeared at the beginning of 1903.

Those of our fellow members whom, for so many years, I have addressed since then upon endocrinological subjects, well know that my views, particularly those derived from the clinic, often failed to harmonize with those of psysiologists and pharmacologists. Beginning with the adrenals, I failed to find in the sick human biped, though anxious to do so, what physiologists saw in their comparatively diminutive and healthy laboratory quadrupeds. I did not find, for instance, that therapeutic doses of adrenalin or suprarenal gland inhibited the functions of the gastrointestinal canal, as physiologists would have us believe; in fact, these agents often had an opposite effect. Nor did I observe the much-talked-of inhibitory action on the pancreas, judging from the intestinal digestive processes. Even the effect on the blood-pressure failed to materialize in practice—only large doses of adrenalin or suprarenal gland or long continued dosage sometimes causing a rise—along, I might add, with effects recalling those of strychnine. Except in distinct hypoadrenia from any cause, where the pressure was low, the supposed blood-pressure raising power of adrenalin upon which the practitioner, in obedience to physiological precepts, had until recently depended two decades, proved misleading. Physiologists of the standing of Moore and Purinton, Hoskins and McClure, Young and Lehmann, and others, have themselves, in fact, proved the fallacy of this view. Indeed, as Walter Timme[4], a clinician, wrote after an extensive test in camp at Plattsburg, "If there is one thing adrenalin does *not* do it is to produce a rise of blood-pressure."

Yet, although physiologists were themselves finding erroneous the functions they had attributed to the adrenals, Swale Vincent[5] going so far as to state that evidence warranted the belief that these organs had no definite function, they were unconsciously accumulating evidence sustaining my own views—all fundamental—in their relations to therapeutics. Briefly, their labors have increasingly shown that the functions I had attributed to the adrenals in 1903 and 1907 had stood the test of time.

When I first undertook the study of the adrenals, much evidence, for instance, had been published tending to show that the process of respiration in the lungs was far from being established. This seemed to me to account for the many gaps in our knowledge of pulmonary and metabolic diseases. I had noted in the course of eight of the revisions of the medical field for my Annual of the Universal Medical Sciences. Indeed, the diffusion doctrine of respiration, so sterile as a source of help in the study of disease and therapeutics, and so costly, therefore, in human lives—and still taught, I regret to say—had been severely criticized for decades by physiologists of the first order, Paul Bert, Müller, Bohr, and others, who showed conclusively that the absorption of oxygen from the air in the pulmonary alveoli necessitated in the blood circulating through the lungs some substance capable of actually appropriating this gas. This conclusion was further sustained, as years went by, by Haldane, Lorrain Smith, and Vaughan Harley. Bohr and Henriques[6] concluded that it was presumably "a kind of internal secretion," the nature and source of which, however, remained undetermined. A comprehensive study of the question in all its phases, including a test of my conclusions in over one hundred diseases and nearly fifty drugs, enabled me to point out that the internal secretion sought was that of the adrenals. The adrenal secretion, after entering the vena cava and passing through the right heart, finally reached the pulmonary alveoli with the venous blood. Here, I held, it became a part of the hemoglobin, endowing this pigment with its power to take up oxygen from the air and thus converting it into oxyhemoglobin.

This conception has now been sustained by several experimenters. Menten and Crile[7] in 1915, and Menten[8] in 1917, found experimentally that adrenalin, which is present in the venous capillaries of the lungs, was capable of converting hemoglobin into oxyhemoglobin and of carrying on the respiratory process. I had adduced also considerable evidence, both direct and indirect, including some furnished by many physiologists as well as clinicians, that the adrenal secretion influenced general oxidation and metabolism and that it increased the intake of oxygen and the output of carbon dioxide. Recently, again, Tompkins, Sturgis, and Wearn[9] found that intramuscular injections of 8 minims of the 1-1000

solution of adrenalin caused an increase of the air intake, also of the total gaseous metabolism while augmenting the respiratory rate. It has been objected that the proportion of adrenalin secreted into the blood was too limited to carry on this function. But the adrenal principle, being an oxidizing catalytic enzyme, it is not destroyed while carrying on its functions, and *is secreted only to replenish loss* after marked fatigue or unusual excitement—a fact which explains, from my viewpoint, why Cannon observed an excessive production of adrenin in excited animals—his emotion theory. The adrenin forming part of the hemoglobin, and which has been found in the red corpuscles by Justus, is the real measure of the asset of adrenin in the blood, and not what the adrenal bodies secrete, which may be *nil* under normal conditions and excessive under excitement or stimulation.

What connection can this function, this direct connection between the adrenals and the respiratory process, both in the lungs and tissue cells, have with the cure of disease?

By the term "pharmaco-endocrinology" I mean *knowledge of the manner in which drugs influence the functional activity of the ductless glands.* If, for instance, we can with any drug enhance that of the adrenals, we are able, therefore, to increase at will not only respiratory activity, but also tissue metabolism, the very foundation of all functions. Again, many investigators, beginning with Abelous and Langlois, have also attributed, on good grounds, an antitoxic function to these organs. A. Marie, in 1912, showed that adrenalin caused active neutralization of bacterial toxins. This important defensive rôle finds its explanation in the function just described, that of sustaining as far as the oxygen supply is concerned, general metabolism. As metabolism includes among its effects stimulation of all organs and tissues which produce all defensive agents, both humoral and cellular, any drug capable of increasing the functional activity of the adrenals must enhance our resistance to disease. Have we any such drug?

As far back as 1903[10] I wrote: "Strychnine, of all agents, stands prominently as the most active suprarenal stimulant" for various reasons submitted at the time. In 1907[11] I further developed this view, citing among other data, H. C. Wood, Sr., and Cerna's observation[12] that the injection of strychnine produced an extraordinary increase in the respiratory air-movement, the increase varying from 75 to 300 per cent. Reichert, Kionka, and Mosso had also noted this phenomenon, which occurred as well in morphinized, chloralized, and curarized dogs as in normal animals. Obermeier[13] had also found that the excretion of carbon dioxide was greatly increased. Briefly, I then showed that its action corresponded, as to metabolic exchanges, temperature, blood-pressure, glycosuria, and other typical effects, with those of the adrenal secretion.

Here again, time has sustained me. In an elaborate study of the subject, Stewart and Rogoff[14] found that strychnine caused a marked increase of adrenin from the adrenals in the dog and cat, ten times the original output having been observed in some instances. The increase was not transient, but persisted during the hour and a half the experiment lasted. "Indeed," they state, "with the smaller doses the effect may go on increasing during the whole experiment." . . . "Doses of strychnine well within the therapeutic range and which cause little or no exaggeration of reflex excitability are capable of producing a considerable augmentation in the rate of output."

Need I urge that strychnine and nux vomica are our preferred tonics, as illustrated vividly by their efficiency in the asthenia following influenza? But this is not the only drug which stimulates the adrenals. If it were not for that curse of therapeutics, the drug addict, we would have in very small doses of cocaine, as well illustrated by the muscular power and resistance with which the Peruvian Indian is endowed by chewing the erythroxylon coca plant, a still more powerful "defensive tonic," if I may so term it. In digitalis and quebracho (aspidosperma) we have partial though powerful excitants of adrenal activity. In caffeine, coffee, and tea we also possess adrenal stimulants, but likewise only when used in moderation. Indeed, it is the intemperate or immoderate use of *any* stimulant that alone does the harm; even water drunk in excess has killed.

In excessive dosing lies also a misleading and most harmful feature of experimental pharmacology: the habit of giving internists as the physiological action of a drug, studied in animals, what toxic doses produced in them. The "inhibitory" fallacy of the action of therapeutic doses of adrenalin is a product of this error, the phenomenon being due to *excessive* constriction of the arterioles that supply the organs affected and arrest, therefore, of their functions. As Sollmann[15] says in this connection: there is no "good evidence for the theory of Eppinger, Falta, and Rudiger that epinephrin inhibits the internal secretion of the pancreas." This applies also to Ott's inhibitory action upon peristalsis insofar as therapeutic doses in man are concerned.

The foregoing examples show that it is quite possible to increase at will, with several drugs, the activity of the adrenals and therefore their antitoxic functions. Yet, how control the opposite condition, excessive activity of the adrenals?

We know that various disorders, sexual, muscular, and cutaneous, including hirsuties, etc., the symptom complex also of hypernephroma, are traceable to excessive adrenal activity, or hyperadrenia, or to the presence of an excess of adrenal tissue, adrenal rests, etc. This causes in some cases a pseudo-type of high blood-pressure due to excessive constriction of *all* arterioles, and the increased vascular tension behind them. Many cases of arteriosclerosis are traceable to excessive adrenal activity. How control this harmful process?

This action of the adrenal secretion, as is well known, is exerted upon the unstriated muscles of the arterioles, as demonstrated by two physiologists, Oliver and Schäfer, in 1894. Now, we have in nitrites *precise antagonists* to this function when the adrenals are overactive. Quite unaware of this action, Cushny[16] writes, for instance: "The seat of action of amyl nitrite is the unstriated muscle of the arteries and veins." Solmann also writes: "The fall of blood-pressure is due entirely to the extensive vasodilatation produced by the direct action of the nitrite on the arterioles. The vasomotor center is not inhibited." Practice proves that these statements are perfectly true. It is in the cases of per-

sistent hyperadrenia with high blood-pressure referred to above, that I have mainly observed what has rightly been termed pseudo-angina pectoris. How rapidly the nitrites and correction of dietetic errors will remove this disorder is well known. Benzyl benzoate, recently introduced by Macht, acts similarly.

We have now seen that we can actually govern with certain drugs the functions of a set of glands which influence not only the very life process itself through oxidation and metabolism, but also—and what is directly connected with our therapeutic aims—our autoprotective functions themselves.

This it not all, however. Other potent resources are at our disposal. One of these is the thyroid gland. I need hardly recall the powerful influence of this organ on metabolism—or rather on the catabolic phase of metabolism—that which causes the thyroid hormone to first break down fats, and then other soft tissues. But there is a function which physiologists and pharmacologists have always studied very imperfectly because it belongs in reality to a domain other than theirs, that of immunology. I mean the *defensive* function of the thyroid, so active at times that it destroys not only bacteria, toxins and toxic wastes, but also the tissues themselves. Among the large number of sufferers from disorders due to the thyroid apparatus observed in the clinical field—the school to which a great physiologist, Pawlow[18], referred as "an endless series of the most different and unusual combinations of physiological occurrences which never make their appearance in the *normal* course of life" —I have seen the erethitic and overactive thyroid steadily destroying body and mind, but I have also seen it yield permanently after a focus of infection, whether in the stomach, the intestines, the tonsils, etc., has been removed. Even that destroyer of adolescence, which has been sending 30,000 children to our asylums every year, dementia precox, is beginning to succumb to treatment in which the antitoxic and bactericidal functions of the thyroparathyroid apparatus were taken into account. In these cases the phosphorized fats of the cerebral cells were yielding with other fats to the catabolic influence of the thyroid hormone, secreted in excess to destroy the pathogenic agent—of intestinal origin in most cases. Have we not in all these cases evidence to the effect that poisons of various kinds may enhance thyroid activity? Why should not appropriate drugs also do it?

Again, who in the practical field does not know that the cretin and other hypothyroid subjects are highly sensitive to infections and that they succumb promptly unless the cause of their vulnerability is recognized and antagonized when they are exposed to an infection?

Referring to the paper read before this Society last year[19] in which I reviewed this whole question, I will merely recall that in 1907[20] I assimilated the defensive rôle of the thyroparathyroid apparatus to Wright's opsonins, its influence on metabolism causing it also to enhance the production of alexins in the sense given this term by Buchner, *i.e.* defensive proteins. This interpretation has also been sustained. Leopold-Levi and H. de Rothschild[21], of Paris, for instance, state: "Sajous has attributed among the functions of the thyroid body a role to the latter which he assimilates to that of opsonins and autoantitoxins. Miss Fassin, M. Stepanoff, and M. Marbé have confirmed on their side the influence of the thyroid on the blood's asset in alexins and opsonins." The first investigator did her work in the Bacteriological Institute at Liége, Belgium, the two latter at the Pasteur Institute of Paris. Lt.-Colonel McCarrison, of the Indian Medical Service[22], reviewing my labors and those of several other observers, also wrote: "While making every allowance for errors of observation, these and other findings of a like nature justify the belief that the thyroid gland contributes largely to the body's antitoxic and bactericidal functions."

Notwithstanding all the evidence available, which collectively would suffice to fill a volume, works of pharmacology make no mention of this defensive function of the thyroid; or if they do, it is merely to quote the observation of Reid Hunt, who found that while thyroid extract decreased the susceptibility of mice to acetonitril, it increased that of rats and other animals to the same poison. Now, acetonitril acting by freeing prussic acid, it is a paralyzant and cannot be expected to increase defensive activity. This applies also to various vascular depressants, which as such impair functional activity including our defensive resources.

The thyroid apparatus being undoubtedly endowed with defensive functions, how can these be brought into play by our drugs? Everyone knows that when all else fails, the iodides will often yield results. How these beneficial effects are produced has never been revealed. Cushny, for instance, says[23]: "Although the iodides have been more largely used in medicine than any of the other salts of the alkalies, their mode of action is still wrapped in obscurity." In referring to iodine, the same pharmacologist writes, however: "The administration of iodine leads to an increase in the iodine of the thyroid gland," and alluding to the symptoms of iodism and others, he adds: "Many other symptoms which have been observed under iodine treatment obviously arise from the excessive activity of the thyroid gland"—thus making it evident that it is through the "body's antitoxic and bactericidal functions" that the iodides produce their curative effects.

But we have more than the iodides. Our older members will doubtless remember that over three decades ago calomel was practically the sheet anchor as initial treatment in infections. And it undoubtedly saved as many lives as the modern highly trained physician exposes when he administers a nitrite—the household sweet spirit of niter—to offset the fever that Nature is evoking to check a disease. In 1907[24] I studied the effects of calomel and in an article containing eighty-one references, urged that in *very small* doses—never over 1/12 grain doses or less—those we used to call "tonic doses," calomel was probably our most powerful defensive agent. I then wrote, as I would now: "The functions of the pancreas, the thyroparathyroid apparatus, and the leucocytogenic organs being correspondingly activated, the quantity of autoantitoxin in the blood is augmented," all of which the more recent observations of Epstein and Pribram[25] and Krohl[26] have only served to confirm insofar as conferring immunity is concerned. This applies to all infections. In the hands of many, long ago, cases of diphtheria treated with calomel gave a mortality as low as antitoxin. Sellden[27] reported

1,400 cases treated by colleagues and himself with cyanide of mercury, the doses averaging 1/160 grain with a mortality of only 4.9 per cent. Another phase of the value of calomel is illustrated by a personal experience aboard a Cunarder returning from Naples in 1910. The ship surgeon came to me for assistance in checking an epidemic of diphtheria in the steerage which, despite the active and prompt use of antitoxin obtained from an excellent source, caused many deaths. The children, of Hungarian immigrant parentage, being found puny and ill-nourished, I advised, besides the antitoxin, calomel in doses averaging 1/12 grain every hour three times, then every two hours. The deaths ceased at once. By stimulating the defensive activity of the thyroid, the calomel caused the addition to the blood of antibodies which, added to those supplied by the antitoxin directly, promptly overcame the toxemia. Conversely, all those who have treated many cases of Graves's disease are familiar with the inhibiting influence of ergotin, arsenic, and other agents on the erethitic and overactive gland.

These examples, to which many could be added, must suffice to illustrate the resources that pharmacology offers when endocrinology is used as foundation to attain our object. The remedies used as examples being familiar ones, it would seem as if I had been treading a well-worn path. Yet, progress lies hidden behind their use as regulators of endocrine activity. As excitants of the ductless glands these well-tried agents can be made to promote the appearance, in the blood and cells, of antibodies as active in aborting disease in its incipiency as vaccines have proven efficient in preventing disease. As depressant of the same organs, other familiar drugs can be made to control exuberant activity sufficient to destroy body and mind, a morbid process typified by hyperthyroidism, and which prevails in several destroyers of mankind.

Last year, Sir Almroth E. Wright[28] wrote that the Great War had taught the surgeon that if he excised all devitalized and heavily infected tissues and brought the walls of the wound together, the protective mechanism of the body could, without antiseptics, deal successfully with every kind of infection. What I would submit in the present connection is that we have in the ductless glands intermediaries through which our drugs can, as do vaccines, so enhance the efficiency of that protective mechanism as to arrest disease, before it has had time to compromise life. Organotherapy has enabled us fully to realize the influence of the endocrines upon morbid processes, and pharmacoendocrine therapy will be the second step which will reveal their true importance as weapons in our warfare against disease.

Viewed in this light, pharmacology will assume its true rôle; it must, indeed, eventually become the queen bee of the hive, which all branches of medical science will feed and raise to the highest degree of efficiency. When all this will have been adequately developed and duly apprehended, there will be no more question of abandoning therapeutics in our medical schools, for after all, it is our mission as physicians to cure disease, and to abandon sufferers to its destructive inroads is no less a crime than it is for the soldier to desert the flag in the presence of the enemy.

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2043 WALNUT STREET.

TISSUE ACIDOSIS VS. BLOOD ACIDOSIS.*

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THIS brief paper is written for therapeutic purposes only. Certain facts in literature concerning the subject of acidosis are only briefly mentioned and summarized in order to make clear certain definite therapeutic indications. The fundamental theories of acidosis have so often been presented in recent writings, principally by James I. Whitney, L. G. Rowntree, Andrew W. Sellards, and Albion W. Hewlett, that it is hardly necessary to cover the ground anew, further than to state that my conception of what acidosis is, either a blood acidosis or a tissue acidosis, is comprised in two very comprehensive definitions, one by A. W. Sellards and one by A. W. Hewlett. Definition by Dr. Sellards:—"An acidosis is a diminution, from any cause, in the reserve supply of fixed bases in the blood or other tissues of the body, the physicochemical reaction of the blood remaining unchanged except in very extreme conditions." Definition of Dr. A. W. Hewlett's: "Acidosis is due to the formation or retention in the body of an excess of non-volatile acid substances. As a result of the process, the blood carbonates are in part decomposed and their quantity lessened."

These two definitions, if accepted, point the way

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very clearly to rational methods both of diagnosis and therapeutics. Dr. Sellards, in his recent valuable little book on "The Principles of Acidosis and Clinical Methods for Its Study," states that it is only necessary to classify acidosis according to its etiology and that it is not necessary to subdivide the principles upon which the theory of acidosis rests.

Dr. Whitney, whose most valuable studies on acidosis are well known, sums up, as follows, the etiological factors under four general groups:

1. *Overproduction of acid due to deficient oxygen,* such as severe exercise, mountain sickness, acute anemia, gas poisoning and asphyxia, decompensated heart lesions.

2. Conditions where a primary lack of oxygen leads to a compensatory raising of the threshold for acid, such as acidosis of high altitudes, acidosis of pregnancy.

3. Metabolic conditions in which abnormal acids are produced in large amounts such as in diabetes mellitus, starvation, postoperative toxemias, diarrheas and cyclic vomiting in children.

4. Kidney inefficiency, such as in chronic nephritis, pus kidney, etc.

If, therefore, these various groups of possible etiological factors are borne in mind, the possibility of an early correct diagnosis will be much facilitated. The author has found, in making a comprehensive study of the subject of acidosis, that the nomenclature adopted in discussing acidosis in current literature is most confusing. Whenever it is necessary to refer to current medical literature, references are secured *first,* under certain classifications; and *second,* under certain nomenclatures or nosological headings.

As a rule, it is a comparatively easy matter to look up the literature concerning a special disease or condition under some of the well recognized and accepted classifications of diseases, especially those which deal with disease conditions strictly from an anatomical or etiological standpoint. The matter, however, becomes much more complicated and confusing when we approach our subject from the standpoint of our present nomenclature. This is especially confusing when we attempt to deal with a broad general subject, such as acidosis, which has so many different phases and can be approached from so many angles. I recall, very vividly, attending a symposium on Acidosis in May, 1916, before the Association of American Physicians in Washington. Before the discussion began, I thought I had a few definite, more or less fixed, ideas on the subject, but before the symposium was over, I was so confused that I did not know whether I was standing on my head or my heels, and the little that I thought I knew had vanished. Dr. Yandell Henderson, professor of physiology at the University of Yale, partially saved the situation for me by pointing out, in closing the discussion, that the matter was really not quite so confusing as it seemed, because everyone was really talking about the same subject, but was approaching it from a different angle, and that even when their views were the same, the nomenclature, which they used to express their views was different, although all really meant one thing. Assuming that there were ten possible different expressions, any one of which could indicate the same thing, and that ten different men each selected a different one of these ten, one can easily imagine the confusion that arose in that discussion.

It might be well to emphasize again the fact that there are only *two* well recognized methods to play the scientific game, and if those of the medical profession, whose aim it is to assist the profession, either by writing or by teaching, would strictly adhere to the rules which govern these two methods, much time would be saved, and, incidentally, much less would be written. The first method is to collect your facts, and then try to adjust your problem to these facts; and, second, to assume a plausible hypothesis as a possible explanation for certain problems and then try to prove your hypothesis from facts. Both are valuable and necessary under certain conditions, but neither should be confused with the other. There is nothing so confusing as to listen to a man, or to read what he writes, when he is constantly confusing his facts with his hypotheses. In the present communication, the author will endeavor to confine himself strictly to the first method and only in one instance will make use of the second method.

1. *Tissue Acidosis vs. Blood Acidosis,* or 2, *Hypoalkalinity of Tissue and Blood* (*Sellards*). My title in the first place is a misnomer and a most unfortunate use of the term; as, strictly speaking, neither the tissues of the body nor the blood can be said ever to be acid in the usual sense of the word. Hence, the title adopted by the author, suggested by Dr. Sellards, of hypoalkalinity, is much to be preferred from an etiological standpoint. In this connection, I would like, briefly, to call your attention to certain comparatively recent facts which have quite a practical bearing on the subject we are discussing. First, the recent epidemic of acute anterior poliomyelitis, commonly, but most erroneously, called infantile paralysis, for the facts brought out in the study of this condition proved conclusively that only about 10 per cent. of the cases affected have paralysis, and that individuals reacted, in this disease, strictly according to their individual powers of immunity; so that some of those exposed established their immunity in less than twenty-four hours, with the production of but few symptoms, while others would go on to the state of paralysis, or die before that stage was reached. In like manner, the late war taught us a similar lesson in regard to epidemic cerebrospinal meningitis. Dr. Herrick, of New York, in a masterly review of this subject, in which he reviewed hundreds of cases seen by him in an army camp, demonstrated the fact that the same was true in this disease and that the meningeal syndrome was but a late manifestation of its symptomatology.

The author would like to draw a similar comparison in discussing the subject of acidosis and to emphasize the fact that an acidosis may be either very mild or even most transitory in character, at one extreme of its origin or development, and very severe and dangerous at the other; and also, that in between these two extremes, a large number of intermediate varieties can be found. He is convinced that heretofore our attention has been so fixed, by various authors, upon the importance and the dangers of the more or less terminal forms of acidosis, that we have neglected, not only to recognize but especially to treat the very large number of mild

cases of acidosis. To recapitulate, we have been taught to diagnose acidosis clinically only when it has reached a far advanced stage of its normal development, exactly as formerly we regarded, clinically, acute epidemic anterior poliomyelitis and epidemic cerebrospinal meningitis. These remarks will be limited chiefly to the subject of the early diagnosis and treatment of the very mild cases of acidosis with which the author has had considerable personal experience, and he would like to point out in this connection the desirability of someone making a careful study of the corresponding mild cases of alkalosis.

What, then, are the well-established facts so far as they have been observed and substantiated in regard to acidosis or hypoalkalinity?

Several years ago, a friend of mine, who had given a great deal of attention to the chemistry of the blood and especially the laboratory methods of studying it, expressed to me, briefly, his views by making use of the following diagram. This diagram has been so valuable to me in following up advances in this subject, that I am going to reproduce it here for my guidance, in making clear to you, the therapeutic points which I wish to bring out and to illustrate.

20 per cent. "Buffer Salts." 80 per cent.
A.——————————————————B.
Acid Radicles. Alkaline Bases.

Imagine all the blood in the body to be represented by a straight line A to B. The blood is a fluid which from a chemical standpoint is composed, approximately, of 80 per cent of alkaline bases and 20 per cent of acid radicles. This proportion, which usually is remarkably constant, is held in balance by what Rowntree has recently most beautifully described as "the buffer salts of the blood." When the blood is thus delicately in balance, it is possible to eat almost any quantity or variety of food and the end results of all food metabolism, be it either that of an alkaline base or that of an acid radicle, will be the same, for the "buffer" (when in good working order) promptly takes up an excess on either side and thus the delicate balance is not materially changed. When, however, anything goes wrong with the "buffer" or fly-wheel, then trouble begins and we have either an acidosis on the one hand or an alkalosis on the other; either of which may be accompanied by most serious conditions, especially if either is prolonged or far advanced.

Let us now continue the study of our diagram and analyze, a little more in detail, what are the facts about our 20 per cent of acid radicles. Let the upright line represent, diagrammatically, the acid content of the blood. Of this, 15 per cent of its bulk (approximately) is made up of volatile acids and the balance of (approximately) 85 per cent is non-volatile acids. The 15 per cent of volatile acids are thrown off, principally, through the lungs as CO_2 gas. The 85 per cent of the non-volatile acids are excreted principally through the urine and very slightly through the feces.

15%	Volatile Acids CO_2	Lungs.
85%	Non-Volatile Acids	Urine and Feces.

This diagram makes it quite evident that, if the non-volatile acids, as a result of deficient elimination, accumulate in the blood, the volatile acids will be thereby compressed and the amount of CO_2 thrown off through the lungs will have to be increased and thus the power to hold the breath will be more or less diminished. This is the rational explanation of the clinical value of the breath holding test of Dr. Henderson.[1]

Dr. Henderson's directions are as follows—"(1) Sit quiet for five minutes. (2) Draw a full, deep, but not too deep, breath. (3) Hold it with mouth closed and nostrils compressed with fingers. (4) Note time. (Usual normal period which breath can be held is 45 seconds. Between 30 and 40 seconds indicates a mild acidosis; between 20 and 30 seconds indicates a high degree of acidosis."

Dr. Whitney, of San Francisco, in two recent articles,[2] makes a very practical clinical suggestion which the above diagram beautifully illustrates; that it is not only necessary to give alkalies to neutralize an acidosis but that it is equally necessary, owing to the extremely loose chemical association of some alkalies with acids, to combine the alkali with either a diuretic or laxative. This latter observation is so evident and so convincing that it is surprising that no one had pointed it out before. It has been the personal experience of the author to have had the most brilliant therapeutic success when giving alkalies when the symptoms pointed distinctly to an acidosis, and also to have as great a failure when a few days later he gave alkalies under apparently similar conditions. I am free to admit that I formerly omitted giving any more alkalies in these cases; as I concluded that my patient had some idiosyncracy to that particular alkali which I was using, and the idea never occurred to me that my failure was due to the fact that I had not combined my alkali, as Whitney suggests, with either a diuretic or a laxative to carry it off.

Before proceeding to the main point of my paper, the treatment of tissue acidosis *vs.* blood acidosis, let me refer in passing to a most important series of experiments that have recently been published in the *British Medical Journal* by Dr. Hamburger of Gronningen, Holland, in regard to the action of mild degrees of acidosis on the leucocytes, especially in regard to their phagocytic action. His experiments show that normal white blood cells in a blood with a proper balance between alkali and acid bodies can normally take up 50 per cent of their bulk of bacteria, but that the instant this balance is lost, even to a slight degree, they can absorb only 25 per cent of phagocytes. In other words, the great practical bearing of his researches was to show that in any infection, associated with an acidosis, alkalies are always indicated in order to raise the powers of our leucocytes (of our little white soldiers) to resist disease from 25 to 50 or 100 per cent.

Returning to our principal subject. What clinical signs have we at our disposal to distinguish between a mild blood acidosis and a mild tissue acidosis? Which begins first? Does the tissue acidosis affect the blood or does the blood acidosis affect the tissues? Frankly, I do not know. Both Fisher and Henderson assume that the process begins in the cells and through the cells ultimately reaches the

blood. Others take the opposite view. Clinically, it would seem as though the acidosis should reach the cells through the blood.

We now have many simple, reliable, and easily carried out methods, by means of which we can determine whether our "buffer" has lost its power, and I am inferring, although I have no scientific facts to prove, or proofs to sustain, my contention, that if the buffer is not acting, and this continues for any length of time, the blood which is constantly bathing all the tissues, will in time give them more or less of an acid imprint, which remains for an indefinite period. In treating these cases, therapeutically, I first try to determine this point and in all cases in which a tissue acidosis is assumed, I tell the patient that the treatment will be a long drawn out one, and will involve a more or less constant use of alkalies, probably for many months.

Early diagnosis of Blood and Tissue Acidosis.—The two simplest and most easily carried out tests are (1) The breath-holding test of Henderson. (2) Litmus paper test: (*a*) Saliva. Normal is alkaline before meals, acid after. (*b*) Urine. Normal acid. (*c*) Stool. Normal alkaline.

Both of the above tests are reliable and easily carried out and, when positive, indicate when treatment should be begun.

Some of the simplest and most easily carried out chemical and laboratory tests are

1. Reaction of blood serum to phthalein.

2. Ingestion of sodium bicarbonate on reaction of urine (Sellard's test). Five gm (5) sodii bicarbonate is given by mouth; the urine should be neutral or alkaline in three hours if normal.

3. Dr. W. J. Bruce[3] gives the following simple test for determining the reaction of the stool. Prepare first a 1 per cent. solution of alizarin. (*a*) Place then on a slide two drops of this solution 1½ inches apart; one of these drops in the control. (*b*) Use a glass rod which has been dipped or thrust into feces either liquid or solid. Mix thoroughly with one of the drops. Alkaline reaction = reddish violet to violet. Acid reaction = light yellow. Neutral = no change.

4. Another very simple and easily applied test has recently been suggested by Dr. C. Mitchell[4] which he calls the iodine color test for determining whether acidosis exists; for he points out that the acidity of the urine alone is not to be depended upon as a sure diagnostic sign of acidosis nor is the presence of acetone bodies, nor a chemical reaction to ferric chloride, as these reactions may be caused by other non-specific factors. A busy practitioner requires most of all a simple trustworthy urine test which may be carried out without special apparatus and chemicals difficult to obtain. The technique of the test he suggests is as follows:

Add to 145 c.c. water 3 c.c. Lugol's solution, and 2 c.c. Sat. solution of picric acid. Mix thoroughly. The result is a clear bright reddish liquid. Pour this liquid into a white dish and heat gently (do not boil) until fumes are abundantly given off. To this hot liquid add urine as follows: (1) Normal acid urine up to 15 c.c. does not change color of above hot fluid. (2) Urine, although acid, but which indicates an acidosis in amounts from 2 c.c. to 10 c.c., will change the above liquid from a bright reddish color to a bright yellow.

Among other early symptoms which may be mentioned are the following: Slight mental irritability; a tendency to hives and eczema; a tendency to a low-grade conjunctivitis associated with subconjunctival hemorrhages and a collection of matter in the inner corners of the eyes. Presence of a heavy or disagreeable breath is also a very important and reliable early symptom.

Treatment.—To be correct and efficient, treatment must depend not only on the etiology of acidosis but also on the fact whether it is a mild or severe case. A mild acidosis treated with too much alkali can easily be converted into an alkalosis.

1. If the etiology indicates that the "buffer salts" are defective from any cause, give alkalies such as the carbonates and citrates of sodium potassium, and calcium.

Dr. T. C. Ely[5] quotes A. Taylor as saying: "As the acids circulate in the system, they abstract from the tissues sodium, potassium, and calcium and disturb the equilibrium of the basis elements in the tissues. Obviously the correct therapeutic measure is not to administer only one type, but a mixture of sodium, potassium, and calcium in order to restore the equilibrium."

2. In acidosis of nervous origin, which is quite often associated with disturbances in the action of the buffer salts, the old prescription known as pil. sumbul comp., which contains Hyoscyamus, ½ grain; Camphor, 1 grain; Powdered Valerian, 1 grain; Ext. Sumbul, ½ grain, is often of surprising value. It can be given as often as once every half hour for three or four doses.

3. In cases where an endocrine loss of balance is suspected as a cause of acidosis, the use of chromium sulphate in four grain doses usually works surprisingly well. The author has given this remedy empirically for a great many years. He has no explanation to offer why it should have such a good effect other than hazarding the hypothesis that chromium may in some chemical way influence some of the endocrine glands.

4. Treatment of acidosis due to certain diseases, as diabetes mellitus, starvation, after surgical operations, cyclic vomiting, diarrhea, infectious diseases of childhood, nephritis and other diseases of kidney should vary with the disease in question.

5. It should not be lost sight of that acidosis may be due to carbohydrate excess. Both Dr. W. J. Stone[6] and Dr. W. Tileston[7] have commented on this matter.

6. Various gastrointestinal disturbances are often associated with a mild or a severe acidosis.

7. The influence of diet upon treatment, in acidosis, does not, as yet, seem to have much clinical value.

8. Transfusion from an alkalinized donor as suggested by the late Dr. Edward Lindeman.[8]

9. As a rule, give small doses at short intervals, rather than large doses at long intervals.

In conclusion, the following explanation might prove of interest of why less meat is a good treatment for acidosis. During protein digestion, the sulphur and phosphorus are oxidized to sulphuric acid and phosphoric acid. These would acidify the blood at once were it not for the presence in the blood of salts of sodium, potassium, calcium, and magnesium. When these fixed alkalies are insuffi-

cient to neutralize the acids produced, the organism makes use of a mechanism for neutralizing the excess as follows: Amino acids passing through the liver and muscles are de-amidized. That is, the amino group (N H) is broken off and changed to

$$\left(\overset{+}{H}\right) = K \times \frac{H_2CO_3}{NaHCO_3}$$

Diagram 1.

ammonia. Further, this ammonia together with water and CO_2 is converted into urea and this is execreted by way of the kidney. If, however, the blood stream brings to the liver unneutralized sulphuric acid and phosphoric acid molecules, owing to the lack of fixed alkali, then the ammonia mentioned above neutralizes the acids and is execreted as ammonia salts. Thus, the more acids produced in the organism, the more ammonia salts and the less urea are found in the urine, and vice versa.

Why Acidosis Can Be Successfully Treated with Acids.—In the *American Journal of the Medical Sciences*, January, 1917, Dr. J. Harold Austin gives the following information: The normal reaction is maintained by three methods: (1) Presence in blood of (*a*) sodium bicarbonate and other salts;

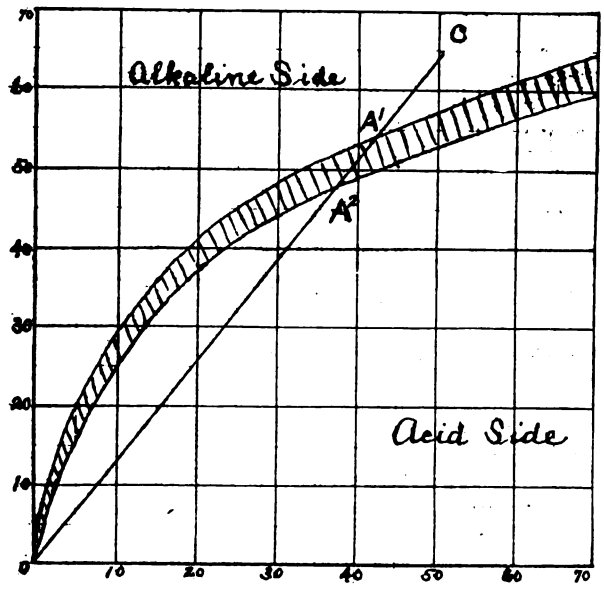

Diagram 2.—The normal CO_2 dissociation curves of normal human blood, as we have found them, are all within the shaded areas. The figures to the left indicate the CO_2 content in volume per cent., those below mark the CO_2 tension in mm. of mercury.

(*b*) two weak acids, CO_2 and phosphoric acid. (2) Rapid elimination of weak phosphoric acid through the kidneys; (3) Rapid elimination of weak carbonic acid through the lungs. When an acid is added to the blood, such as strong HCl, it combines with the sodium salts and liberates CO_2 and phosphoric acid.

Sodii phosp. + HCl = NaCl + phos. acid.
Sodii carb. + HCl = NaCl + CO_2.

Thus, for every unit of strong acid introduced into the blood, there is liberated a unit of weak acid which possesses much less power of altering the reaction of the blood. The only danger is too much strong acid.

At the meeting of the Association of American Physicians held in Atlantic City on May 5, 1920, Dr. J. H. Means, in a paper in which he discussed the acid base equilibrium in disease, gave the two following diagrams, which expressed very clearly the points he was demonstrating. Diagram 1 is one devised and published a number of years ago by Lawrence J. Henderson. And diagram 2—the CO_2 diagram—is a method of presenting acid-base equilibrium factors in graphic form which was worked out by Haggard and Y. Henderson and was published by them in 1918 in the *Journal of Biological Chemistry*.

In discussing Diagram 1, Dr. Means pointed out that much trouble arose from the fact that the denominator in this diagram was not clearly separated in one's thought from the numerator. Hence much unnecessary confusion was constantly arising. He then gave Diagram 2. In this the upper line of the curve indicates the H ion content, and the lower line of the same curve the CO_2 tension of the arterial blood. When both are normal they cross the line OC at points A^1 and A^2 respectively. Any marked changes in suspected normal cases would be indicated by a deviation either to the right or to the left of line OC.

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Fifth Avenue and St. James Street.

THE THERAPEUTICS OF DECREASING BODY ALKALINITY.*

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For centuries, practically speaking, the profession and the lay world have been talking about body acidity or increasing acidity of the human economy, —a state of the system that can never be while life lasts. If such a condition could be produced, we would have a corpse to work upon, not a living patient. What we really have to deal with is a decreasing alkalinity of the system, not a rising acidity. There is no acid condition of the animal economy to rise. Professor John C. Dalton states this beautifully when he says: "This alkaline reaction is essential to a large number of vital processes taking place in the interior, and is present, without exception, in all the animal fluids which are contained in the circulatory system or in the closed cavities of the body. An acid reaction, on the other hand, is found only in a few of the organic fluids

*Read at the twenty-first annual meeting of the American Therapeutic Society, held in Philadelphia May 7, 1920.

which are employed in the process of digestion or are discharged externally."

To understand intelligently the therapeutics of decreasing alkalinity, we must know, first, how nature produces and maintains this alkaline state of the system; second, we must know the cause of decreasing alkalinity. With these two facts in hand we can scientifically elucidate its therapeutics.

In the oxidation reduction of the protein molecule, we have an atom of sulphur split off and eliminated from the molecule. This is done at two points. *First*, by the oxidation reduction processes which take place in some of the epithelial cells that enter into the construction of the mucous membrane of the stomach. This results in the production of a molecule of sulphuric acid which, as soon as it drops from the free surface of the cell, comes in contact with a molecule of sodium chloride, followed by the formation of a molecule of hydrochloric acid and one of sodium sulphate,—as illustrated by the following equation: $C_{72}H_{112}N_{18}O_{22}S + H_2O + 4(O) = C_{72}H_{110}N_{18}O_{22} + H_2O + H_2SO_4$. Immediately upon the formation of this free sulphuric acid molecule it attacks one of sodium chloride, with the formation of hydrochloric acid and one of sodium sulphate, illustrated by the following equation: $H_2SO_4 + 2(NaCl) = 2(HCl) + 2(NaSo_4)$. After the hydrochloric acid has served its purpose in the digestive act, it in turn attacks the trisodic phosphate, restoring the sodium chloride lost in making the hydrochloric acid and sodium sulphate, with the formation of the disodic monohydrogen phosphate, which salt is the true physiological alkalinizer of the human economy:—Illustrated by the following equation: $2(HCl) + 2(Na_3PO_4) = 2(NaCl) + 2(Na_2HPO_4)$.

The chemical mutation, as here expressed, gives an exact explanation for the production of hydrochloric acid, along scientific lines. It further proves conclusively why the elimination of the inorganic sulphates is always greater than the intake. It shows also that nature produces for herself daily a slight amount of laxative agent in the form of "Glauber's salts" thus formed. It explains at the same time how some of the chloride of sodium is destroyed and again restored to the system each and every day, keeping the intake and the output always equal.

It proves pretty conclusively that we cannot have a perfect metabolism without this salt, and that placing a patient on a salt-free diet is not based on sound physiological chemistry.

These mutations demonstrate also how the animal economy acquires its daily supply of disodic-monohydrogen phosphate, which salt is not found in this form in the food-stuffs. Without this particular salt a perfect metabolism cannot be maintained.

With these facts before us, we are in a position to study the problem of decreasing alkalinity of the system, to discover how it is brought about, what happens when it does occur, and how best to cope successfully with this abnormal state.

There are two etiological factors to be considered. *First*, the use of foods deficient in the trisodic phosphate and other mineral salts. This deficiency in mineral salts is due, largely, to the common method of cooking vegetables denuded of their protective skins. The water in which they are cooked is thrown away, and with it the mineral salts, since this fluid contains the larger part of the mineral substances in our foods—salts without which there can be no perfect metabolism. Therefore, the liquor in which all vegetables are cooked should be saved and served with the vegetables if the much-needed supply of these essential mineral substances is to be continuously supplied. By eating vegetables in their raw state, as some have advocated, all the mineral salts are taken into the system; hence the wonderful cures that have been secured by the use of vegetables in their raw state.

The *second* etiological factor is the arrest of or diminished oxidation of the protein substance in the cells of the gastric mucous membrane, as already described. This results in a deficient production of sulphuric acid, hence less hydrochloric acid and sodium sulphate. This furnishes less hydrochloric acid to transform the trisodic phosphate into the disodic-mono-hydrogen-phosphate. If there is also a deficient amount of trisodic-phosphate—as there is of hydrochloric acid—the dealkalinization of the animal economy takes place with very great rapidity. So much so, that nature attempts to overcome the difficulty by pulling the fixed alkalies from their stable position in the teeth, bones, and various structures of the body. Failing to overcome or arrest the dealkalinization, a very positively decreased alkalinity is developed. When this stage is reached, it is absolutely impossible to have anything like perfect assimilation. If allowed to continue, it brings about the state of the system called acidosis, which, to be axact, is an intensely rapid dealkalinization of the whole economy until life can no longer be maintained and death speedily ensues.

When for any reason we have an unusually large percentage of protein material oxidized in these gastric cells, it produces the condition known as hyperchlorhydria. This can be brought about in one of two ways: by the ingestion and utilization of an unusually large quantity of protein material and its oxidation in these gastric cells. This overtaxes the oxygenating capacity of the system and is, in itself, another factor in disturbing metabolism. Or it may occur as the result of vicarious oxidation of the protein material in these gastric cells; that is, by all the sulphur atoms being split off in the gastric cells, leaving no sulphur for the liver to produce its daily production of taurocholic acid—still another factor in the production of disturbed metabolism. These two conditions must be differentiated to enable us to apply our therapeutic measures with scientific accuracy. If there is in connection with the hyperchlorhydria an abundance of trisodic phosphate in the food, there will be produced an unusually large amount of disodium-monohydrogen-phosphate. This will cause an excessive alkalinity of the body fluids and structures—a state of the system which, if carried too far, will be detrimental to a perfect metabolism and assimilation. Nature, however, speedily eliminates the excess of this alkaline salt, but in so doing the urine becomes unduly alkaline, which is still another source of irritation and acts as a deterrent factor.

From the foregoing, it is readily apparent that a defective metabolism may be caused by directly opposite conditions—by a decreased or by an increased alkalinity of the body fluids and structures.

In both instances, however, the animal economy remains alkaline and always must, so long as life lasts. The treatment in the two instances must be somewhat different. As there is more apt to be a deficiency of trisodium phosphate than an excess, a mineral salts. For instancee, in the rachitic child, as Professor Jacobi used to say in his clinic, there is plenty of calcium but it cannot be fixed in position. Giving more does no good. How can it, when there is a constant dealkalinization associated with

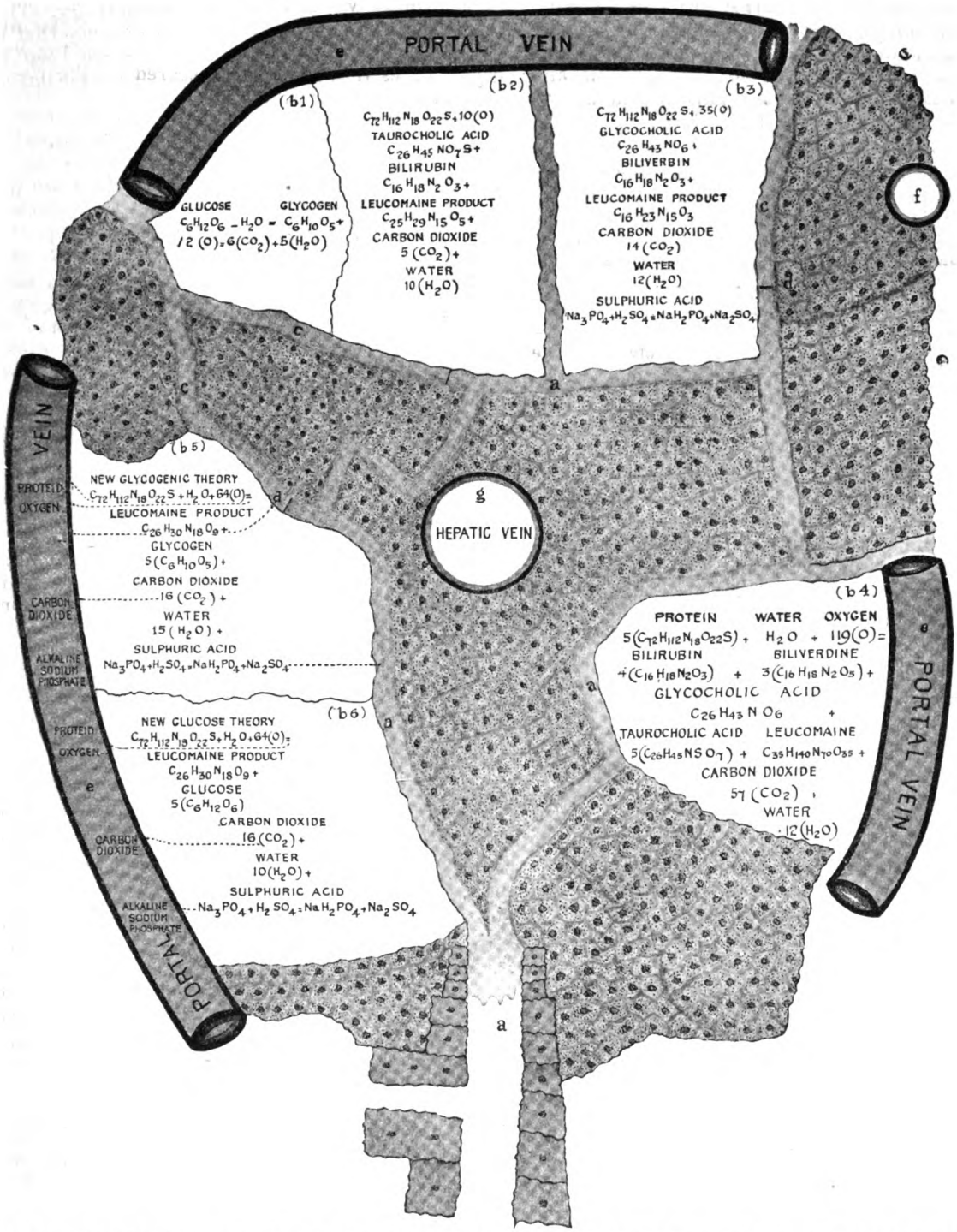

FIG. 1.—Schematic drawing of normal liver, highly magnified. *a*. Lumen of bile ducts and radicals; b^1 to b^6, hepatic cells very highly magnified, illustrating chemical transmutations within them; *c*, lumen of lymphatic channels; d, basement substance between bile radicals and lymphatic spaces; *c*, blood vessels of the portal system; *f*, hepatic artery; g, hepatic vein. (From the Reference Hand Book of the Medical Sciences, Vol. VI.)

superalkaline state is not often met with in actual practice.

Under these circumstances assimilation remains impaired, even though the quantity and composition of the food are good, aside from the defects in a pulling down of the fixed alkalies from the structures of the body continually taking place in the system?

The *second* point in the body at which nature eliminates the sulphur atom is in the hepatic cells.

Here the remaining sulphur atom in the protein material not oxidized in the gastric epithelia is reduced by a process of oxidation reduction, with the formation of taurocholic acid, biliverdine, a leucomaine product, carbon dioxide, and water:—Thus, $C_{73}H_{118}N_{18}O_{22}S + H_2O + 10(O) = C_{26}H_{45}NO_7S + C_{25}H_{29}N_{15}O_5 + 5(CO_2) + 10(H_2O)$. See Fig. 1-1b.

When this condition is developed, the normal balance between the stomach and liver elimination of sulphur is disarranged. This adds another upsetting factor to the animal economy in connection with this problem of dealkalinization of the system. The amount and quality of bile are changed. This results in less bile reaching the intestinal canal than is normally the case. This still further impairs the digestive function, and the whole metabolic process is further disturbed.

From the foregoing, we find that dealkalinization of the animal economy is no single and simple problem, but one that is quite complex and intricate from start to finish. It is one, however, that must be thoroughly understood if we are to present our therapeutic remedies with scientific accuracy. The administration of any single chemical substance, such as bicarbonate of soda, just because it is an alkaline substance and can change an acid to an alkaline reaction, does not fully meet the indications, since it does not overcome all the disturbed chemical activities and it does not furnish the physiological alkalinizer. A study of the chemical mutations, here outlined, indicates that nature, working normally, produces a special form of alkali for this particular alkalinizing process. It is the disodium-monohydrogen-phosphate—$Na_2H(PO_4)$. This salt is the physiological alkalinizer of the animal economy. It is the special salt that enables nature to hold the other mineral substances in fixed relation to the teeth, the bones and the various structures of the body. This is especially true in relation to the calcium salts. Another thing to be noted in this connection is the mode of its production, which is by a somewhat slow yet progressive manner, as a part of the digestive act, so that this disodium-monohydrogen-phosphate gradually and continuously enters the blood stream, reaching its acme between the middle and latter part of the digestive act.

It has been further established that the disodium-monohydrogen-phosphate salt is necessary and the normal method for transforming the uric acid molecule into a urate as it escapes from the renal cell into the lumen of the uriniferous tubule. At the same time that the urate is formed, a monosodium-dihydrogen-phosphate is produced. This monosodic-dihydrogen salt is the normal and true acidifier of the urine. The following equation shows how the urate and monosodic-dihydrogen molecule is formed: $C_5H_4N_4O_3 + Na_2H(PO_4) = C_5H_3N_4O_3Na_2 + NaH_2(PO_4)$. (See Fig. 2). The acidity of the urine, like the alkalinity of the system, rises and falls but the urine is always acid in reaction when the metabolic processes are normally effected.

Unless this body alkalinity is uniformly maintained it is impossible to have a perfect metabolism. For this reason alone, the necessity for reestablishing and maintaining this perfect alkaline condition is the first and most essential thing to be accomplished in the therapeutic management of imperfect metabolism and malassimilation.

By the administration of some form of abnormal alkalies, it has been my good fortune in the past to obtain some very remarkable results in the management of this class of cases. Since realizing fully the importance of using the physiological salt in preference to any other form of alkali, my results have been just so much more satisfactory. This one example alone demonstrates conclusively that in our therapeutic endeavors the nearer we keep to nature's methods in the selection of remedial agents

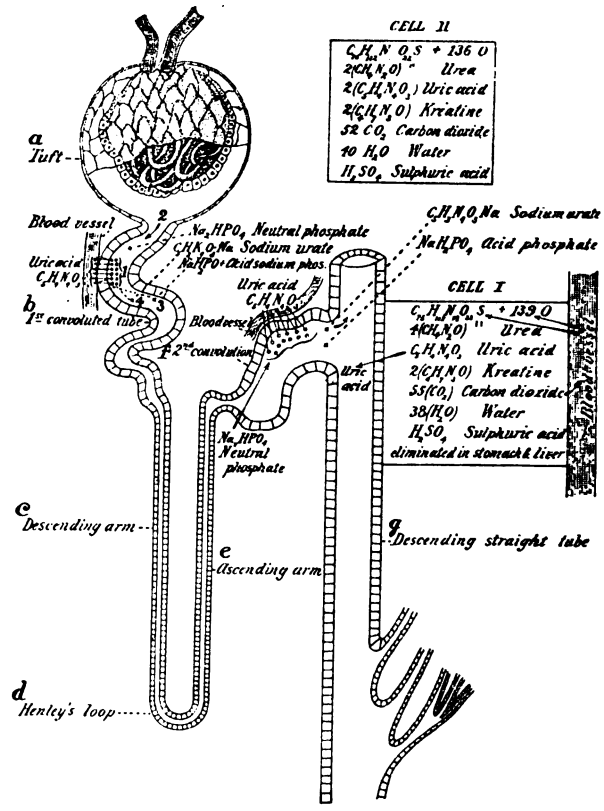

FIG. 2.—Schematic drawing showing single uriniferous tubule from Malpighian tuft to papilla or its outlet. (*a*) Malpighian tuft and blood vessels. (*b*) First convolution. (*c*) Descending arm of loop. (*d*) Henley's loop. (*e*) Ascending arm of loop. (*f*) Second convolution. (*g*) Straight or collecting tube. 1. Uric acid molecule dropping into lumen of tube. 2. Neutral phosphate of soda molecule as it unties with the uric acid to form. 3. The acid phosphate of soda; and 4. The urate of soda formed by this chemical mutation. Cell I. Magnified single renal cell, with lumen of the tube on one side and the blood vessel on the opposite side, illustrating normal oxidation of proteid molecule within the protoplasm of the cell. The proteid and oxygen coming from the blood into the cell, where it breaks up into its reduction products. The uric acid dropping into the lumen of the tube, while the carbon dioxide flows back into the blood. All the other reduction products dropping into the tube as does the uric acid. The sulphur being eliminated as a sulphate. Cell II. Magnified cell illustrating abnormal or suboxidation in the renal cell. Urea diminished one half while the uric acid is overproduced fifty per cent. In both the normal and abnormal oxidation the sulphur is found in the urine as a sulphate. The sulphuric acid molecule represented by the formula H_2SO_4 in Cell II., when it reaches the urine, is in the form of a sulphate, Na_2SO_4 or "Glauber's" salt. This salt being produced in connection with the oxidation reduction of the protein elements, in some of the gastric epithelia, in the process of producing sulphuric and hydrochloric acid.

the better our results will be. I have tried to use the disodium-monohydrogen-phosphate in various ways and forms to secure its alkalinizing effect upon the system. In every instance, however, the result was an undue cathartic action.

When the formula and composition of the pharmaceutical preparation now known as liquor calcis et sodæ phosphatum compositus was brought to my attention, I felt sure that we had a truly physiologi-

cal pharmaceutical remedy. Its composition per hundred parts of water is as follows: Sodium carbonate (Na_2CO_3),OO.404; sodium phosphate (Na_2HPO_4), 00.023; sodium chloride (NaCl), 00.080; calcium carbonate ($CaCO_3$), 00.057; magnesium carbonate ($MgCO_3$), 00.004; potassium chloride (KCl), 00.004.

When I noted the disodium-monohydrogen-phosphate in conjunction with the other mineral salts, my first thought was that here lies the solution of our dealkalinized cases and the associated disturbance of metabolism. While truly artificial in production, it was evidently so constructed that it could be used as a pretty close imitator of nature's plan.

It contained the true physiological salt in such a combination that it could be introduced gradually, after the plan of nature, and without producing the cathartic effect.

Without saying a word as to my impression of the preparation, I began using it in some very obstinate cases of disturbed metabolism and faulty assimilation, with very gratifying results to the patients as well as to myself. This preparation does not supply the mineral salts thrown away in the fluid in which vegetables have been cooked; neither does it supply the loss of hydrochloric acid, due to defective oxidation of the protein material in the gastric cells. It does, however, supply to the animal economy the special type of sodium phosphate which is absolutely essential to the blood in order to enable the impaired physiological activities to swing the abnormal metabolic processes to those that are normal. It also enables nature to fix the other mineral substances in stable relation to the various structures of the body, and greatly augments assimilative activity.

I first used this solution in a ten months old child who had resisted all forms of change in foods, medicine, and everything ordinarily thought of. At ten months this child was no more advanced than it should have been at five, and it seemed to be steadily losing ground. I advised the substitution of this solution in the preparation of the milk and to give it plain between feedings—making no change whatever in the food. The improvement was surprisingly prompt. Within ten days the child began to thrive, and has continued to do so to this day. After using this preparation in a large number and variety of cases, I became fully convinced that the greater part of its virtue was due to what may justly be called this particular physiological sodium phosphate, and not so much to the calcium and other mineral substances that it contains.

This statement is not made with the intention of underestimating the value of the calcium and other mineral salts that the solution contains, but simply to emphasize the fact that it contains the true and physiological alkalinizer of the animal economy in a form that is practical and that pretty uniformly produces the desired results. While it is true that the sodium carbonate is an alkalinizer, its chief function in the body is in conjunction with the bicarbonate to carry the carbon dioxide from its seat of production to the lungs, at which point the carbon dioxide is cast out of the blood stream into the air sacs and eventually exhaled from the lungs.

As the total amount of this sodium phosphate, required to maintain the full body alkalinity is comparatively small,—not over four or five grams for the twenty-four hours,—a decreased alkalinity can be easily overcome by drinking twenty to fifty ounces of this solution daily. More than this quantity is apt to render the urine alkaline, which is undesirable.

The deficiency in the production of hydrochloric acid can be overcome temporarily by the use of some dilute hydrochloric acid, administered after meals. The taking of an alkali before the meal will in a measure overcome the acidity of the alimentary canal, which is due to fermentation of the food stuffs made possible by the absence of the hydrochloric acid and digestive ferments. An alkali taken before the meal, further, seems to stimulate the gastric secretion; and secondarily increases the oxidation reduction of the proteid material in the gastric cells. Some form of light laxative must be used to make good the decreased production of the sodium sulphate.

In those instances in which there is a decreased production of the taurocholic acid, which is another factor in producing and keeping up the disturbances in metabolism and non assimilation, something must be done to reestablish the full amount of oxidation reduction of more proteid material by the liver cells. There are various methods by which this can be accomplished. Sometimes one method works best, at other times an entirely different therapeutic agent will be required.

When all these abnormal conditions have been recognized and corrected along truly scientific lines, we can almost inevitably obtain pretty exact and perfect results.

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46 WEST EIGHTY-THIRD STREET.

THE CONTROL OF HYPERCHLORHYDRIA AND ITS CONSEQUENCES BY CHOLECYSTO-GASTROSTOMY.*

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ANY rational method for the control of hyperchlorhydria must have a basis in sound physiologic fact. This is as true of an operative treatment as of the treatment by diet and medicines.

The activity of pepsin in the stomach depends upon its combination with hydrochloric acid which is formed by the parietal cells of the gastric glands in the prepyloric portion of the stomach. The acidified pepsin mixed with food is carried by peristaltic waves to the pyloric antrum, a part which is subjected to a more intense irritation from the gastric juice than any other portion of the stomach. Evidently, to protect the antrum from digestion, we find that its mucous glands contain no parietal cells and secrete an alkaline mucus, while normally at the completion of gastric digestion the pyloris relaxes and a reflux of bile and pancreatic juice into the stomach rests the antrum from the erosive chyme. In the duodenum there is also an interesting protective mechanism. The acidified pepsin, if permitted a prolonged contact, might damage the intestinal mucosa but this is prevented by the closure of the pylorus (Cannon), which is produced reflexly on the entrance of acid chyme into the duodenum and which continues until the acid is neutralized by the bile and pancreatic juice. The neutralization is more than a mere change in reaction, it is an absolute destruction of the ferment, for acidified pepsin once neutralized is rendered permanently inert.

Points on the mucosa where the protective mechanism is weakest are the predominent sites for peptic ulcers. Thus the ulcers in the stomach are found chiefly on the upper and lateral walls of the antrum where there is the most prolonged contact with the most acid gastric juice associated with the most intense motor activity. The duodenal ulcers are most frequently on the upper wall of the first portion just where the spurts of acid chyme through the pylorus first impinge and where neutralization is most difficult. In the fundus of the stomach which serves to store and hold the food awaiting digestion and where there is little acid secretion or active gastric juice, ulcer is rare, although not as rare as in the well neutralized second and third portions, of the duodenum and the jejunum, where ulcer is almost unknown. If we permit the active gastric secretion to enter directly a practically immune portion of the upper digestive tract, erosion and ulcer frequently occur and precisely at the point where the acid secretion first enters the bowel. Thus from gastrojejunostomy a jejunal ulcer occurs in about 2 per cent. of the cases. Clinically the most effective medical treatment against peptic ulcer is the reduction of the hyperchlorhydria by rest, the use of a diet that either does not stimulate the secretion of hydrochloric acid or that will promptly combine with the secreted acid, perhaps associated with the very free use of alkalies.

Unquestionably such a treatment in many cases controls the hyperchlorhydria and gives the patient complete relief from the symptoms of ulcer, but unfortunately the relief usually is not permanent, and a considerable percentage of the patients finally seek relief through operation.

Of the surgical operations, all that have won any wide degree of acceptance permit the neutralization of the gastric juice by the regurgitation of bile and other intestinal secretions into the stomach. This occurs, for example, in gastroenterostomy and the various forms of pyloroplasty. When the neutralization of the chyme bathing the ulcer is less complete the results of the operation are less satisfactory. Thus in duodenal ulcer a gastroenterostomy usually relieves; the bile and pancreatic juice enter the stomach through the new stoma, reduce the acidity of the chyme passing through the pylorus, and the ulcer heals. In these cases *x*-ray studies may show that no food leaves the stomach by the new opening, proving that the benefit is not derived from any new or better drainage. If the pylorus is occluded the ulcer heals a little more surely as it is then completely protected from the acid gastric juice. With gastric ulcer the results from gastroenterostomy are poor; the ulcer is usually along the upper part of the antrum and the bile entering the stomach at a dependent part is swept on by peristaltic action to the pylorus and does not efficiently neutralize the chyme bathing the ulcer.

Part of the value of a "coat sleeve" resection of the stomach may be from bringing the cardia closer to the pylorus so that the bile normally entering the stomach when the pylorus relaxes has easier access to the cardia and to what remains of the lesser curvature.

Pyloroplasty and the Finney operation, of course, provide a means for the more complete and continuous regurgitation of bile into the stomach than is normal.

If peptic ulcer selects for its seat points where there is the most prolonged and intense hyperchlorhydria, if the ulcer rarely occurs on alkaline mucous surfaces, and if it heals when the acidity is overcome by admixture with the normal antacid bile, it is evident that acid pepsin is the most important single factor in the production of ulcer. Such being the case, why not simplify the surgical problem by throwing the bile directly into mucous areas that have proved unable to withstand the acid gastric juice and thus produce a continuous physiologic neutralization of the affected mucosa? Why not do a cholecystogastrostomy for obstinate hyperchlorhydria, or what we would term a cholecysto-ulcerostomy for ulcer, anastomosing the gall bladder with the edges of the opening left after an ulcer excision, or so placing the anastomosis that bile continuously bathes and protects the ulcer-bearing area? Of itself the entrance of bile into the stomach produces no harmful symptoms, normally entering the stomach after each meal, frequently being found in extracted test meals, and almost continuously entering the stomach after gastroenterostomy with complete digestive comfort. Years ago Moynihan reported the case of a boy shot through the jejunum—for whom he closed the ends of the divided bowel and did a gastroenterostomy. This boy, although all of his bile and pancreatic juice had to pass through the stomach, and out

*Read at the annual meeting of the American Therapeutic Society held in Philadelphia, May 8, 1920.

through the new opening, developed normally and remained free from digestive symptoms.

In about 27 cholecystogastrostomies, and 15 cholecystoduedenostomies, I have seen no ill effect *per se* from the operation. In gall-bladder disease I was first impressed by the rapid and early convalescence and the relief from indigestion that followed the operation. In a series of 10 gastric or duodenal ulcers if we exclude one neurotic woman who had had 13 abdominal operations, and one patient dying from an associated condition, the results thus far have been excellent. In these patients the symptoms apparently have been relieved, and in one case of bleeding ulcer there has been no hemorrhage since the operation, and the patient has rapidly gained in weight and is free from his old dyspepsia.

The operation is simpler and easier than a gastroenterostomy and may be performed through a smaller incision and with less manipulation or exposure of intestinal contents. It is not difficult to do under local anesthesia. We have performed it under local anesthesia in a number of very old, obese, weak, or toxic patients, or those with bad myocardial disease. It seems to do for ulcer in a simple and direct way what other operations do in a roundabout and rather illogical manner.

We make a fairly large opening (2 to 4 cm.) in the long axis of the stomach and use a rather broad area of anastomosis with two or three rows of 00 or 000 chromic catgut. The gall-bladder, usually, can be sufficiently mobilized to be brought to the desired part of the stomach. As a rule no drainage is used and the wound is tightly closed. After the operation the gall-bladder probably gradually contracts to a small duct. In a few *x*-ray and clinical studies after operation the bismuth meal has not entered the gall-bladder, and while hydrochloric acid was at times present in the contents it was in less than the normal amount and associated with a diminished total acidity.

It is to be appreciated that this is but a preliminary report of an operation, made with an enthusiasm that comes with a limited and rather recent experence. It is hoped that the operation may be sufficiently tried to prove or disprove soon our early good impressions. If we can eradicate the chief cause of ulcer of the stomach we have also gained a most important point in the prophylaxis of cancer of the stomach when it is recalled that cancer as a rule springs from mucous surfaces in contact with an acid secretion.

2033 WALNUT STREET.

THE TREATMENT OF SYPHILIS.

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ALTHOUGH a great deal has been written on this subject, it is permissible from time to time to review even well known principles in order to fix them more securely in mind. Obviously there can be no standard method of handling any disease and every physician, as a result of his peculiar experience, finally works out for himself a system which satisfies his own point of view. The introduction of synthetic arsenic compounds ten years ago revolutionized our point of view as to the treatment of syphilis and promoted a clearer understanding of the disease.

This arsenic compound is arsphenamine, and to-day there are several brands of the substance (Schamberg's, Metz's, Billon's, Takamina's) differing from each other slightly as to their physical attributes, but all about equally efficacious therapeutically. Any one of these brands that has passed the test of the Hygienic Laboratory in Washington can be employed with safety. Arsphenamine must be regarded as an artificially produced antibody. It destroys spirochetes because the arsenic in the molecule is attached to the microorganism by the benzol ring, the latter roughly corresponding to an amboceptor. When this union is complete the arsenic exerts its destructive effect upon the germ, which is disintegrated, and thereupon unloads upon the host the poison which had previously been confined within the cell body of the parasite. The reason for alluding to this fact will become clearer later on. It must be remembered that arsphenamine works specifically upon the parasite and not upon the host. Nevertheless more than a certain amount of arsphenamine is poisonous to the patient. Therefore the theoretical aim in employing a compound of this sort is to inject more than enough necessary to destroy all of the parasites, but not nearly enough to poison the host. In spite of all precautions, however, some people are hypersusceptible to the drug and present symptoms of poisoning after its administration. This poisoning may be due either to the arsenic or to an unknown substance in the compound or to the improper preparation of the substance.

In order to prepare arsphenamine properly it is necessary to employ sterile glassware, sterile rubber tubing, sterile needles, and sterile, freshly distilled water. The average safe dose per injection is four decigrams (0.4) but most people are able to tolerate six decigrams (0.6) and the optimum bulk of water in which the substance is injected has been found to be twenty cubic centimeters per decigram. Thus a total bulk of four decigrams would be eighty cubic centimeters of water, and for six decigrams one hundred and twenty centimeters. An ampule of arsphenamine is emptied into a sterile flask and about thirty cubic centimeters of hot sterile distilled water are added. The container is gently agitated until the powder has gone into solution. The fluid is now clear yellow or brownish yellow, but is acid. In this acid state it is highly poisonous and it must be neutralized before it is safe to inject it. This is accomplished by adding about fifteen drops of 15 per cent. freshly made up sodium hydrate solution. The fluid now becomes opaque because a precipitate forms which is an insoluble salt of arsphenamine. If this emulsion were injected the patient would be killed by embolism. It is necessary to continue to add sodium hydrate drop by drop until a clear solution is again produced. At this point the solution is slightly alkaline. By adding from two to five drops more of the sodium hydrate, in other words, by produc-

ing a slight over alkalinization a disodium salt is formed which is prevailingly not toxic. The solution is again clear and yellow but it is still too concentrated.

We now come to the second step in preparation. A sterilized, graduated glass container has been suspended from the wall, about two and a half feet above the level of the operating table. In its upper end has been placed a sterile glass funnel containing sterilized cotton. At the lower end of the container is a sterile soft-rubber tube, about a yard long, at the end of which is an adapter to fit the needle. About three inches above the adapter is a clamp. About two ounces of sterile, distilled water is poured into the container and the air in the container and rubber tube is exhausted. The water is let down to the zero mark. Arsphenamine solution is now poured into the funnel and it filters through the cotton. More sterile distilled water is added until the container holds a total bulk of eighty centimeters of solution or one hundred and twenty centimeters, according to whether four or six decigrams of arsphenamine will be used.

The patient is now ready for the injection. A tourniquet is placed around the biceps closely enough to make the veins stand out, but not tight enough to obstruct the arterial circulation. Obviously the patient is lying down. The needle is gentle inserted into the patient's vein and when the blood flows freely the tourniquet is removed, the tubing is fitted into the needle, the clamp is released, and the arsphenamine is allowed slowly to flow into the vein. The speed of the injection must not be too great or the patient may go into collapse.

It will be seen that there are some technical complexities in the use of arsphenamine. For the physician properly equipped for this work these factors are of no moment, but for practitioners not thus equipped or whose practice is not largely among syphilitics the aforementioned difficulties may seem insuperable. There are two ways in which the difficulties may be overcome. One is by the use of neoarsphenamine which needs no alkali and which may be injected in greater concentration, and by using an ordinary twenty centimeter syringe. The dose of neoarsphenamine must be half again as great as that of arsphenamine, since the salt is less efficacious. The other simplification has been furnished by the recent success of a pharmaceutical house in the manufacture of a permanent solution of arsphenamine. At the last meeting of the American Medical Association, Dr. Stetson of New York, in his discussion stated his experience with this solution, and he found it therapeutically as efficacious as the solution made in the physician's office and no more toxic. This solution is prepared in the Lowy Laboratories, and has been licensed by the Hygienic Laboratory. Any brand of arsphenamine specified by the physician is supplied in permanent solution, ready to use, with all the appurtenances for administration sterilized and included in the package. I have given sixty injections with this solution and can corroborate Dr. Stetson's statements. Each package is dated by the order of the Hygienic Laboratory and the substance should not be used after the date specified.

Undoubtedly it would be desirable if every physician could prepare his own solution, but this is not possible in smaller communities, nor even in larger communities among practitioners who do not frequently have reason to employ the drug. For men in these groups a permanent solution is of great advantage.

In addition to arsphenamine, mercury must be employed in the management of syphilis. This is done in three ways. Either by mouth, by inunction, or by injection. The disadvantage of the first method lies in the irritation of the intestinal tract; the disadvantage of the second is that it requires a great deal of time, is usually done carelessly, and is unpleasant; the disadvantage of the third method is due to the fact that if mercury poisoning develops there is no way of suddenly interrupting the treatment as is possible when the first two methods are used. In spite of everything, however, the injection method is the cleanest, quickest, and most efficacious. Thus this is the one advocated by the author. Either soluble or insoluble salts may be employed. The latter group is the more efficacious, and of these mercury salicylate is the most useful. According to the work of Harold Cole of Cleveland, mercury salicylate is the most easily absorbed of the insoluble compounds. It is prepared in 10 or 20 per cent. emulsion in sterile olive oil to which 1 per cent. of liquid petrolatum has been added. The injection is given every five or seven days beginning with a half grain. The tolerance of the patient is determined by increasing the amount until salivation develops. Two-thirds of this amount is then used at each injection, for there is no advantage in producing mercurialism. The iodides are a useful adjuvant in treatment. The saturated solution is administered after meals three times a day. A great many people are unable to stand iodides. They either get symptoms of congestion in the upper respiratory passages, or the iodide acne. If this should develop the drug must be interrupted.

The symptoms of arsphenamine poisoning vary. Many untoward results can be avoided by cautioning the patient not to eat before the injection, and to partake of food only sparingly during the few hours following it. Sometimes, and particularly after the third, fourth, or fifth injection, the patient suddenly turns blue, his face swells, the pulse gets weak and rapid, and it is hard for him to breathe. This picture suggests anaphylactic shock. In patients known to be subject to this, the attacks can be prevented by injecting hypodermatically 1-50 of a grain of atropine ten minutes before the arsphenamine injection. Furthermore, the attack can be controlled by injecting seven drops of suprarenal gland extract. A common picture of arsphenamine poisoning comes on from three to ten hours after the injection. This is characterized by pain in the bones and joints, headache, vomiting, and diarrhea. The rarer forms of poisoning present the symptoms of acute jaundice, chronic jaundice, or a chronic, itching, red, scaling disease of the skin which lasts for several weeks and is often accompanied by nephritis. The mild skin disturbances that occur are eruptions that look like scarlet fever or measles, and some forms of herpes or even zoster. Death from arsphenamine is extremely rare.

When the substance was first used, numerous

cases were reported of partial or complete blindness or deafness. These were supposed to be due to the drug, but it was found that this was not so and that the untoward results were due to syphilis itself. If a fresh case of syphilis is treated with arsphenamine or mercury, it has been observed that the rash grows brighter and more intense. This is caused by the destruction of the parasites and the local outpouring of their poisons which increase the inflammation. This is called the Herxheimer reaction. If a similar process takes place in a nerve the function of the nerve will be impaired. It is this phenomenon that caused the blindness or deafness alluded to above, and the proper thing to do is to continue the treatment of syphilis and not to stop it. Since we have become familiar with this fact the disturbances just discussed have become rarer. These disturbances are called neurorecidives.

Syphilis should not be treated continuously but rather in interrupted courses. This is due to the fact that the parasite becomes accustomed to the drug and is no longer destroyed by it. It is better to combine arsphenamine and mercury in courses, giving from six to twelve injections of the former, and from ten to fifteen of the latter. In late syphilis iodides may be added. It has been found recently that it is safe to use arsphenamine every four days, but for ordinary purposes it is sufficient to make the interval from five to seven days. Thus, the patient would get one arsphenamine injection every fifth or seventh day and one mercury injection at similar intervals, the total series covering a period of from eight to fifteen weeks. Two or three series should be administered annually.

The object of treatment is to make the symptoms of the disease disappear, and to turn the Wassermann test from positive to negative. It would require a separate paper to discuss the value of the test, but for practical purposes the latter may be regarded as one of the signs of the disease, without the disappearance of which, the patient cannot be considered cured. The treatment differs in different stages and phases of the malady.

In the primary stage, before the Wassermann test has become positive, the patient should receive two courses of treatment in the first year and only mercury in the second and third years, provided the Wassermann reaction never develops. In primary syphilis with a positive Wassermann test the patient should receive two courses of combined treatment in each of the first two years and only mercury in the third year, provided the Wassermann test has become and remains negative. The same is true in secondary syphilis. In older syphilis the patient should receive at least three years of combined treatment including iodides, but the use of arsphenamine should not be stopped in late syphilis until the Wassermann test has become negative, no matter how long it takes.

There are several exceptions to this rule. A man of sixty does not require as intensive treatment for latent syphilis with a positive Wassermann test as a man of forty or twenty would require, because there is a smaller margin of time ahead of him in which the complications of the disease can develop.

There are a few fine points to be emphasized. In treating syphilis of the heart, blood vessels, and kidneys, it is inadvisable to start very intensively, because a sudden resolution of the syphilitic process might cause permanent damage to the organs or even death. Thus it is well to start such patients off with a course of iodides and mercury over a period of two or three months. Then arsphenamine administration may be begun.

The problems of treating syphilis of the central nervous system are too numerous to be discussed in this paper, which purposes to deal more with the disease in its general manifestations, but it may be stated that at times it is necessary to add to the general treatment of the disease the subdural introduction of arsphenamine according to the combined method of Swift and Ogilvie.

The great problem is to know when the patient is cured. The earlier in the course of the disease treatment is begun the prompter the cure. Thus in the primary stage, before the Wassermann reaction, we find the optimum time. Theoretically we may say that if a patient has been free from symptoms and signs of the disease for a year without treatment, if he presents no Wassermann reaction, and if the cerebrospinal fluid is normal, he is well. The difficulty is to know when to start the test year. It is impossible to lay down any definite rules, for each case must be judged on its own merits, and even those with the greatest experience must inevitably make mistakes. But it is safe to say that the test year should never be begun before at least three years of treatment have been carried through conscientiously. During the test year the patient should be examined every two months, the Wassermann test being made each time. And at the end of the year, as well as at the beginning, there should be an examination of the spinal fluid. Annually for six years after the test year the patient should be thoroughly examined both physically and serologically.

It is hoped that this brief outline of the management of the disease will serve to convey to some a few of the cruder standards which are of use in the treatment of the malady and which may serve as guides in controlling the progress of treatment.

780 Madison Avenue.

THE GUILLOTINE, A SIMPLE ONE-MAN INSTRUMENT FOR DOING CIRCUMCISIONS.

By CHESTER T. STONE, M.D.,

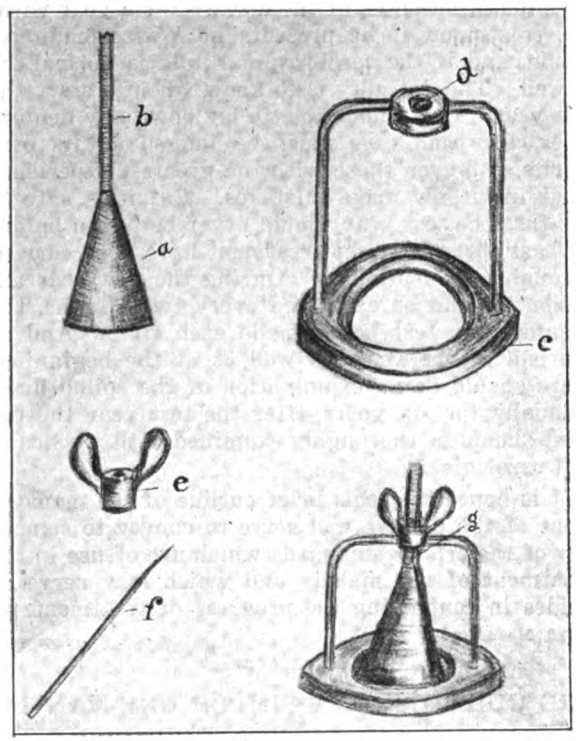
BROOKLYN, N. Y.

How true it is that there is nothing new under the sun. New applications of old principles are, however, constantly occurring. Being greatly hampered by lack of assistance during the war prompted the devising of this instrument.

It consists, as may be seen in the cut, of a cone (a) continued at its narrow end to a screw (b); (c) a plate with a hole the exact size of the cone at point of contact, the inner edge of the plate being a knife. Bridging the plate and bisecting the hole is a bridge (d), perforated for the passage of the screw; (e) is a winged nut for drawing the cone against the knife, and (f) a pin for rotating the cone in case of need. The instrument comes in five sizes from that suitable for an infant up to a large adult size.

To perform the operation the instrument is taken

apart and the cone lubricated on its inner surface, placed over the head of the penis after first retracting the foreskin. The skin is next pulled over the outside of the cone. It is well at this time to mark the skin with a pen at the point where it is to be removed. The cutting plate is next placed over the cone and skin with its edge in contact with this line; the winged nut is then screwed down until there is slight pressure on the skin. Now the local anesthetic may be injected just posterior to the inked line. When sufficient time has elapsed for the anesthetic to be effective, tighten up on the winged nut until a click is heard. With this the skin may be seen to roll up on the cone. Remove the clamp and suture. The incision will be found to be smooth and clean-cut, with no tabs or buttonholes or bulging frenum. In some cases of unusually thick mucous membranes the skin will cut through but the mucous membrane may remain in-



The guillotine for circumcision operation.

tact at intervals. By loosening the winged nut two or three turns and inserting lever (f) in hole (g) a rotary motion may be given the cone and the mucous membrane may be severed. The plate is so beveled that a knife may be used if preferred. After tying the bleeding vessels the most effective method of suturing seems to be to first place four sutures anterior, posterior, and lateral, leaving the ends long for binding on the dressing. By placing tension on two adjacent ones as anchor sutures, a continuous suture is then run around the whole edge. The result will be most pleasing.

Aside from the fact that this instrument makes the act a one-man operation, it has many other advantages. It is quicker, the author having done five complete operations, including the anesthetic and suturing, in one hour. It is practically bloodless, for the compression makes an efficient hemostat. The cosmetic results are far ahead of any method, for with this instrument it is impossible to have eight pointed stars, unsightly bulgings, or unforgivable buttonholes. The instrument is practically "fool proof," which is a decided advantage. It will be noted that less anesthetic has to be used on account of pressure anesthesia produced by the clamp. The wound will also heal more rapidly than it does when other methods are employed. The instrument itself is easy to keep in shape and can be used by anyone. Its use might be compared to the way some people play billiards. For starting an operation with this instrument there are always three ways of making a shot, either by pressure, by rotating the cone, or by using a knife.

62 PIERREPONT STREET.

Medicolegal Notes.

Medical Testimony as to Surgeon's Care and Skill Admissible.—In an action against a physician and surgeon for negligence in performing an operation, where the plaintiff's declaration expressly charged want of care and skill, the testimony of other surgeons that the defendant was a careful and skillful surgeon was held admissible.—Shaw v. Klein, Mississippi Supreme Court, 83 So. 620.

Extent of Liability.—The Minnesota Supreme Court says, by way of obiter dictum, that a physician or surgeon "is not necessarily liable for malpractice because of a bad result. He must often act promptly, upon his best judgment, and he is not liable for injuries arising, without negligence, from honest errors of judgment. But this is an exception to general rules of negligence and the exception is not absolute. Every act of his is in a sense an exercise of judgment and usually of honest judgment. Yet it may be negligent. He might be honest in his judgment that he could safely leave certain details to an assistant and yet be liable for negligence in doing so. . . . If a surgeon persists in the use of an anaesthetic after warning which would impel one of reasonable prudence to desist he should be held to answer for the consequences."—Moehlenbrock v. Parke, Davis & Co. (Minn.), 176 N. W. 169.

Insufficient Evidence of Failure to Diagnose.—In an action against a physician for malpractice, where the basis of the action was failure to diagnose as cerebrospinal meningitis the affliction from which one child in the plaintiff's family was suffering, and that defendant allowed other children to mingle with the one afflicted so that they contracted the disease, it was held that the evidence as to the presence of cerebrospinal meningitis was insufficient to warrant the submission of the case to the jury, and judgment for the defendant notwithstanding verdict was directed. It was also held that an uncalled for statement by the plaintiff's counsel in his argument to the jury that the physician was protected by insurance was error necessitating reversal.—Sherwood v. Babcock, Michigan Supreme Court, 175 N. W. 471.

Classification for Taxation of Physicians According to Length of Practice Is Discriminatory and Invalid.—The Arkansas Supreme Court holds that a classification of physicians for taxation under the State statute of 1919, authorizing cities to tax occupations, by imposing a greater tax on those who have practised ten years or longer than on others, violates the provision of that law that "no classification shall be based upon earnings or income." The court says that it is difficult to see how men of the same learned profession can be put in different classes for purposes of taxation, except upon the basis of difference in earning capacity or income, and any other classification would be purely arbitrary. The discriminatory effect of such an ordinance can, however, be eliminated by striking out the excessive amount of the tax without affecting the validity of the ordinance in any other respect.—Davies v. City of Hot Springs (Ark.) 217 S. W. 769.

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INTUSSUSCEPTION IN TYPHOID FEVER.

IF one may judge by the number of reported cases, intussusception in the course of typhoid fever is an extremely rare complication, but a very deadly one when it does occur unless recognized early and properly treated. Recently A. L. Moreton (*British Journal of Surgery*, April, 1920) has reported a new case and reviewed the literature. As he says, the rarity of the condition may be estimated from the few references that are made to it in the standard textbooks on medicine and surgery. Thus, Murchison's classical treatise "On the Continued Fevers of Great Britain" makes no mention of it, while the same is to be said of Allbutt's "System of Medicine," 1905, and Nothnagel's "Encyclopedia of Practical Medicine," 1904; Osler and McCrae in "A System of Medicine," 1907, simply say that several instances have been reported, in one with hemorrhage, the diagnosis of perforation being made; while W. W. Keen makes no mention of the matter in his classical volume on "Surgical Complications and Sequelæ of Typhoid Fever," 1898.

In Moreton's case the patient was a woman 24 years of age. Up to the forty-seventh day the course of the disease had been moderately severe with some atypical features, especially as regards constipation and the character of the temperature, which had been rather of the remittent type. On the morning of the forty-seventh day the temperature suddenly fell to 97.8° and the patient had a severe attack of vomiting. The pulse rate was not raised, abdominal distention was not increased, the area of liver dulness was normal and the abdomen moved well on respiration. On the afternoon of the next day the pulse rose from 120 to 140, the temperature remaining about the same, while there was colicky pain in the right iliac fossa. On the forty-eighth and forty-ninth days the bowels moved spontaneously and no blood was found in the stools, while the blood count showed but a very slight leucocytosis. On the afternoon of the forty-ninth day pain had become very acute, the right iliac fossa was exquisitely tender and an ill-defined, resistant mass was found on examination, while the abdomen was becoming distended. Perforation and various other possibilities were thought of (apparently not intussusception, however) and an exploratory operation was decided upon. Ileo-ileal invagination was found, the apex passing into the cecum, but without participation of the ileocecal valve or appendix. The intussusception was easily reduced and no cause, such as a swollen Peyer's patch, could be found. The subsequent course, as far as postoperative features were concerned, was uneventful and the patient was ultimately discharged cured.

Moreton was able to find but ten other cases in the literature, one of which occurred in a two-year-old infant, the average age of the others being 21. Five of the patients were males, three females, and in three the sex was not stated. The period of the disease in which intussusception occurred was noted in eight cases: One in the first week, one in the second, one in the fourth, two in the sixth, and three in the seventh week. The intussusception was enterocolic in six cases, enteric in three, and in two the type was not recorded. In two of the enteric cases there was more than one intussusception. Of the eleven cases, six recovered, four died, and in one the result was not stated. Operation was done in six cases with but one death, that being in a case with three intussusceptions, all ileo-ileal.

Summarizing his study of these cases, Moreton says that acute intussusception is one of the rarer complications of typhoid fever; it may occur at any time during the progress of the disease, but it is usually late in its course or during a relapse; it may be caused by irregular peristalsis due to inflammatory changes in the wall of the gut, or an enlarged Peyer's patch may start the process; the type is more commonly enterocolic, and if of the enteric there may be more than one lesion; the differential diagnosis from perforation may be difficult; the prognosis is good with operation, and operative results are much better than in cases of perforation; and in reducing the intussusception it should be borne in mind that diseased bowel is being dealt with, and the utmost gentleness should be used in all manipulations.

IMPORTANCE OF DISEASED BRONCHIAL GLANDS.

OUR knowledge of enlargement of the lymphatic glands during life is for the most part dependent upon our ability to palpate them. Any well-performed physical examination always takes into account the glands of the neck, groin, axilla, elbow, etc., and their condition is set down with a certain feeling that we have been thorough in our work. Unfortunately, however, there are large groups of highly important glands in both the abdomen and thorax which never come under the searching finger. Those in the abdomen are made a little more accessible through operations; but the thoracic glands may be greatly enlarged and diseased without our having suspected it during the life of the patient. Now and then *x*-ray

plates of the chest bring out with some degree of precision certain shadows which are taken to be mediastinal glands, but one is never quite sure about them until autopsy.

Writing in the *Acta Laryngologica*, Vol. 1, Fasc. I, Prof. E. Schmiegelow of the Rigshospital, Copenhagen, Denmark, makes a contribution to the pathology of the bronchial glands, laying, of course, especial stress on tuberculosis. The diagnosis, he says, can be made in three ways: By direct bronchoscopy; visually, by the patient coughing up the gland; and by post-mortem. To many practitioners this will not offer much hope, especially the post-mortem cases. Coughing up the gland takes place only in those instances where a caseous gland has ruptured into the bronchus, in which case pus may flood the lung and death ensue promptly. Now that direct inspection of the bronchi has become a well-established procedure, it may be of benefit to submit the patient to a bronchoscopist for his opinion, but in many instances, particularly in children, parents will rebel even though it can be shown that no possible harm can result—a statement which few specialists would care to make over their own signatures.

But to revert to the more academic aspect of the matter, Schmiegelow states that 8 per cent. of healthy bronchial glands in healthy individuals contained tubercle bacilli. This he quotes from Kälble. In children the enlarged glands are mostly tuberculous in origin; in adults they are anthracotic or calcareous, which may mean that they have been tuberculous. Perforation into the bronchi, either potential or actual, is described by various writers in from 0.3 per cent. to 3 per cent. of all autopsies. Perforation in children causes violent choking spells, even death. Persistent cough without much sputum is caused by the glands irritating the vagus or by pressure on the easily compressible bronchial walls. Where sudden death occurs in children afflicted with enlarged and diseased bronchial glands, the question immediately assumes a medicolegal aspect. Thus Reunert cites the case of a child left playing by itself without any guardian near at hand. The child had been quite well. When the parents came to take it away they found the little one dead. Violence was suspected, but autopsy showed that the child had died of suffocation following perforation of an abscessed bronchial gland into the lung. If the perforation is small the gland is discharged slowly, if the perforation is large the destructive lesion is large and the patient drowns in his own secretions.

Diagnosis and treatment by tracheobronchoscopy has been successfully carried out, but it is at present possible only in glands situated in the posterior mediastinum. Treatment by internal medication is disappointing. There are cases both in adults and in children where a violent, non-productive cough has tried the nerves of doctor, patient, and everybody concerned. Inhalations, deep intratracheal injections of silver salts and other mucous membrane antiseptics, cough medicines, alteratives, such as the iodides, and all other efforts avail nothing. The thoracic glands are probably infected and enlarged in such a case, and nothing short of a change of climate will suffice. An ocean voyage or balmy pine-laden air may help to shorten the course of the malady.

As for the anterior mediastinum, J. K. Dalziell has reported three patients from whom he removed the sternum. In one he found an abscess under the arch of the aorta. Caseous tuberculous glands were discovered and removed, and the patient recovered.

The importance of the whole matter seems to lie in the diagnosis of the kind and degree of bronchial gland involvement. In children we may expect cough and difficulty of getting the air in and out of the bronchi. Papillomata of the airways must be ruled out and one is probably rarely justified in making a diagnosis of "asthma" in these little patients. In adults we must remember the possibility of bronchial gland enlargement coincident with any infection of the airways or adjacent lymph paths. Auscultation and percussion will tell us little, the *x*-rays more, and the bronchoscope most. Ultimately we may have to send the patient away, and then our major effort is centered on just what the right climate is likely to be. That is not infrequently experimental for each individual. Shall it be the mountains or the seashore or the pine woods? Even in the presence of frank pulmonary tuberculosis, the answer is not always easy.

THE DIAGNOSIS OF SYPHILITIC CHANCRE OF THE PALPEBRAL CONJUNCTIVA.

SYPHILITIC chancre of the palpebral conjunctiva when fully developed remains stationary for a lapse of time varying from one to two months, after which cicatrization takes place in the usual way without leaving any apparent trace of the sore. The diagnosis of the lesion is difficult, particularly so because the true nature is not suspected, and frequently it is not until the advent of the secondary manifestations of syphilis that the diagnosis is made. Mistakes are more prone to be made at the onset of the lesion when symptoms are still absent. Later, when the process has arrived at the stage of a painless ulcer, with an indurated base with edges unelevated and accompanied by a tumefaction of the preauricular lymph node — hard, painless, and movable — the diagnosis is easier. Although it is impossible to make the diagnosis from the clinical aspect of the lesion, when fully developed at the end of three weeks, the Wassermann will probably be positive and the treponema can be found in scrapings made from the surface of the ulcer.

The differential diagnosis must be made from conjunctival tuberculosis, epithelioma, ulcus molle, secondary and tertiary luetic lesions, and other oculopalpebral affections, such as herpes, stye, and chalazion. Tuberculosis of the conjunctiva is more common in children and young

subjects with a tuberculous history; rarely a primary localization, it is more frequently a secondary lesion from extension of lupus on the nose, nasal canal, or lids. The ulcer has a dirty, gray fundus with irregular edges, its base is not indurated, while around it small grayish-yellow nodules are seen. Epithelioma is met with in elderly adults. It forms a reddish growth of variable consistency with a rather irregular surface bleeding readily. It is not uniform in color, being a dirty red and granular in spots. Enlargement of the lymphnodes occurs late in the process. Simple ulcus molle is so rare on the conjunctiva that its reality has been doubted, but some authentic cases have been reported by both Gaston and Vignes. The lesion is painful, with red, undermined punched-out edges, and an irregular grayish yellow fundus. The enlarged lymphnodes are painful and the specific bacillus can be found in the secretions from the sore. Mucous patches of the conjunctiva never produce tumefaction of the lymphnodes and are not indurated. They are accompanied by other secondary manifestations. Syphilitic tarsitis is a late symptom of the infection and has a painless evolution. The tumefaction involves the entire lid and the tumor remains localized to the tarsus. Gummata of the palpebral conjunctiva are extremely rare, far more so than on the bulbar conjunctiva. Out of twenty-five cases collected by Bayard in his thesis (Paris, 1895) the palpebral conjunctiva was the seat of the process in only five. In gumma, the ulceration is much deeper, extensive and sanious. The history of the case, absence of enlarged lymph nodes, and the rapid action of potassium iodide differentiate a gumma from a chancre. There is no lymphatic involvement in stye and it has a painful inflammatory evolution, while in conjunctival herpes there are pain, intense photophobia, and intact lymph nodes. Chalazion is round, hard to the feel, rarely ulcerates, and has granular contents.

It is clear, therefore, that the main difficulty in making the diagnosis is that the primary sore of syphilis on the palpebral conjunctiva, because of its infrequency, does not occur to the mind of the observer.

THE UPSTREAM SPREAD OF CHOLERA.

In 1883 the British Government sent a cholera commission to Egypt to study an epidemic of the disease which spread from the Damietta mouth of the Nile, where that river falls into the Mediterranean, to the place where it divides into the Damietta and Rosetta branches, thence up the main river. Cantlie, who was a member of the commission, called attention to the fact that the infection spread from town to town and district to district, until its track was lost somewhere about the Dongolo district. The towns in the Rosetta branch and the Delta were irregularly attacked, showing, as Cantlie believed, overland infection in all probability. The upstream spread of infection he attributed to fish, but has had no opportunity of investigating this supposition. These views, which he recalls in a note in *The Journal of Tropical Medicine and Hygiene* (August 2, 1920, p. 198), are of particular interest just now, in view of the reiterated prophecy that cholera, among other alien diseases, may invade this country and others to which it is unfamiliar. Cantlie's suggestion that Hoops, who contributes experiences with this disease as seen in a new country (Kedah, Malay Peninsula) (*ibid.* p. 189), might take up this question is pertinent, and applies likewise to other investigators.

Hoops, in the contribution mentioned, calls attention to the suggestion that the cholera outbreaks in Kedah were not due to imported cases, but to the persistence of the cholera vibrio in the country between the epidemics, either in an altered and unrecognizable form (temporarily nonpathogenic) in the earth or water, or in the gallbladder of human carriers. It is certain, he states, that to infect man the cholera vibrio must be swallowed. Answering the question as to the channels by which it spreads, Hoops accepts the view that it is largely by the same agencies as those by which typhoid fever is disseminated, namely, food, fingers, and flies. Among other possible food sources of infection are mentioned fish from infected rivers, the eating of which has been condemned by Gimlette, and shellfish scraped from the bottom of ships, which have been found to contain cholera vibrios.

If these possibilities are proved to be in line with the suggestion of Cantlie, the upstream spread of cholera is no more difficult of explanation, as some have thought, than spread in any other direction from the apparent point of origin.

FAMILIAL DEMENTIA PRECOX.

Laignel-Lavastine discussed this subject at a recent session of the Société de Psychiatrie, reported in *La Presse Médicale* for June 2, 1920, xxviii, 36. The author presented before the society a brother and sister, both attacks with progressive psychic dementia with lack of insight, disorientation, apathy, grimaces, and assumption of meaningless attitudes. The brother showed more mutism and inertia while the sister showed more excitement with attacks of laughter, puerilism, and timidity. The diagnosis was hebephreno-catatonic form of dementia precox which appeared in the boy at the age of 18 and in the girl at the age of 12. The father was an alcoholic and probably syphilitic, but the blood of the patients showed no complement deviation. The familial form of this condition is not common, so that the author felt justified in calling attention to this example. In another case in his practice three sisters were successively attacked. All showed the paranoid form. One sister has since died of tuberculosis. For years it has been noted that in familial psychoses paranoid forms are more common than others, while familial incidence naturally means hereditary taint. In discussion Delmes mentioned the case of the daughter of a celebrated professor developing evidences of hebephrenia now

many years ago. Last year a younger brother began to grimace and show negativism, suggesting incipient dementia precox. It is not unlikely that this case may become attenuated, but recrudescence will doubtless follow.

Cutaneous Filariasis in Guatemala.

According to a correspondent of *La Presse Médicale* for June 9, 1920, xxviii, 38, this very curious condition has been placed on record by Robles of Guatemala. It is an erysipelatous eruption of the face characterized by fever, burning and itching, and troubles of sight and hearing. Lemaire places the habitat of the disease as the western slope of the Cordilleras. The cutaneous lesions are the size of a pin head to a hen's egg with an average the size of a cherry or almond. The number varies from 3 to 5 and the lesions become cystic when they are found to contain filariæ of both sexes belonging to the genus *Oncocerca* and morphologically at least the species correspond to the *Oncocerca volvulus* of Leuckart which is widely diffused on the Congo. Brumpt, the South American parasitologist, prefers to call the species the *Oncocerca cæcutiens* because of its tendency to cause blindness. At present the condition is endemic only in Guatemala in a narrow strip of land running longitudinally. Thus far it has been encountered only at an altitude of 600 to 1200 meters. In one coffee plantation at 700 meters altitude every workman was a victim. At a slightly lower level there was not a case, although the workers went back and forth. Young and old are attacked impartially. Only field hands are attacked and the Indians somewhat more freely than the whites. From a map of the affected district the term "litoral" would seem to be a misnomer, for this region is at least 40 miles from the coast with which it runs parallel for about 100 miles. Some species of fly, probably a sandfly, is believed to carry the filaria.

Action of Uranium Salts on Neoplasms.

This form of activity does not seem to be exploited because of any relationship between uranium salts and those of radium, mesothorium, etc. It is only claimed that like selenium, neosine, trypan red, and other miscellaneous substances uranium salts are oncotropic, which seems quite different from the claim that their efficiency is due to radioactivity. Acqua, Almaglia, and others have worked along this line. The former studied the action of uranium salts on young vegetables and concluded that they inhibit caryocinesis. Almaglia then studied the action of a solution of uranium nitrate in very weak concentration (1-20,000) on adenocarcinoma induced in the tail of the white rat. Injections directly into these tumors showed no inhibitory effects. Vrzosek repeated these injections with more positive results and saw these tumors come to arrest and then regress after a series of injections. The frozen unstained sections under the microscope showed that the cells were stained yellow by the yellow oxide of uranium. Only the tumor, and not the tissue cells, was thus stained. It is even claimed that injections of nitrate of uranium stunt the entire growth of the young rats.

News of the Week.

Paris Fights Rats.—A plague of rats, developing from rodents that were hardy enough to make the journey from the trenches to Paris, where they multiplied in alarming numbers, has infested the French capitol. In the effort to rid the city of the pests every householder has been enlisted, and the sum of 300,000 francs has been voted by the Municipal Council for the work. For every dead rat presented at certain depots the Minister of Hygiene pays twenty-five centimes reward. Professional rat-catchers are using poison and poison gas in the war on the rodents, especially in market and slaughter-house areas. As a precautionary measure dust bins and refuse boxes are removed from the streets except within certain hours. Posters are distributed by the Ministry of Hygiene appealing to everyone to go rat hunting by day and night.

Red Cross Relief Program for the Coming Winter.—Appropriations amounting to $48,200,000 have been made for the American Red Cross relief program during the fiscal year ending July 1, 1920. Relief work in foreign lands will comprise nearly two-thirds of this, for it is believed that Central Europe faces another winter of famine, pestilence, and ruin. The recurrence of typhus fever on an unprecedented scale is anticipated.

Cholera in Corea.—Advices from Seoul, Corea, state that 9,000 cases of cholera have been reported, with 3,000. Opposition to cremation causes the natives to secrete the bodies of the cholera victims, which renders the control of the disease very difficult.

Second Rat-Poison Incident at Camp Dix.—For the second time rat poison has been discovered in flour at Camp Dix, presumably accidently upset in the flour. About forty members of the Motor Transport Corps were made suddenly and violently ill as the result of the last accident. Through prompt work on the part of the medical officers no fatalities or permanent ill effects occurred. The incident is being investigated.

Food Drafts for Germany.—Food drafts amounting to $8,000,000 and representing 800,000 ten-dollar food draft packages have been distributed in Germany since the American Relief Administration warehouse was opened in Hamburg, in addition to 50,000 fifty-dollar parcels by the Hoover organization.

Whiskey No Longer Medicine in the Navy.—The Bureau of Medicine and Surgery of the United States Navy has issued an order prohibiting the issue of spirituous liquors to naval vessels for medicinal purposes. When the stock on hand in medical supply depots is exhausted "no further purchases will be made and whiskey will be stricken from the supply table of the medical department of the navy." The use of ethyl alcohol is permissible when a medical officer deems alcoholic stimulation absolutely essential for the preservation of life.

Philadelphia Medical Schools Merge.—Plans have just been completed, after four years of negotiation, for the merging of the Medico-Chirurgical College and Hospital and the Philadel-

phia Polyclinic and College for Graduates in Medicine, forming the Graduate School of Medicine. The first regular course of the new institution will open October 4.

More Public Health Nurses Needed.—At the recent conference of State health officers held at Saratoga Springs, Dr. Josephine S. Baker, director of the division of Child Hygiene of the New York State Department of Health, made the statement that there are 9,500 public health nurses in the United States and places for 40,000 more.

Anterior Poliomyelitis in Boston and New York.—During the first half of the year seventeen cases of infantile spinal paralysis were reported in Boston, 16 cases during July, 94 cases in August, and 63 cases for the first nine days of September, according to advices from the Health Commissioner of that city to the Health Commissioner of New York City. There have been only 43 cases in New York, with three deaths, according to Commissioner Copeland, who has written a letter to every physician in the city requesting special vigilance and the reporting of all suspicious cases.

Malnutrition Class.—At Greenwich House, one of the United Neighborhood Houses of New York City, undernourished children just out of babyhood are being fed scientifically. The class at present is composed of seventeen little boys and girls, who are given a "supplementary breakfast," a nourishing luncheon, and a mid-afternoon meal of crackers and milk. After luncheon the children sleep for an hour and a half on the roof playground. Each of the children has shown a gratifying gain in weight. The malnutrition class is an outgrowth of the Baby Clinic held at Greenwich House every Thursday afternoon.

Crime Decreased by Prohibition?—According to Charles L. Chute, secretary of the New York State Prohibition Commission, there was a 34 per cent. decrease in the number of persons brought before the courts in seventeen of the larger cities in the State during the first three months of 1920 compared with the same period for 1919. There were arraigned 45,123 offenders of all ages during these three months of the present year, as against 68,535 last year, a decrease of 23,392. In practically all courts, he says, by far the greatest decrease has been in cases of public intoxication, disorderly conduct, and other offenses growing out of drink, although there has been a decrease in other offences as well. The reduction is attributed to prohibition.

Physical Test for Automobile Drivers.—The Health Commissioner of New York City has presented to the Secretary of State the suggestion that every person applying for a license to drive an automobile be compelled to give evidence of having good eyesight, good hearing, and good morals. Many licensed chauffeurs have defective eyesight and hearing, and many are said to be drug addicts. Out of 7,464 individuals registered as confessed drug addicts, according to the Commissioner, 534 were listed as drivers or chauffeurs.

Vital Statistics Encouraging.—During the first seven months of this year, according to figures prepared by the health authorities, New York City had a birth rate of 22.34, against 21.90 for the same period of 1919. The rate of infant mortality for last year was 83 in each 1,000, while the preceding year's rate was 92.

Lip Reading School Opened.—The New York City Board of Education has announced the reopening of the free school of lip reading for adults with defective hearing. The classes are held on Monday, Tuesday, and Wednesday evenings at Public Evening School 93. In addition to learning lip reading, hard of hearing women and girls wishing to learn a trade may join classes in dressmaking, millinery, embroidery, and cooking. Men and boys wishing to learn a trade should make application and state their preference.

Plans for Crippled Children.—Commissioner Bird S. Coler of the Department of Public Welfare, New York City, has announced that the five hundred or more victims of infantile paralysis will become resident patients in the city's hospitals. The transportation system is thus abolished. A public school teacher is provided for each hospital so that the education of the little cripples will not be neglected.

Insane Aliens to be Deported.—Officials of the Immigration Bureau at Washington are planning for the deportation of more than 1,700 insane aliens reported to the Bureau since 1915. The various states are said to have expended about $2,000,000 in the upkeep of the alien insane. More German immigrants are included in the 1,700 than from any other country.

The National Anesthesia Research Society, which will hold its first annual meeting in Pittsburgh, Pa., October 4-8, in conjunction with the Interstate Anesthetists Society, the Western Pennsylvania Odontological Society, and the Medical Society of the State of Pennsylvania. One of the special features of the session will be the awarding of prizes aggregating $200 for the best papers on original research in anesthesia presented to the society.

Charitable Bequests.—By the will of the late John J. Deery of New York City the following bequests were made: New York Catholic Protectory, $5,000; St. Vincent De Paul Society, $2,000; Church of St. Paul the Apostle, $1,000; Catholic Bureau for Dependent Children, on East Twenty-second Street, $2,000; St. Joseph's Day Nursery, 469 West Fifty-seventh Street, $500, and the Home for Crippled Children, at Port Jefferson, L. I., $1,500.

Civil Service Examinations.—The New York State Civil Service Commission announces examinations to be held October 2 for Medical Examiner and Assistant Medical Examiner, State Industrial Commission; Physiological Chemist, State Department of Health, and First Assistant Physician, Letchworth Village, Thiells, Rockland County. Applications should be made before September 25 to the State Civil Service Commission, Albany, N. Y.

The New York and New England Association of Railway Surgeons will hold its thirtieth annual session at the Hotel McAlpin, New York City, October 19, under the presidency of Dr. William B. Coley of New York. Clinics will be held at the Hospital for Ruptured and Crippled October 20, and at the Memorial Hospital and the Post-Graduate Hospital October 21.

Body of Miss Delano Arrives.—The body of Miss Jane A. Delano, who was Director of the Department of Nursing of the American Red Cross during the World War, arrived September 10 on the United States transport Sherman. A guard of honor from the Red Cross met the body at the army base, South Brooklyn, where the transport docked, and escorted it to Washington for burial. In the spring of 1919 Miss Delano broke down in France and died in the hospital at Savenay in April of that year.

Jefferson Medical College to Honor War Dead.—The Alumni Association of Jefferson Medical College, Philadelphia, on October 7, will dedicate a memorial to the graduates who lost their lives in service during the World War. The memorial is in the form of a bronze tablet, five feet high by four feet wide, on which will be engraved the names of the martyrs. Of the 1,147 graduates who entered the military service, twenty-five lost their lives.

Obituary Notes.—Dr. ROBERT H. HAMILL of Summit, N. J., died Sept. 5 in his sixty-sixth year. He was graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1878. He was a member of the American Medical Association.

Dr. STEPHEN V. W. STOUT of Jersey City, N. J., died Sept. 7 in the Memorial Hospital, New York City, where he had been under treatment for an affection of the throat. He was born in 1846, and was graduated from the College of Physicians and Surgeons, New York City, in 1868. Dr. Stout served as County Physician of Hudson County, N. J., from 1873 to 1876, and as member of the New Jersey Assembly in 1898.

Dr. ALBERT E. KOONZ of New York City died Sept. 8 at St. Luke's Hospital, after an illness of six weeks. He was forty-seven years old. He was graduated from the College of Physicians and Surgeons in 1896. He was also a graduate in dentistry.

Dr. FREDERICK HENRY GERRISH of Portland, Me., died Sept. 8 at the age of sixty-five. He was graduated from the Medical School of Maine in 1869, specializing in surgery. He held a professorship in the University of Michigan until 1873, when he became a member of the staff of Bowdoin College, of which institution he was emeritus professor of surgery at the time of his death. He was a former president of the American Academy of Medicine and of the American Therapeutic Society.

Dr. HARMON NORTHROP MORSE, professor of chemistry and director of the chemical laboratory at Johns Hopkins University, died at his summer home at Chebeague Island Sept. 8, at the age of seventy-two. He had been on the staff of Johns Hopkins since 1876.

Dr. GEORGE H. MCGUIRE of the Bronx, New York, met death September 12 when the automobile in which he and seven members of his family were riding plunged twenty-two feet off an elevated road at Dobbs Ferry, N. Y. All but one, the physician's twelve-year-old son, of the eight were killed, probably instantly. Dr. McGuire was born in 1862, and was graduated from New York University Medical College in 1883.

Correspondence.

REPORTING PROGRESS RELATING TO IMPROVING THE MILK AND BUTTER SUPPLIES.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—It is interesting to realize how many matters of a scientific nature have more or less relevancy to the "Great Milk Question." I have lately had an inquiry from Kansas City relating to the present status of the movement with which it is now somewhat widely known I am interested. My latest communication to the MEDICAL RECORD relating to the causative effect of diet in so-called rheumatism, seems to have excited considerable interest if I am to judge by the communications sent to me relating to that matter.

As a matter of fact I may say that I have unwittingly become the repository of a large amount of suggestive information from various sources, a consideration of which has led me to rearrange my conclusions previously formed, which may be of general interest, and which have a bearing on the character of the milk and butter supplies. I have also vicariously undergone some self-inflicted experimentations that have strengthened my views to the effect that the milk and butter supplies produced and sold today are not harmonious in character with our latest acquired scientific general knowledge.

From the sources of information received there seems to be little doubt that there may be directly and indirectly acting, irritative conditions of the blood, varying in character, that will, in connection with various other special conditions, produce one or other of a number of diseases, and stand as obstacles to cure. It seems likely that such irritative conditions of the blood may be hyperacidity, excess of sugar, too much concentration of well balanced nutrients, lack of balance in the nutritive constitutients, deficiency in the nutritive supply, high blood pressure, too low blood pressure, too much protein, absorbed protein split-poisons, unexcreted accumulation of normal metabolic products, and, not to be forgotten, accumulation of putrefactive poisons.

These putrefactive poisons, as well as split-protein poisons, are more or less present in all market milk and butter products sold today; and practically nothing is being done to eliminate the menace of such contaminants in those vitally important foods, outside of ordinary pasteurization. It seems clear that one or a combination of such blood irritants may be present in the blood and be a causative factor in producing rheumatic arthritis, gout, lumbago, diabetes, various skin affections, cancer, exophthalmic goiter, nephritis, and other troubles.

Accepting such conclusion as a probability, it is obviously a matter of importance that both milk and butter should be as free as possible from such damaging matters, prior to their consumption. It is really a sad fact that no milk or butter attainable by the general consumer is as yet as good as it should be, and that under present conditions of handling those products no one can know the relative character of what is consumed. There is no

way of improving this situation, so far as is known, unless *all* milk and butter supplies are so treated as to remove the menace. The treatment required is relatively simple; and after the cost of installing the means for treating them, the increase in cost is very slight. In fact, so far as the better grades are concerned, the cost of production is considerably lessened.

There is no hope of securing the desirable change of treatment without *forcing* dealers to do what at least some of them now know it is their duty to do; and it will require a considerably large new moneyed investment for new equipment, and an education of consumers to understand the situation. Now inasmuch as milk dealers are not in business for their health's sake alone, naturally no one is willing to undertake the new methods unless he can be protected against loss in their undertaking.

Realizing the need of overcoming that situation, I make the basis of my reform proposition, the principle that has been entirely overlooked hitherto in reform work, viz., controlling the various methods and means for accomplishing the result by patenting the same so as to be able to place the protecting patents into the hands of selected distributors, who through the held monopoly would be able to do the needed educational work among consumers, and eventually secure the cooperation of other dealers by consolidation with them, thus cutting down cost of distribution.

After thirty-five years' experimental work I have found that it will require the issue of about twenty-six patents to secure the protective power. About half of the applications filed have been granted, and good progress is being made with the balance. It is now up to me to secure the funds needed by a holding company to work the patents, and to carry the campaign into effect. I am putting this matter up to about one hundred of the most prominent men and women of the country whose backing will be strongly moral as well as financial in connection with the work.

I don't know that I shall live to see this movement carried out, as the "three score years and ten" age has been passed; but my general health is good and I am struggling hard to prolong my life. I eat as lightly as I can of a regulated diet as to which I will write later on. I have evolved a "bran cake," and a method of preparing oats, that are worthy of adoption generally.

I want the openly published approval of all medical men and scientists whose approval will be helpful, and will be glad to undertake the education that apparently all need as to the advance that it is now clear I have made. It has taken me eight years to realize that I have gone ahead of everybody else in this matter; but that realization has been forced on me by the circumstances of the struggle, and I beg medical confrères in particular not to think my head has been swollen in this connection. My thoughts have been far too much taken up by a not as yet completely resolved arthritis of the knee for three years to feel any great degree of self-pride as to anything I have done in my nearly ended life.

J. M. W. KITCHEN, M. D., M. S.

EAST ORANGE, N. J.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, August 20, 1920.

Face Surgery.—A somewhat remarkable book dealing with plastic surgery of the face has been written recently by Major H. D. Gillies, F. R. C. S., and published by Frowde, and Hodder and Stoughton. Major Gillies was in charge of the hospital at Fragnal, Sidcup, near London, which was brought into being during the war for the purpose of treating facial injuries which, under the conditions of warfare that prevailed, were fairly common. It goes without saying that a great deal of the surgery appropriate to the cases had to be learned and therefore some originality was brought into play and much skill and ingenuity exercised. Indeed, the book is a record not of brilliant surgery alone, but of the physical and esthetic salvation of men who had been changed, by injury, at most out of the likeness of a human being. It was an effort of humanity on a wide scale as well as an exhibition of surgical skill in its highest phase. The photographs with which the pages of the book are profusely illustrated show all the stages of the reconstructive work and prove that few cases are so desperate that facial surgery cannot better them and that in many instances seeming miracles have been performed. Sir Arbuthnot Lane, who has written a preface to the volume, points out that the value and importance of plastic surgery have not diminished with the close of the war and insists that "ugly scars resulting from burns and accidents, deformities of the nose and lips, harelips and cleft-palate, abnormal protrusion or ill-development of the mandible, moles, port-wine stains, all abound and are not only the constant source of the greatest distress and anguish, but naturally lower the market value of the individual." The book covers in a very satisfactory way the entire subject and in it are included chapters on the principles and underlying plastic surgery by Captain Fry and the administration of anesthetics by Captain Wade. The author is known in some of the big cities of America as in the autumn of last year he visited the United States and gave several addresses on plastic surgery.

The Census of Next Year.—In April next the census will be taken in Great Britain. One of the features of the new census bill, which will come into force shortly, gives the power to hold a census every five years instead of as formerly, every ten years. The Minister of Health has a wider field than that concerned with health functions proper. He deals with industrial matters, occupation and employment, questions of the greatest value to actuaries and life insurance companies, as well as to those concerned with matters of housing. There are three census authorities, one for England and Wales, another for Scotland, and another for Ireland. Under the bill it is proposed to leave out the "fertility" inquiry, the number of children born and alive in the case of existing marriages. That inquiry which was made in 1911 was of importance as bearing upon the tendency of a diminishing population, but owing to the war the results have not been completely published. It is a question which need

not be repeated on the next occasion. No inquiries will be made about infirmities, but in their place it is hoped to substitute inquiries as to occupation, industries, education, continuation schools, transport, housing, and old-age pensions. A knowledge of the extent of the stream of traffic between places of employment and residence would be of great importance, inasmuch as it would be of the highest value in regard to matters like housing, overcrowding, and transport. No questions will be asked about religion, military service or illegitimacy. Every census has brought its new problems. At the last census the important inquiry was concerning the fertility problems. Economic labor questions are now regarded as of more importance.

Protests Against Health "Inquisition."—There is no doubt that the new Ministry of Health has a hard road to hoe. The English Catholics are now up in arms against what they term attacks on the moral law and the infringement of individual liberty by the socalled "inquisition" which it is proposed to establish under the Ministry of Health. A meeting of protest was held during the session of the National Catholic Congress held recently in Liverpool. A letter was read from Mr. Hilaire Belloc in which he expressed the general sentiments of the Catholic with respect to the proposed measure. He pointed out that they knew what State control, as it is called, produced; what were its effects upon the individual, the unit and the family; its irresponsibility, the impotence of the voting masses to direct or even check it, and the singular power exercised over it by the few rich men who controlled the political machine. Catholics had a definite and unalterable view of how human life should be lived and of what was tolerable and what intolerable in the action of the State upon the individual conscience and the family. Resistance to the most immoral and monstrous of the new devices which the Ministry of Health was certain to attempt would be met officially by an angry intolerance. There would be no opportunity for compromise. The powers of the Ministry of Health would be under the double control of great capitalists and extreme theorists and they would be used to impose things to which no Catholic could submit. They could not admit an interference with the liberty of marriage in adult men and women, nor any element at all of the horror known as eugenics. They could not admit what was called sex teaching, or any one of the whole series of propositions regarding sex hygiene; neither could they admit the claim of the State over the children as against the claim of the parents. Religious resistance, the writer went on to say, might well be fruitful, because the politician was easily frightened, and knew in his heart that these new extensions of irresponsible power had no popular backing. The politician was, as a rule, a weak bombastic man who had taken up a Parliamentary profession either for a salary, the limelight, opportunities for picking, or the power of patronage. Cardinal Bourne made a speech at the Congress in similar strain and appealed to labor to fight against infringement of individual liberty. A resolution was passed declaring that the Ministry of Health was of a character to justify corporate action. It is obvious that the Catholics intend to fight any interference with the powers of the church and this resolution may seriously embarrass efforts made by the Ministry of Health to improve the health of the country, if such efforts clash with the views of Catholics or their directors.

High Birth Rate Maintained.—The quarterly return of births, marriages and deaths shows that during the June quarter of this year nearly 6,000 more boys than girls were born in England and Wales. The figures also disclose the facts that the births registered during the three months ended June 30 numbered 248,665 and the deaths 119,283. The number of persons married during the three months ended March 31 was 138,302. The number of persons married during the first quarter of 1920 showed a decrease of 64,000 from the number in the preceding quarter, but was 18,026 more than that in the first quarter of 1919; it corresponds to an annual rate of 1,418 per 1,000 total population, including armed forces at home and abroad in 1919. The births registered in the second quarter of 1920 were 22,417 fewer than in the preceding quarter, but 99,841 more than in the second quarter of 1919; it was the highest number recorded in any second quarter since the establishment of civil registration. Of the 245,665 births, 12,132 or 2,201 more than the number in the corresponding quarter of 1919, were illegitimate. The births of males numbered 127,258, and those of females 121,407. Male births were in proportion to female births as 1,048 to 6,000, the average proportion in the ten preceding second quarters being 1,040. The 245,665 births registered during the quarter correspond to an annual rate of 26.6 per 1,000 total population, including armed forces at home and abroad in 1919. The natural increase of population in England and Wales last quarter by excess of births over deaths was 129,382, against 45,701, 51,650 and 40,364 in the second quarters of 1917, 1918, and 1919. The deaths registered in England and Wales last quarter were 18,354 fewer than in the preceding quarter, but 10,823 more than in the second quarter of 1919. The 119,283 registered deaths included 62,025 of males and 57,255 of females. The total deaths correspond to an annual rate of 13.0 per 1,000 total population in England and Wales in 1919. Influenza was stated to be either a primary or contributory cause of death in 4,370 or 3.7 per cent. of the total deaths registered last quarter. Infant mortality, measured by the proportion of deaths under one year of age to registered births was equal to 82 per 1,000, being 6 per 1,000 below the average in the ten preceding second quarters.

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 2, 1920, clxxxiii, 10.

1. Multiple Resections of the Small Intestine. Ernest L. Hunt.
2. Results of Cholecystectomy with Particular Reference to Dilatation of the Common Duct. John Homans.
3. Acute Intestinal Obstruction: A Study of a Second Series of Cases from the Massachusetts General Hospital. Edward P. Richardson.

4. Cancer: Factors Entering Into Delay in Its Surgical Treatment. Channing C. Simmons and Ernest M. Daland.

3. Acute Intestinal Obstruction: A Study of a Second Series of Cases from the Massachusetts General Hospital.—Edward P. Richardson reports a series of 118 cases in 115 individuals, in direct continuation of the first series, reported by Scudder (*Northwestern Medicine*, October 1908), the present series including the ten years from 1908 through 1917. There was a general mortality of 41.5 per cent. in 118 cases operated upon in the second series, as compared with a previous mortality of 60 per cent. From a comparison of the results of the two series of cases the writer concludes that the period during the second ten years shows a slight but definite advance in the treatment of this condition. In spite of this, the results of operative treatment remain far from satisfactory. Nor is there suggested, from the study of these cases, or from the experimental evidence, any radical means of improving the results. From the nature of the condition, the results of treatment of late intestinal obstruction are likely to remain bad, in the absence of revolutionary advances in surgical knowledge. The important field for improvement in results lies in earlier diagnosis and early operation, at a stage when so difficult a problem for surgical treatment is not presented. An average duration of time from the onset of symptoms to operation of approximately three days cannot be considered satisfactory, and the chief hope for better results lies in the reduction of this period.

New York Medical Journal.

September 4, 1920, cxii, 10.

1. Fractures of the Long Bones and Their Repair. Ethan H. Smith.
2. Horatio C. Wood. Henry Beates, Jr.
3. Evolution of Modern Medicine Leading to Group Diagnosis. Hyman Goldstein.
4. Binocular Single Vision. George W. Vandegrift.
5. Protein Fever, with Five Charts. George F. Cott.
6. Splenectomy, with Report of Two Cases. George I. Miller.
7. Present Status of Rabies. Clinical and Microorganismal. B. M. Underhill.

2. Horatio C. Wood. Henry Beates, Jr. See MEDICAL RECORD, September 4, p. 393.

Journal of the American Medical Association.

September 4, 1920, lxxv, 10.

1. The Use of Arsphenamin in Nonsyphilitic Diseases. Mathew A. Reasoner and Henry J. Nichols.
2. Opportunities and Responsibilities of the Physician of Today. Frank L. Rector.
3. Intestinal Extraction of Absorbed Alkaloids. G. H. A. Clowes and A. L. Walters.
4. Physical Factors in Mental Retardation. Edward A. Strecker.
5. The Nonoperative Determination of Patency of Fallopian Tubes by Means of Intra-Uterine Inflation with Oxygen and the Production of an Artificial Pneumoperitoneum. I. C. Rubin.
6. The Use of Saturated Salt Solution Intravenously During Intracranial Operations: Preliminary Report. Ernest Sachs and George W. Belcher.
7. Postdiphtheritic Paralysis of the Respiratory Muscles: Report of Case Treated by Prolonged Artificial Respiration. W. McKim Marriott.
8. Temperature Factors in Determining the Age of Maturity Among the Eskimos. Vilhjalmur Stefansson.
9. Inoculation Against Hay-Fever: An Experience, a Warning, and a Suggestion. Will Walter.

1. The Use of Arsphenamin in Nonsyphilitic Diseases.—Reasoner and Nichols discuss briefly the various nonsyphilitic diseases in which arsphenamin has been found beneficial, and summarize their observations as follows: For practical therapeutic purposes, the beneficial effects of arsphenamin and neo-arsphenamin are most apparent in a limited number of spirochetal diseases. They act as specific in Vincent's angina, relapsing fevers, yaws, gangosa and pulmonary spirochetosis (if given early) in man, and in equine influenza. A therapeutic effect is noted in rat-bite disease, in certain dental conditions and in fowl spirochetosis. The complete measure of the effect in the latter condition has not yet been established. No apparent benefit has been found in such other spirochetal diseases as Weil's disease and yellow fever. Good results have been obtained in syphilitics, in a number of nonsyphilitic conditions, which are influenced adversely by that disease. Their use has been recommended in conditions in which arsenic is indicated. In such case the effect is alterative rather than specific, and ordinarily there is no special advantage over liquor potassii arsenitis. There is a limited effect on certain protozoal diseases, as malaria (tertian and quotidian), some of the trypanosomiases and leishmaniasis. It is possible, however, that this effect may be nonspecific. With the exception of anthrax, and possibly glanders, few favorable results are reported in bacterial diseases. Except in Vincent's angina, arsphenamin and neo-arsphenamin should be administered intravenously in medium-sized dosage. Two or three injections usually accomplish the desired purpose, except in pulmonary spirochetosis, which may require a series of injections. In diseases showing liver involvement, it has been recommended that neo-arsphenamin be given on account of its supposed lesser degree of toxicity.

5. The Nonoperative Determination of Patency of Fallopian Tubes by Means of Intra-Uterine Inflation with Oxygen and the Production of an Artificial Pneumoperitoneum.—I. C. Rubin. See MEDICAL RECORD, May, 22, p. 890.

The Lancet.

August 14, 1920, cxcix, 7.

1. The Croonian Lectures on the Psychology of the Special Senses and Their Functional Disorders. Arthur F. Hurst.
2. An Investigation Into the Causal Organism of Influenza. J. W. Edington.
3. Treatment of Chronic Otorrhœa by Zinc Ionization. A. R. Friel.
4. Some Observations on the Treatment of Gonorrhea with Detoxicated Vaccine. W. V. Corbett and T. E. Osmond.
5. Herpes and Chicken-pox. Claude E. Ker.
6. The Analysis of a Fugue. R. L. Gamlen.
7. Provision of Expert Medical and Surgical Treatment. A. H. Hygott.
8. A Sketch of Seventy Years. T. Prigden Teale.

4. Some Observations on the Treatment of Gonorrhea with Detoxicated Vaccine.—Corbett and Osmond detail briefly a series of cases treated with detoxicated vaccine with the object of judging its effect upon them both clinically and serologically. A series of "controls" received no vaccine. All cases were admitted to the hospital suffering with acute gonorrhea and with gonococci present in urethral smears were placed in either the "test" or the "control" series. All cases were treated on the same general lines, smears were taken on average once a week, and urines were examined twice weekly. The 123 "test" cases received detoxicated vaccine commencing on the day of admission. The first 18 of these received a total of 40,000 millions spread over a period of 30 days, but this was later given up and the remaining 105 received a total of 60,000 millions within the same length of time. The vaccine was given subcutaneously alternately into either arm. In view of the fact that cases were taken serially and not picked, and that test cases and controls were treated on exactly parallel lines, and that all were submitted to a long period of observation, it is considered noteworthy that the average duration of the disease in test cases was 38.5 days as compared with 48.4 days of controls—a decrease of nearly 10 days per case.

5. Herpes and Chicken-pox.—Claude E. Ker, discussing the debated question of the alleged relationship of herpes and chicken-pox, says the coincidences of occurrence are getting sufficiently numerous to be somewhat puzzling, warranting a review of the whole subject, which he proceeds to give. He discusses the cases of relationship under (1) cases of herpes zoster followed by chicken-pox; (2) cases of chicken-pox followed by herpes; (3) cases of herpes and chicken-pox in the same individual at the same time; (4) cases of chicken-pox and herpes appearing simultaneously in different individuals. It is also noted that there is some evidence that herpes occasionally appears in what might be described as an epidemic form. The difficulties in accepting the theory of the identity of the virus of herpes and chicken-pox are cited. Admitting that it is easy to exclude absolutely the possibility of a real relationship between the two conditions, much yet remains to be explained. The question of immunity, for instance, requires careful consideration. Many patients who suffer from herpes have undoubtedly had chicken-pox previously, and there is no reason to believe that herpes

confers any protection against chicken-pox. Is it to be assumed that the general blood infection is not sufficient to make the individual immune to the local nerve infection and vice versa? Moreover, herpes does not protect against itself, second attacks being known to occur. As second attacks appear to be rare, the mere fact of their existence is no real argument, as some have proposed, against the infectivity of herpes, as they occur occasionally in all the infectious diseases. But from another point of view, herpes does not behave as if it depended on a living virus. The frequency with which it has been reported to appear during a course of treatment with arsenic is very difficult to explain on any theory of infection. The key to the mystery lies in the hands of the general practitioner. All cases in which the association of the two diseases is noticed should be carefully noted and put on record. It is equally important to keep a note of all cases of herpes which, occurring in a family where there are susceptible children, are *not* followed by chicken-pox. The possibility of a missed case of chicken-pox being the real cause can never be entirely excluded, especially when one remembers that the whole eruption of that disease may be represented by one spot and in consequence is very easily overlooked. A series of similar observations, however, would give some idea of what percentage of cases of herpes are followed by chicken-pox, and should such a percentage be found considerable the relationship between the two conditions might be more reasonably accepted. The proportions, moreover, of herpes patients who have or have not previously suffered from chicken-pox would be an interesting addition to one's knowledge. Attention might also be given to the question of second attacks of herpes and to the dates on which herpes occurred in the practice of the observer and his neighbors with a view to investigating epidemicity. Until a considerable mass of information can be obtained the question must be left an open one, recognizing at the same time that such information is necessary before one can, with any justice, absolutely repudiate the theory of identity.

British Medical Journal.

August 14, 1920, ii, 3111.

1. Obstetric and Gynæcological Education. Henry Briggs.
2. Rupture of Vein of Dermoid Cyst: Intraperitoneal Hemorrhage: Operation: Recovery. J. O. Beven.
3. Ligature of the First Part of the Right Subclavian Artery for Traumatic Aneurysm of the Second and Third Parts. D. W. Hume.
4. Problems of Filariasis. J. W. Stephens and Warrington Yorke.
5. Filaria Bancrofti in the Production of Elephantiasis and Kindred Diseases. George C. Low and Philip Manson-Bahr.
6. Treatment of Human Trypanosomiasis and Kala-azar by Intravenous Injection of Acetyl-aminophenyl Stibiate of Sodium. Philip Manson-Bahr.
7. Dietetic Deficiency and Endocrine Activity, with Special Reference to Deficiency Œdemas. Robert McCarrison.
8. Discussion on the Treatment of Denervated Muscle and on the "Disuse" Theory. Introduced by J. N. Langley.

7. Dietetic Deficiency and Endocrine Activity, with Special Reference to Deficiency Edemas.—Robert McCarrison states that the fact that the endocrine organs are profoundly influenced by dietetic defects has been demonstrated by experimentation on pigeons, guinea-pigs, and monkeys. Animals of these species were fed on six classes of deficient dietaries. The first was deficient in all three classes of vitamines and in suitable protein, and was disproportionately rich in carbohydrates; the second was deficient in B and C vitamines and disproportionately rich in carbohydrates and fats; the third was deficient in B-vitamine and disproportionately rich in carbohydrates and fats; the fourth was deficient in A and B vitamines; the fifth in B-vitamine only; the sixth in C-vitamine only. The effects of these dietaries on the endocrine organs are attributable to three factors operating in varying combinations: (1) deficiency in vitamines; (2) imperfect balance of the food with respect to proximate principles; (3) the fortuitous occurrence of pathogenic agents in the body. From a study of the different endocrine glands in accordance with these premises the writer draws the following summary: (1) Dietetic deficiency has a profound influence on endocrine activity. (2) All endocrine organs, with the exception of the adrenal glands and the pituitary body, undergo greater or lesser degrees of atrophy and depreciation of functional capacity as a result of dietetic deficiencies. (3) The adrenal glands, and in males the pituitary body, enlarge in consequence of dietetic defects; the former greatly, the latter slightly. (4) The adrenal glands are, of all endocrine structures, the most susceptible to dietetic defects. (5) The character of the adrenal enlargement varies with the character of the dietetic deficiency. (6) The adrenalin content of the enlarged adrenals varies with the character of the dietetic defect; it is in excess of normal when the food is deficient in vitamines, in proteins, and disproportionately right in starch; it is below normal when the diet is scorbutic, and also when concurrent infections are associated with dietetic defects. (7) Edema is invariably associated with massive enlargement of the adrenal glands in pigeons fed on autoclaved rice. But massive enlargement of the adrenals is not invariably associated with edema. This association bears some intimate relationship to the adrenalin content of the enlarged organs; when the content is high edema occurs in 86 per cent. of cases, when the content is low edema does not occur. (8) Fresh butter contains some substance which tends to protect against edema. This substance was not present in cocoanut oil. (9) The hypothetical "anti-edema" substance in butter has a pronounced influence over the adrenal glands. It appears to exert its protective action against edema by maintaining their adrenalin content at a low level. (10) Butter varies in its capacity to protect against edema. This variation is dependent on the quality of the cow's food: butter is richer in "anti-edema" substance when the cows are fed on green fodder than when they are fed on dry fodder. The writer concludes that these observations have a significant bearing on the causation of deficiency edemas in the human subject.

New Orleans Medical and Surgical Journal.

September, 1920, lxxiii, 3.

1. Uterine Fibroids Complicating Pregnancy. A. P. Heineck.
2. Case of Gundu Observed in Bahia, Brazil. F. Luz and O. Torres. (Translated by A. McShane.)
3. Dressing for Fracture of the Clavicle. E. L. Leckert.

1. Uterine Fibroids Complicating Pregnancy.—A. P. Heineck bases his discussion of this subject on personal experience supplemented and controlled by an analytical survey of 380 cases reported with adequate data, in which the diagnosis received either operative or post-mortem confirmation. From this study he makes, among others, the following observations: Uterine fibroids are found associated with any form of pregnancy and occur in gravid uteri, otherwise normal or abnormal, congenitally so or acquired. Uterine fibromyomata exert an unfavorable influence upon conception, gestation, labor, and the puerperium. Uterine fibroids originate and may continue during all periods of menstrual life, may first become manifest in primiparae, deutiparae, and multiparae. By virtue of their weight, volume, or location, they displace and fix the pregnant uterus forward, laterally, upward, downward or backward, causing pathological versions and flexions, and even pelvic impaction and incarceration. When pregnancy develops in a myomatus uterus, the nutrition of the fibroids is unfavorably influenced by the altered conditions, and hypertrophy of the tumor results. Fibroids, like other tissue masses, are subject to inflammatory and degenerative changes. These changes occur previous to, or after abortion, or prenature labor; previous to or after full-term labor. Inflammation of a fibroid terminates in gangrene, partial or complete, central or peripheral; in suppuration. or in the formation of adhesions. Adhesions of inflammatory origin, by displacing and fixing the gravid uterus, interfere with its functions and that of contiguous viscera, and are an important factor in the etiology of dystocia. Fibroids are subject to calcification, to fatty, cystic, myxomatous, or red degeneration. Red degeneration, which is an aseptic necrobiotic process characterized by hemolysis and autolysis of tissues, is occasionally met with in non-gravid myomatous uteri, but is more frequent, and more intensive in uterine fibroids co-existing with or complicating pregnancy. During its entire course, uterine fibroids are a grave menace to preg-

nancy. Treatment is most successful when it fulfils the following conditions: (1) The delivery of a living and viable child; (2) the complete removal of all fibromyxomatous tissues; (3) the restoration of the mother to sexual and anatomical integrity. Expectant treatment has its dangers,—postponement of the climacteric to fifty odd years; formation of submucous nodules, causing repeated hemorrhages; cardiac degeneration; thrombosis and embolism; malignant degeneration of tumor tissue. Fibroid tumors of the uterus are amenable to operative removal, and the tolerance of the gravid uterus to operative procedure is well known. The imperative indications for surgical interference are given and the different procedures discussed.

Long Island Medical Journal.

August, 1920, xiv, 8.

1. Puerperal Eclampsia in Hospital Practice. Robert E. Coughlin.
2. Suprapubic Prostatectomy by the Two-Stage Method. J. Sturdevant Read.

1. Puerperal Eclampsia in Hospital Practice.—Robert E. Coughlin makes the following statements: (1) That there is no expectant treatment in a consideration of puerperal eclampsia. (2) That early control of the convulsions and emptying of the uterus will bring about the best results. (3) That veratrum viride is a very important drug in the treatment of convulsions due to the toxemias of pregnancy. It acts best when given in large doses at frequent intervals. It may be administered either by hypodermic injection or by mouth, but the former method is preferable because of a better and more prompt action. It should be given until its physiological action,—slowing of the pulse,—is produced. (4) That atrophine sulphate should be tried in desperate cases, especially where there is a tendency to pulmonary edema. (5) That while careful nursing, hot packs, applications to kidney region, and diet, are important, the prime indication for treatment is the control of the convulsions and early evacuation of the uterus, thus bringing about improvement in the metabolism, improvement in the circulation by reducing blood pressure, improvement in the condition of the urine, improvement in the temperature, pulse and respiration, saving the heart and cardiac muscle from unnecessary strain,—in a word, the bringing about of metabolic changes so that the balance between absorption and elimination has been increased in favor of elimination.

Il Policlinico.

May 1, 1920, xxvii, 5.

Glycuronuria.—The present number contains two articles on this subject, by Sabatini and Lorenzani respectively. The conclusions of the former are that the finds to date are incomplete and conflicting, but they have promise for the future if well tested. To this end we must have readily applicable tests which do not necessitate a large quantity of urine and which are specific for glycuronic acid. A single test should be decisive. The best for the purpose are the napthoresorcine test of Tollens and Rorive and the alphanapthol test of Goldschmiedt (with or without modifications by subsequent chemists) the former being given the preference. The author however believes that the Goldschmiedt test is the more sensitive, the more rapid, etc., even if not actually specific. In about ten per cent. of cases the two reactions disagree. The alpharesorcin and socalled diphenylamine reactions appear to agree in all cases tested. In the author's experience the ingestion of nitrates does not affect the naphthoresorcine test but powerfully modifies the alphanaphthol and diphenylamine tests. Lorenzani concludes that it has not been proved that glycuronic acid when present in excess in the urine—as in diabetes—is due to the inability of the organism to oxidize carbohydrates. It is more probable that excess of this substance is an indication of an accumulation of toxic material in the blood. Attempts to base a prognosis on the urinary content of glycuronic acid are hazardous because of unusual finds—thus the author once found an increase in a case of pancreatic cancer which occluded the choledochus.

Il Policlinico.

June 21, 1920, xxvii, 25.

Dissimilarities Between Lethargic Encephalitis and Dubini's Disease.—Ronchetti arrives at certain conclusions with special reference to the identity of the myoclonic form of sleeping sickness with the Dubini or as he terms it Dubini-De Vecchi disease—electric chorea. In both syndromes, the ancient and modern, the mortality was high and especially in the older episode; Frua reports two recoveries from the Dubini disease to illustrate the rarity of recovery; and the mortality in general ranged from 80 to 90 per cent. Although Dubini's syndrome was styled a chorea, paralysis was very common and it was alleged to be present in over three-fourths of all cases. The absence of eye symptoms in Dubini's reports has been used to discount the identity of the two affections but Pignacca, a contemporary, speaks of fixation of the eyes and strabismus. Ptosis as such is not mentioned. Dubini does not speak of lethargy but as it were goes out of his way to emphasize the intelligent and wide awake behavior of the patient. It is true that in one case he mentions lethargy but in this subject there was found at autopsy a focus of softening in the thalamic region. Pignacca goes a little further and mentions a terminal lethargy comparable with the stupor of typhoid fever. He also mentions the great frequency of convlusive attacks; of 36 subjects 25 showed epileptiform convulsions and therefore Frua proposed the name of "convulsive typhus" for the affection.

Indianapolis Medical Journal.

August, 1920, xxiii, 8.

1. A Case of Endothelioma of the Brain. Max A. Bahr.
2. Medical Legislation Needed. P. A. Zaring.
3. Bilateral Lobar Pneumonia with Empyema. Edward Binzer.

2. Medical Legislation Needed.—P. A. Zaring emphasizes the following points: When the honest man has taken all the prescribed courses of learning, finally graduating in an "A Grade" medical college, he should be permitted to practise medicine without having to chance the State Board. And no one should be permitted to practise medicine without a diploma from such a college. Every county with a small number of physicians, say fifty or less, should have a physicians' institute. Where there are larger numbers of physicians the counties should be divided into districts. Two or more small counties, or parts of counties, might be combined into one district, to augment the interest. Each institute should meet regularly, say once a month, and every member should be required to attend a certain per cent. of all meetings. He should be paid something for such attendance, and fined for non-attendance of the required number of meetings. Because physicians actually must render service without any possible chance to secure bills in advance, therefore they should have special provisions for collecting physicians' bills. No property belonging to the family should be exempted by law. A garnishee law should obtain in these cases.

Gazette des Hôpitaux.

June 8-10, 1920, xciii, 52,

The Asthenia of Epidemic Encephalitis and of Grippe.—Litvak writes briefly of this subejct. One of the points of similarity between the two affections is the asthenia. In the spring of 1918 the author saw the début of the pandemic at Bologna, Italy. He was struck with the following peculiarities: the fever was not usually preceded by chills, the headache and vomiting were not always associated with alimentary errors, and the rachialgia and malaise were associated with an inexplicable asthenia which bore no relation to the severity or duration of the brief and usually mild affection. This asthenia was sometimes initial, sometimes intercurrent and often appeared for the first time during convalescence. Neurasthenia was often a sequel. Asthenia of influenzal origin, postinfluenzal neurasthenia—these are described magistrally by Gowers, Strümpell and Oppenheim and nothing further need be said on this subject. Passing to epidemic en-

cephalitis we find asthenia present here although masked by the somnolence and other cerebral symptoms. But why may not somnolence be in itself a manifestation of primary asthenia? The prevalent opinion which makes of somnolence a regional manifestation due to the implication of the hypnic zone in the base of the brain has been antagonized—for example by Zagari of Modena, who attributes the somnolence to depression and not to irritation of certain zones which preside over sleep. In addition to mere somnolence there is marked depression of all the psychic functions. It is admitted that the mesencephalon is primarily attacked by the toxic products of the disease, which explains the incidence of somnolence in these cases. But how explain the cases in which insomnia, agitation and delirium are substituted for somnolence? This should not be difficult, for this dualism is seen throughout the whole of pathology. The author cites certain sequelæ in grippe cases in which the syndromes—erethetic or torpid—appeared after some weeks and ended fatally from organic disease.

La Presse Médicale.

June 16, 1920, xxviii, 40.

Practical Significance of Stercobiline.—Brule and Garban state that the substance stercobiline is simply fecal urobiline. The generally accepted view to-day is that the entire quantity of stercobiline is derived from the true bile pigments (bilirubine) in the intestine. These reach the intestine through the choledochus and are transformed into stercobiline and stercobilinogen. Bilirubine is absent from the stools save in the new born. In other words it is completely transformed somewhere in the course of the intestine into the two substances mentioned. It is evident that the amount of stercobiline in the feces is an index of the amount of bilirubin and bile which enters the intestine. This may be obtained by chemical or spectroscopic analysis but the results are only approximate. It is very difficult to extract all of the stercobiline from the feces. Attempts to oxidize the stercobiline into the companion pigment have not been successful in practice. But the two pigments are very unstable and have been transformed into a third substance which has been termed bilirubidine. *In vitro* however this change is very slowly accomplished. Another pigment has been found in animal feces known as bilicyanine which is nearly related to biliverdine. Nothing has thus far been said of the absorption of stercobiline or rather bilirubine in the intestine and its elimination by the uring as urobiline. The latter is not of course a constant constituent of the urine while it may also reach the latter from sources other than intestinal absorption. The problem of quantitatively estimating the amount of bilirubine which enters the intestine is very complex. Only in fistula cases is there a special opportunity for the investigation of these matters. The author would therefore seek to determine the amount of bile secreted rather by a study of the amount of biliary acids in the feces.

La Presse Médicale.

June 30, 1920, xxviii, 44.

Oscillometry in Asthenics and Maniacs.—Benon and Leinberger contribute a brief article on this subject. In asthenia we see a psychoneurotic state characterized by amyasthenia and anideation; or in other words the muscular system is weak in comparison with the vegetative functions, while the mental processes suffer in the same fashion, being unable to function in respect to ideation, recollection, etc. This syndrome is complicated not rarely by deliriant manifestations. The opposite condition to this is mania with its increase of muscular force and of ideation. In these two opposed states the behavior of the heart should show marked differences and these the author has attempted to elicit through the use of the oscillometre. If in the normal subject the amplitude be represented by 2 to 2½ it is found to be in mania as high as 6; while in asthenia it is chiefly less than 1 degree—about 2/3 of one degree to a full degree. The differences between the maximum and minimum blood pressures are seen to be about 9 in. the maniac and 2 to 2½ in the asthenic. There is here seen in operation a rule—the amplitude of the maxima is directly proportional to the amplitude of the pulse. In other words in the asthenic the oscillometric index as well as the differential pressure is slight, while in the maniac they are marked. Thus far the authors have found no exceptions to these finds, which can only mean that the force of the heart differs radically in the two conditions.

La Bulletin Médical.

June 19, 1920, xxxiv, 32.

Mongolism.—Apert analyzes this condition from the anthropological standpoint. Is it an illusional resemblance or are these children throwbacks to Mongolian ancestors? The chief analogy is the eye both in the obliquely directed palpebral fissures and the epicanthus. The resemblance is apparent to the laity and the author cites examples: one child bore the nickname "Oyama." In another case the nurse who was wheeling a "Mongolian" baby was repeatedly asked if it were a Chinese and in a third there was evidently a suspicion of illegitimacy or of a changeling. But even in cases without the oblique eyeslits and the epicanthus there is something Mongoloid about these children which arrests the beholder. The head shape for example is markedly brachycephalous, the nose and cheek bones and general harmonics of the face are Asiatic. Even over and above these similarities there is a something intangible which calls up imperfect memories of having seen such features—those of actual Mongols either in life or art—before. In Mongolian idiots we usually find so many stigmata of degeneration that the somatic peculiarities above described naturally range themselves under the same head. The so-called blue sacral Mongolian spots, strange to say, have never been seen in Mongolian idiots but the few recorded cases in whites have been seen in normal children. Thus far we know nothing of the causes of Mongolism. The author does not allude to the occasional occurrence of Mongolian features in normal white subjects: in one case known to the reviewer the father (or perhaps grandfather) of the young woman in question had been a missionary in the Orient before her birth. Under the head of treatment the author refers to pluriglandular extracts—thyroid-suprarenal—combined with mineral matter—manganese and calcium—which seemed to cause considerable initial improvement but later became inert.

Acidosis in Acute Abdomen.—Labbé speaks of the increasing importance of the study of acidosis in both medical and surgical pathology. We now look systematically for diaceturia and acetonuria. Infrequent as a general condition, it is relatively common in acute abdomen and notably in appendicitis and cholelithiasis. Here acidosis varies directly with the intensity of the operation, disappears with the vanishing phlogosis, and reappears with relapse. It may be shown that it is not due to fasting nor to chloroform when given for operation. It is now believed to indicate implication of the hepatic function and should be seen in association with urobilinuria, ammonuria, and aminoaciduria. In fact, acidosis stands in some relation with the pathology of organs drained by the portal vein.—*Gazette des Hôpitaux.*

Cholemic Hemorrhages.—This term is applied by Petren to certain fatal post-operative bleedings of which he has collected a series of fifty-eight Swedish cases. The subjects of operation have at the time some form of jaundice, and any mild intervention such as trial laparotomy may end fatally. Naturally, operations on the biliary passages are the most common source of this accident. It is necessary that the icterus shall have been present for several weeks, and as a rule the condition is manifest as a hematoma on the first or second day after intervention. In other cases the blood is effused into some cavity or passage. One lesson is evidently not to delay operation when a subject develops jaundice.—*Schweizerische medizinische Wochenschrift.*

Book Reviews.

ATLAS OF OPERATIVE GYNÆCOLOGY. By BARTON COOKE HIRST, M.D., Professor of Obstetrics, University of Pennsylvania. Quarto of 292 pages, with 164 plates and 46 figures. Philadelphia and London: J. B. Lippincott Company.

IN this book Hirst says he has attempted the graphic method of describing operations for conditions peculiar to women by a series of colored illustrations showing the separate steps of each operative procedure. Most of the illustrations were made by Mrs. P. P. Chase after repeated observation of the performance of the operations. The text has been subordinated to the illustrations, thus saving the readers time.

The illustrations show such operations as the author has found most useful and give the technique which he employs. This is an advantage in one way, since it gives the selection from the almost innumerable methods in gynecological surgery which an author and operator of wide experience considers best; but, on the contrary, there are many excellent methods which other operators of equally wide experience might prefer but which are neither illustrated nor described in this book, therefore it is not nor does it pretend to be complete.

Before taking up the individual gynecological operations, about 30 pages are devoted to the subjects of equipment and preparation for gynecological operations, closure of abdominal wounds and operative technique. The author's method of opening the abdominal cavity not only is, as he says, "troublesome to nurses and no doubt to the patient," but also appears to the reviewer, who has himself had a rather extensive experience in abdominal surgery, as unnecessarily complex and time consuming. In fact, a reasonably quick operator would have an average appendix out and the wound partially if not completely closed by the time one who followed Hirst's method had the appendix in the field of vision.

There is little else to criticise either in the choice of operative methods or the manner of their presentation. The illustrations are really excellent and so nearly explain themselves that but little text is necessary. The author's method of opening and treating extensive breast abscesses appeals to the reviewer except when plain gauze drains are advised in the later stages of treatment; for Soresi and others have shown that plain gauze, unless coated with paraffin or some other substance, often acts as a plug rather than a drain. The description and illustration of the removal of the breast for malignancy are largely taken from Deaver and McFarland's "The Breast." The text on this subject will bear further elaboration and at least two other methods of technique should be illustrated.

Hirst's Atlas should form an excellent aid to both students and operators.

ENGEBNISSE DER GESAMTEN MEDIZIN. Unter Mitarbeit hervorragender Fachgelehrten herausgegeben von Prof. Dr. TH. BRUGSCH. Erster Band. Berlin and Vienna: Urban und Schwarzenberg, 1920.

THE series of "Ergebnisse" which begins with the present volume is intended to provide for internal medicine the same valuable service that is already afforded by similar publications in the departments of physiology and pathology. It consists of brief monographs on widely differing topics by authors especially qualified to deal with them, and to report not only recent progress but also to discuss in detail subjects not usually treated at length in the ordinary handbooks. The present volume contains tweny-five such articles, all by well known writers, and comprises a great fund of highly valuable material. The project represents a very important contribution to medical literature.

THE SURGICAL CLINICS OF CHICAGO. Vol. III, No. 6, December, 1919. Octavo of 216 pages, with 63 illustrations. Index. Published bimonthly. Philadelphia and London: W. B. Saunders Company.

AMONG the interesting features of this number of the Clinics are Bevan's remarks on the value (relatively slight, in his opinion) of the *x*-ray in the diagnosis of gallstones; Eisendrath and Goodkind's report of a case and discussion of acute and subacute pancreatitis; Strauss's cases and discussion of the surgical treatment of gastric and duodenal ulcer, with a new method of pyloroplasty; Carl Beck's report of a case of diverticulum of the urinary bladder in an inguinal hernia, and another of gangrenous hernia of bladder and intestine; Speed's case and discussion of elephantiasis nostras; McWhorter's case and discussion of osteomyelitis with variation in growth of the femur following separation of the distal epiphysis; Harsha's case and discussion of acromegaly; and Woolston and White's report of 1000 patients operated on for tubal infection. This last article is very brief, and it would seem that with the study of so many cases it should have been made much more valuable.

DISEASES OF THE NERVOUS SYSTEM. A Text-book of Neurology and Psychiatry, by SMITH ELY JELLIFFE, M.D., Ph.D., formerly Professor of Psychiatry, Fordham University, New York, and formerly Adjunct Professor of Diseases of the Mind and Nervous System, New York Post-Graduate Medical School and Hospital, and WILLIAM A. WHITE, M.D., Superintendent of St. Elizabeth's Hospital, Washington, D. C.; Professor of Nervous and Mental Diseases, Georgetown University; and Lecturer on Psychiatry, U. S. Army and U. S. Navy Medical Schools. Third Edition, revised, rewritten and enlarged. Illustrated with 470 engravings and 12 plates. Philadelphia and New York; Lea and Febiger, 1919.

IT is only a few years since the first edition of this epoch-making work appeared, created a large audience which soon demanded a second edition, has devoured that, and now has called for a third edition. This has been carefully prepared and thoroughly revised in accordance with the last word in these allied subjects. In his recent Presidential Address to the New York Neurological Society, Walter Timme deplored the lagging behind of neurology, its contentment with old forms, and its infinitesimal progress compared with other branches of medicine. He spoke the truth, but it is one which would be non-existent were there more works such as this one.

The present edition bears especially the marks of revision in its sections dealing with vegetative neurology and endocrinology. Furthermore, the vast clinical experience of injuries to peripheral nerves afforded by the Great War has resulted in a greatly improved and elaborated discussion of sensorimotor neurology. In the part devoted to psychiatry the authors have gotten even further away than before from the old Kraepelinian school and lean heavily on interpretation rather than description. While this section is divided into the old groups of dementia precox, manic-depressive, etc., the authors mention and recommend Kemp's so-called mechanistic classification without seeming to realize that this is after all descriptive psychiatry carried to the *nth* power. It is as if physical diseases were minutely subdivided into minute groups, each symptom sufficing for a class.

MANUAL OF TROPICAL MEDICINE. By ALDO CASTELLANI, C.M.G., M.D., M.R.C.P. Lecturer at the London School of Tropical Medicine; Emeritus Professor Ceylon Medical School; Lieut. Colonel R.I.M.N.S (Balkan Zone); Director of Clinique for Tropical Diseases and Physician to Colombo General Hospital 1903-1915; Member of Royal Society's Commission in Uganda 1902-1903; and ALBERT J. CHALMERS, M.D., F.R.C.S., D.P.H., Director, Welcome Tropical Research Laboratories (Soudan Government); Ceylon Medical Service 1901-1911; Holt Fellow, University College, Liverpool, 1890; Medical Officer, Gold Coast Colony, 1897-1901. Third Edition. New York: William Wood and Company, 1920.

IT is several years since the second edition of this standard work was published, the long interval being occasioned not by a waning interest in tropical diseases, but by the interruption in all scientific work occasioned by the war. The time was not lost, however, for an opportunity has been afforded for the incorporation of much new material based upon the invaluable experience of the authors in their work with the armies in the Balkans and elsewhere where many of the diseases called tropical prevail. The addition of this new matter has increased the value of the book, which from the appearance of the first edition has been an indispensable guide to the student of the diseases of hot climates.

Society Reports.

AMERICAN THERAPEUTIC SOCIETY.

Twenty-First Annual Meeting, Held in Philadelphia, May 7 and 8, 1920.

First Session—Friday Morning, May 7.

THE PRESIDENT, DR. CHARLES E. DEM. SAJOUS OF PHILADELPHIA, IN THE CHAIR.

Dr. SAJOUS in opening the meeting said that this was the twenty-first birthday of the society. The time was auspicious to give the science of therapeutics its due. Its neglect and abandonment should be corrected and its due importance to medicine and to humanity at large should be recognized.

The Late Professor Horatio C. Wood.—Dr. HENRY BEATES then read the obituary of Professor Horatio C. Wood (see page 393). At the close of the reading the members stood as a mark of respect to the memory of Professor Wood.

Presidential Address.—Dr. CHARLES E. DEM. SAJOUS then delivered his address with the title: "The Abandonment of Therapeutics in Medical Schools, Due to Neglect of Is Curative Subdivision, Pharmaco-Endocrinology" (see page 463).

Tissue Acidosis vs. Blood Acidosis.—Dr. WILLIAM H. MERCUR of Pittsburgh, Pa., read this paper (see page 467).

Therapeutics of Decreasing Body Alkalinity.—Dr. WM. H. PORTER of New York City presented this communication (see page 471).

Dr. H. C. GORDINIER of Troy, N. Y., said he was present at a general meeting when the subject of acidosis was presented, and to many there present the subject as discussed seemed as if spoken in an unknown tongue. He had had the same experience with sodium bicarbonate. The urine was rendered neutral or alkaline, without change in the dyspnea. On the other hand, with the use of the citrates and plenty of water, there had followed a reduction or disappearance of the acidosis and the dyspnea.

Dr. E. E. CORNWALL of Brooklyn said he would like to ask a question. How did the carbohydrate in the diet guard against acidosis? How was it that the Esquimaux, whose diet contained abundant fat, but almost no carbohydrate, managed to escape acidosis? Could they use enough ammonia to save themselves? He sounded a warning against too much restriction of carbohydrate in non-diabetic conditions, on the pretext of protecting against carbohydrate indigestion, which he thought was somewhat of a fad, and was often carried too far; he cited a case of a woman of forty, who for indigestion and emaciation was put on a diet which contained a large amount of fat with a considerable amount of flesh, but was greatly restricted as to carbohydrate; the woman developed a typical and severe attack of acidosis. He referred to the post-operative diet of broth and tea or coffee, which was so generally used, and which naturally favored acidosis. He spoke of the end results of the metabolism of foodstuffs in respect to acidity and alkalinity. All animal flesh and eggs in the final combustion in the body showed an excess of acid over base, thus making for acidity; and cereals, though to a less extent, showed the same. All fruits, green vegetables, and roots in their final combustion showed an excess of base over acid, thus supporting the alkaline reserves of the body; and milk, though to a less extent showed the same. From which it appeared that food from the animal kingdom, with the exception of milk, made for acidity in the body, and food from the vegetable kingdom, with the exception of cereals, made for alkalinity. A balanced diet, which would safeguard the alkalinity of the body consequently must contain a sufficiency of the foods of the alkaline class, which practically meant that they must contain a sufficiency of fruits and green vegetables, and not too great a preponderance of flesh and bread. Milk, Nature's prepared food, was safely alkaline, but not sufficiently so to offset the acid tendency of a diet containing much flesh. Green vegetables and fruits were the most effective alkalinizers, and also important sources of vitamines.

Dr. MERCUR, in closing, said that he had written this paper to learn something about acidosis. He had not learned the treatment of acidosis with food. The only diuretic he had used was water. He gave bicarbonate of soda, well diluted, but shifted to some other alkalies later, citrate of potash, or pure kaolin, 15 to 30 grains. It was necessary to have a free activity of the kidneys.

Dr. PORTER said that it was necessary to have trisodium phosphate. Animal foods were deficient in trisodium phosphates and vegetable foods were rich in them, and these fixed the alkalies in the tissues. If the diet were deficient in these the bone tructure of children was affected and rickets followed.

Some Aspects of Hyperchlorhydria with Special Reference to the Treatment of This Affection.—Dr. JULIUS FRIEDENWALD of Baltimore read this paper. Hyperchlorhydria, he said, was an increase in the gastric hydrochloric acid secretion, produced during the period of digestion, and was formerly diagnosed whenever the hydrochloric acid of the gastric contents, after an Ewald test meal, exceeded 0.2 per cent., whether symptoms accompanied this state, or not. Many cases, however, had an acidity higher than 0.2 per cent., without presenting the symptomatology of hyperacidity, and many hypoacid cases showed symptoms of hyperacidity. Thus the normal and the hyperacid states differed in different individuals. According to some observers then, each individual stomach had its own degree of hyperacidity, what was sufficient for one, being more than sufficient for another. Another explanation was that in some persons the gastric mucosa was hypersensitive to hydrochloric acid and that also there must be some condition present to occasion the gastric hyperesthesia, the causative factor being either ulcer, retention, or hypersecretion on the one hand, or a sensory neurosis on the other. Recent observations, on interpretations of a series of curves of fractional analyses, had shown that there existed a hypersecretory type, a hyposecretory type, and a normal, or isosecretory type. A large group of healthy persons belonged to the first group. Also in health alternate cycles of activity and rest were noted—digestive and interdigestive periods. Psychic secretion was first produced, followed by true chemical secretion. At the beginning of peristalsis a gradual increase in acidity took place, which, at its height, was balanced by tryptic regurgitation. This occurred in the interdigestive phase. HCl at this stage was low. Soon after ingestion of food the digestive period was again accompanied by a rise in acidity. Very high acid curves could be compatible with perfect health; thus disease conditions, such as ulcer, were by no means accounted for by the hyperacid state, but were probably induced by vagotonia and disturbance of the sequence of digestive and interdigestive phases. Symptoms of gastric ulcer could be clinically improved without alteration of hyperacidity or hypersecretion, so that other conditions must be sought. These factors were probably to be found in the influence of the endocrine system, the thyroid possessing the power to intensify gastric function by influence on the terminal filaments of the vagus, and adrenal extract having an inhibitory action on the sympathetic. The involuntary nervous system controlled gastric secretion by maintaining a balance between activating and inhibitory innervation. The stimulation of the vagus group produced hyperchlorhydria; the inhibitory fiber's regulated secretion and spasm. Thus, in order properly to control hyperchlorhydria a correct estimation of the etiological factors was necessary. These included: (1) primary disturbance of the gastrointestinal tract; (2) constitutional and organic disease, including focal infection and reflex causes; (3) nervous affections; (4) disturbances of the endocrine glands. *Group one* included ulcer, pyloric obstructions, acid gastritis, atony and chronic constipation, disturbances caused by improper food and by tobacco. *Group two* contained cholelithiasis, nephrolithiasis, chronic appendicitis, chlorosis, cerebrospinal lesions, abdominal adhesions and genito-urinary infections. *Group three* comprised cases of mental strain, overwork, worry, neurasthenia, hysteria, and mental conditions. *Group four* covered the endocrinopathies. Until the latent cause of the disturbance was discovered, no proper therapy could be instituted. In regard to dietary regulation, it would seem important

to allow only such food as would avoid irritation of the gastric mucous membrane, thus reducing the hyperesthesia which was responsible for the hyperacidity. A liberal diet of proteins, carbohydrates, and fats was to be preferred, provided the food was not coarse. All organic acids and condiments were forbidden. Milk, eggs, and cheese could be suitably used to substitute meat proteins. Dr. Friedenwald presented tables (from Bickert) in which were given lists of foods strongly exciting gastric secretion, and those slightly stimulating it. Sugar was found helpful as it tended to reduce acidity. Fats, in the form of butter, cream, and olive oil were valuable. These patients should be allowed to eat five or six times daily. The Sippy cure was useful in a number of instances. Hygienic measures should not be neglected in cases of hyperchlorhydria. Fatigue and mental strain must be counteracted. Gastric lavage was not indicated in mild forms, but was valuable in the more severe cases. The use of alkalies was questionable, as in the end they tended to increase the maximal acidity. Bismuth and magnesia, or bismuth and soda might be of use. Atropine by mouth had no effect, but hypodermically produced quick results. Nerve sedatives, such as bromides, and valerianates were useful in gastric hyperesthesia and in hypoacid cases with symptoms of hyperacidity. Benzyl-benzoate was also useful in this connection. In conclusion it might be stated that clinical improvement might take place and yet the hyperchlorhydria remain stationary.

The Control of Hyperchlorhydria by Cholecystogastrostomy.—Dr. WAYNE W. BABCOCK of Philadelphia read this paper (see page 476).

Dr. MARTIN E. REHFUSS of Philadelphia said that one had heard a good deal regarding the question of hyperacidity. To attack this condition from the most accurate angle, one must have it well defined. Hyperacidity did not mean the same thing as hyperesthesia. There was a difference between the clinical findings and the enterogastric findings. The phenomena of pain, burning and distress might be produced in every case simply by increase of the actual acid. Such cases had been reported with total achylia and no acid. One-third of his own cases gave a low acid reaction. Thus there was a discrepancy between the subjective findings and the gastric acidity. It would seem therefore that the feeling of hyperacidity burning, and distress were brought into play by factors which has nothing to do with the titration of acid. At the Jefferson Medical College for five years they had been busy working on chemical tests and a large number of cases had been investigated. The effects of food on the normal stomach were examined in normal controls, and it was found that there might be very high acid within normal limits. To beef the average acid reaction was 120, and to eggs 80, in the normal individual. There must be other conditions influencing this question because some individuals had symptoms with high acid and others did not. He did not understand why bicarbonate of soda should affect acidosis nor how alcohols worked in the stomach. In persons with no acidity, soluble alcohols were very rapidly neutralized, followed by sugar secretion. This was true in regard to other forms. Bismuth over a long period of time was found to have a real sedative power. All foods, even water, were found to produce actual definite stimulation of the stomach and one-third of all human beings had an acid tendency, no matter what food was taken. One often found a higher acid reaction in a subject who complained of no symptoms. Study of a large number of normal people would reveal as high an acid as pathological cases. To-day there was confirmation of this fact coming from all sides. The conclusion was that it was not the quantity of acid, but the actual titratable acidity of the secretion that produced the symptoms. Dr. Babcock had spoken of his enterprising operation of cholecystogastrostomy. Dr. Babcock spoke as surgeons always spoke—that is, he said he had had so many cases, and they were all right. Last week a case was seen that was not all right. Dr. Babcock did unusually good surgical work, but Dr. Rehfuss said that as many patients came to him for postoperative gastric conditions as for gastric conditions. One-third of the cases, perhaps, were due to surgical interference. He would hesitate to allow a patient to undergo an operation which was not a physiological one. He could not conceive of the gall-bladder being attached to the stomach, with good result. While there might be a primary reduction of the acid, acid had not been proven to be a cause of ulcer. If it were, these operations might be justified, but it was not. Often there was a very high acid and no ulceration. One could introduce hydrochloric acid and there would be no result. He believed that hydrochloric acid was the cause of the chronicity of the ulcer, but until one found out what it was that made the mucous membrane lose its vitality, one did not know the cause of ulcer. The psychic secretion was so easily produced that one could get 240 to 800 gm. psychic secretion in the stomach without introducing any meal at all. This lasted from 60 to 80 minutes. The hypertonicity and hypersecretion were controlled by the vagus innervation, which supplied the stomach, gall-bladder, appendix, and duodenum. With vagus stimulation there was increased secretion in all of these organs. Chemical secretion persisted during the entire period of digestion. He believed that the question of gastric secretion would be explained by the influence of the ductless glands on the 10th nerve and sympathetic centers and by the influence of bacterial toxins on those centers.

Dr. JOHN C. HEMMETER of Baltimore said that this was a very capable presentation of the subject. A study of 6 years of ulcers of the stomach was very thorough. Ulcers could be produced experimentally. Sepsin, a product of fermentation of yeast, when injected into the blood produced ulcers of the stomach and duodenum. A toxin associated with skin burns would produce duodenal ulcers. The mucosa of the upper intestine was secretory and that of the stomach excretory. It was found that a circle was formed of the absorption of bile constituents. They were secreted in the duodenum and appeared in the circulation. Methylene blue could be absorbed and secreted for many hours. It was well known that the degree of acidity in the stomach could be controlled. He believed that Dr. Babcock should be given a chance to see what he could do in counteracting the chronicity of this condition.

Dr. KOONTZ of Philadelphia said that he would like to report two cases of cholecystogastrostomy. One was a patient who had had chronic dyspepsia 18 years. There were characteristic pain and distress, rapid loss of weight, and constantly shorter intervals between the attacks. The patient was admitted to the hospital and put under observation 10 days; total acidity was 100, free HCl 75, combined total acid 25. The *x*-ray showed ulcer of the pyloric sphincter. The patient was transferred to the surgical ward for operation. Cholecystogastrostomy was done. There was immediate relief of symptoms with a gain in weight. The gastric analysis after operation showed total acidity 32, free HCl 16, combined acidity 12. The *x*-ray showed the stomach emptied normally. The second case was diagnosed as one of gastric ulcer. A cholecystogastrostomy was done with anastomosis on the ulcerated curve. Following operation there was hematemesis. But later the patient gained. There was a condition of achlorhydria after operation. *X*-ray pictures of the results so far showed no abnormality of the gall-bladder. Convalescence was uneventful as regarded gall-bladder and stomach symptoms. There were three deaths: one cholemia with gallstones; one with appendicitis; one with intestinal tuberculosis. In other cases the operation had proved beneficial.

Dr. L. F. BISHOP of New York City said that he had the misfortune to teach chemistry before he became a physician, and as a young man it got him into all kinds of trouble. Chemistry was a sad story in the hands of many doctors. He was glad that Dr. Rehfuss' work was done by chemists. The doctors always stuck to the qualitative questions, whether things were acid or alkaline, they did not get on to quantitative methods. It was the same thing with the milk modification men. The point made by Dr. Rehfuss was important—not whether the contents were acid or alkaline, but how much acid was there. That was the whole question.

Dr. FRIEDENWALD, in closing, said that the society was to be congratulated on having Dr. Rehfuss to discuss these papers. His work on the gastric contents was well known and they were indebted to him for his

tube for fractional analysis. In regard to benzyl benzoate, it was useful in pylorospasm, in 20 drop doses in cold water, before meals. He did not know whether one preparation was better than another. In hyperacidity, as with many other conditions, analysis would find out whether it was due to the stomach itself or to some other cause. The symptoms could be relieved without reducing the amount of acidity in the stomach.

Dr. W. WAYNE BABCOCK, in closing, said that he was sorry he emphasized acidity in regard to this operation. He did not believe that acidity was the only factor in the production of gastric ulcers nor that alkalinity was the only protective factor in bile. There were a few ulcers that persisted despite anacidity. Most of the ulcers of the duodenum, however, were cured by a gastroenterostomy. What was the reason? It was at first thought that the gastroenterostomy relieved the patient by giving dependent drainage and by putting the ulcer at rest. Somebody, however, fed dogs pieces of meat tied to a string after the operation and found that the meat went out through the pylorus and then re-entered the stomach through the new opening and often repeatedly looped the loop, showing the tendency for food to pass out by the normal channel despite a large defendant opening in the stomach. Attempts made to tie off the pylorus permanently showed the strong tendency of the normal opening to reestablish itself. But experience had shown that duodenal ulcers heal after a gastroenterostomy, although the stomach emptied itself in the normal way. In other words, it was something that entered the stomach through the new stoma that gave relief, and not any new or better form of drainage. Evidently either the bile or pancreatic juice reentering the stomach contained the healing substance. These juices normally regurgitated back through the pylorus at the end of each meal and were the normal resting agents for the stomach. That these juices also protected the upper intestine was shown by the frequency with which ulcers of the duodenum and jejunum developed after bile and pancreatic juice had been diverted from these portions of the bowel. If gastroenterostomy or pyloroplasty relieved certain types of ulcers by permitting bile to enter the stomach, why not select an easier and more direct operation by anastomosing the gall-bladder directly with the ulcer-bearing area? In this way it seemed possible to protect and heal the large percentage of gastric ulcers that at present were not relieved by a gastroenterostomy. What was the effect of the nearly continuous entrance of bile into the stomach? So far as one could see the patients did as well as after gastroenterostomy, without the danger of that operation. Of 43 operations, only 2 or 3 cases had persistent symptoms, and none showed regurgitation or discomfort from the bile. The opening was made longitudinally, but quite large, and curiously the food as a rule did not seem to enter the gall-bladder. Of course it did not seem normal to have the bile thus enter the stomach, but for that matter it was not normal to have pylorospasm, hyperchlorhydria, or ulcer either, and as in other matters it seemed wise to select the lesser of two evils.

(To be continued.)

AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION.

Thirty-seventh Annual Meeting, Held in Philadelphia, Pa., June 15, 16, and 17, 1920.

President's Address.—Dr. LAWRASON BROWN of Saranac Lake, N. Y., said that the success of a medical society depended upon whether its founders and directors possessed vision. Its first and foremost function was to bring together medical workers. Free intercourse among medical workers he believed to be essential to the development of an investigator's highest qualities. Its members being interested in more or less similar lines of work, it should function along the lines of group study of patients. He laid stress on the value of discussion, and thought it might be a good thing to have informal meetings where the younger men could ask questions of the more experienced. He expressed the opinion that fitness alone rendered a man's observations of value, by fitness meaning honesty, carefulness and willingness to one's observations, no matter how many cherished theories they might overthrow. He thought that a few carefully observed and recorded cases greatly outweighed a large number of cases stored in a memory. He believed that personal experience should be based upon carefully studied statistics of personal observation, and not upon personal impressions, which often covered a lack of recorded observation, and availed only for diagnosis. The phrase "personal experience," he said, should not be used as a cloak to cover one's ignorance of real personal experience.

Diagnosis of Myxedema.—Dr. JAMES M. ANDERS of Philadelphia presented a communication on this subject. In this paper he said that myxedema was insidious in its course, rendering an early diagnosis difficult, and he emphasized the importance of recognizing this disease, in view of the fact that a sovereign remedy for it existed. Unrecognized and long overlooked, cases with serious physical and mental developments would, he said, fail to respond in a satisfactory manner to appropriate measures. Statistical evidence would show that the condition was often overlooked. In the majority of cases some of the more characteristic features would be wanting. The author described incomplete types that might touch certain other diseases of the endocrine origin, and briefly considered the relation of myxedema to exophthalmic goiter. He believed efforts to stimulate interest in the subject to be both timely and important.

Dr. JOHN LLOYD of Rochester, N. Y., asked Dr. Anders whether he believed that there was an actual change produced in the kidneys by lack of thyroid secretion.

Dr. LAWRENCE LITCHFIELD of Pittsburgh said that it was very important to know the exact composition of the thyroid extract that one administered, different manufacturing chemists preparing these differently. Otherwise it would not be possible to keep accurate notes of what was being used and what the results were in each case. It was essential, he said, that the sheep's thyroid from which the extract was made should be normal and not goitrous.

Dr. DELANCEY ROCHESTER of Buffalo wished to know whether digestion was disturbed in the patient of Dr. Anders, because he himself had had several cases in which the administration of thyroid had done no good until a careful study of the digestion was made and a suitable diet prescribed.

Dr. H. R. M. LANDIS of Philadelphia thought that more stress should be laid on the expansive function of the thyroid. In order to use thyroid therapeutically one must obtain a more accurate idea regarding dosage. He had found that one dose would continue to act for fifteen days. The problem regarding digestion, referred to by Dr. Rochester, had not yet been worked out, but the speaker thought that the thyroid had much to do with the amount of acid in the system of the one receiving it.

Dr. ANDERS felt strongly that there could be no pathological changes produced in the kidneys. His case of myxedema and acromegaly showed a decided subacidity. He reiterated the fact that three-fourths of the reported cases of myxedema had been overlooked by one or more physicians before being recognized.

The Diagnosis and Treatment of Algid Malaria.—Dr. THOMAS D. COLEMAN of Augusta, Ga., defined pernicious malaria as a grave form of chronic malaria caused by the plasmodium, and always occurring in patients who had previously had malarial attacks or had resided where malaria prevailed. It would carry off the patient with horrifying suddenness. In all the classifications of pernicious malaria that he had seen he thought the tendency was to make too minute subdivisions, based on differences in degree, rather than of kind. He still adhered to the classification made by him in a former paper, namely: Comatose, algid, and hemoglobinuric (commonly called hemorrhagic). These types were produced by clumping of the organisms in different parts of the body. In the capillaries of the cerebrum it produced the comatose; in those of the medulla and basal ganglia, the algid; and

in the red blood cells of the general circulation, the hemoglobinuric. The diagnosis of algid malaria, he said, rested on the clinical and laboratory tests, the former embracing periodicity and the effects of quinine, and the latter the presence of the parasite or its products. The symptoms usually complained of included definite or indefinite attacks of fever or chills and fever, ill-defined pains in the back and limbs, sometimes headache, lack of inclination to exertion, loss of appetite, and indigestion with attacks of diarrhea or constipation; examination showed a diminution in the red blood corpuscles and hemoglobin, a decrease in the mononuclear leucocytes, flabbiness of the heart muscle, high-colored urine, containing an excess of urates and urobilin, enlargement of the spleen and liver, coating of the dorsum of the tongue and redness of its edges, yellowing of the conjunctiva, and harshness and greenish-yellow discoloration of the skin. Some cases would not show jaundice, but merely appeared anemic. The treatment should not be postponed until an explosion has occurred, but should be instituted in time to prevent the explosion. In cases presenting symptoms of chronic malaria, repeated search of the blood should be made for the plasmodium. Failure to find the parasite, however, would not negative the presence of malaria. The author had gotten very little satisfaction out of the use of any other drug than quinine, and did not think that time should be wasted in experimenting with anything else in such grave cases. The dose for adults should be five to ten grains every six hours for a week, then ten grains daily for three weeks or more. When given by mouth, in order to secure absorption, either a capsule or a solution should be used, because the tablet or sugar-coated pill would be apt to pass through the alimentary tract undissolved. In cases of nausea and vomiting, the drug should be given either intramuscularly or intravenously, five to ten grains being injected, in urgent cases, every six hours for a week. After this, ten to fifteen grains should be given daily for two or three weeks or more by mouth. In cases of such gravity, idiosyncrasies to quinine should not be considered, the author preferring to take his chances of combating any harmful tendencies of the quinine by the use of other remedies, including stimulants. He cited an interesting case in which the diagnosis was puzzling.

Dr. J. M. ANDERS of Philadelphia thought the true algid form should be distinguished from others. He had applied this term only to cases having a comatose condition and hemorrhage, which often ended in death in the course of a few hours. He agreed with Dr. Coleman that these pernicious forms were chronic types of malaria. He felt that all types should not be called pernicious, but only those having a subsequent explosion. Dr. Anders had often seen reports of cases of pernicious malaria not due to the tertian parasite. Cases of pernicious malaria should be treated, not only until the paroxysms had ceased to occur, but until the blood was thoroughly sterile. He preferred quinine to any other drug, and usually selected the intravenous route; but only when the injections could be given promptly, the time element being of the utmost importance.

Dr. THOMAS DARLINGTON of Washington, D. C., spoke of having had, many years before, about seven thousand workmen under his charge, all of whom suffered with malaria. There were not a few deaths among them, and he had seen death occur within twenty-four hours with hemorrhages from the eyes and nose. He felt, however, that thousands of cases of this kind, in which he had used quinine, were cured.

Dr. H. R. M. LANDIS of Philadelphia suggested the use of spinal puncture in cases of pernicious malaria in which it was difficult to find parasites in the blood. He thought that the risk was slight. In varying states, varying degrees of absorption might be encountered. In cases in which quinine could not be employed, he made use of methylene blue.

Dr. GORDON WILSON of Baltimore said that there was nothing in the classification given by Dr. Coleman to determine the type of organism producing the disease. While most cases could be placed under one of the three classes mentioned, one now and then met with irregular types that did not seem to fall into any of these classes. In such circumstances it was only through finding the organism in the blood that one could arrive at the correct diagnosis. He believed quinine to be the only drug to use in these cases. By injecting fresh blood he had often saved the lives of these patients.

Dr. DELANCEY ROCHESTER of Buffalo asked how the solution of quinine for intravenous injection was prepared.

Dr. JOHN ELLIOTT of New Orleans said the striking feature of some cases of malignant malaria that he had had the opportunity of seeing a number of years ago was that hemoglobinuria was limited to the white people. The algid form was seen in the natives. Forty to fifty per cent. had parasites in the blood. In the algid type, parasites were seldom found. While tertian malaria was always amenable to treatment, the more malignant tropical form did not always respond.

Dr. COLEMAN, in closing the discussion, expressed himself as satisfied that he had seen several types of pernicious malaria. He did not think one was justified in employing spinal puncture, although some cases might be improved. In regard to Dr. Wilson's comment, Dr. Coleman said that in these irregular types the patient might have something else at the same time that he had malaria. While hemorrhages occurred in certain types of pernicious anemia, he did not consider this to be the same as hemoglobinuria. In making the preparation of quinine for injection, he said, most men used distilled water, though some preferred saline solution.

Postural Rest for Pulmonary Tuberculosis.—Drs. GERALD B. WEBB, ALEXIUS M. FOSTER, and G. BURTON GILBERT of Colorado Springs sent this paper, which was read by Dr. WEBB. It stated that rest had been proved to be of value in tuberculosis of the joints and of the larynx, and defined artificial pneumothorax as a method of applying rest to the lung affected with that disease. Physicians had never fully applied the principle of rest to the tuberculous lung. The majority of patients with pulmonary tuberculosis were apt to lie on the side of the lung that had little infection, the actively diseased lung being thereby allowed the greater movement. The authors described their method of applying practical rest to the lung by having the patient lie on the affected side, the results of this treatment they claimed, having been excellent.

Dr. DELANCEY ROCHESTER of Buffalo thought that the treatment by strapping the side was much more pleasant to the patient than that by postural rest. He called attention to the fact that almost every pneumonia patient would lie on the diseased side.

Dr. JAMES ALEXANDER MILLER of New York had used this postural rest idea, with the patient lying on the affected side, and, in addition, had had the patient lie on a pillow, gradually increasing the height of the rest by the use of bags of salt or sand. This rested the lung more completely than could be done by posture alone.

Dr. CHARLES L. MINOR of Asheville asked whether Dr. Webb had any experiments to show what the effect on the bad side was when patients were put on that side. Dr. Minor did not see that the rate of breathing would be affected thereby.

Dr. BERTRAM E. WATERS of New York asked whether Dr. Webb had found that the patients were unable to get a free drainage from the affected lung when this method was employed.

Dr. WALTER C. KLOTZ of Paris, France, wished to know whether Dr. Webb would make a comparison between immobilization by postural treatment and that by compression and pneumothorax.

Dr. PAUL E. RINGER of Asheville had found that ascitic patients, when moving over on the affected side, would begin to cough and become uncomfortable. After lying in that position for a certain length of time they became sore and stiff; and he wondered how it would be possible to get them to lie that way for three or four months. He asked Dr. Webb whether it was the rest that he secured or the increased hyperemia produced by the postural treatment that caused the improvement. Dr. Phillips thought it doubtful whether there was much decrease in the amount of expansion of the lung. The greater part of the work of respiration being carried on by the diaphragm, it would be interesting to find out how much the mobility of the diaphragm was restricted on the diseased side.

Dr. JUDSON DALAND of Philadelphia said that the auscultation of the two bases in patients with pulmonary disease frequently showed distinct differences in the vesicular murmur. He felt sure that the lung on the inferior side could not function so well as that on the superior side, irrespective of the diaphragm.

Dr. CLEAVELAND FLOYD of Boston asked whether Dr. Webb had practised artificial pneumothorax, and if so whether he had found that putting the patients in this posture lengthened the interval at which he had to refill the chest.

Dr. LAWRASON BROWN of Saranac Lake said that he did not wish to deny that Dr. Webb's method did good, but he wondered how it worked, when he considered various points in the physiology of the lung. The part that moved most was the posterior part of the apex, and the apex did not move except through the sinking of the lung, which depended on the diaphragm. Dr. Brown also wanted to know how many cases Dr. Webb had tried the method on, and how many of these cases he had had success in.

Dr. CARROLL E. EDSON of Denver, in examining patients for suspected central pneumonia, had noticed that he got a sharper breathing on the lower side than on the upper. This had led him to suspect that the central pneumonia was on the side on which it later proved not to be. He wondered why, if the expansion of the lower and inner portion was due wholly to the diaphragm, it should move more with the weight of the liver lying against it, so that it had to push this weight, rather than when the weight was working with it.

Dr. FRED H. HEISE of New York said that the class of cases that Dr. Webb had been treating were advanced cases with adhesions between the diaphragm and the pleura and between the pleura and the chest wall. This placed the diaphragm at a disadvantage and did not allow it to expand the lower portion of the lung properly.

Dr. J. MADISON TAYLOR of Philadelphia said that there were varying conditions, localized here and there, that must be taken into account more in giving medicine by mouth or in any other way. While it had been thought that the result of such administration was almost uniform distribution, such was not the case, as indicated by the researches of Sir Almroth Wright, what the latter had called dead corners preventing the distribution of fluids or making it difficult.

Dr. THOMAS D. COLEMAN of Augusta referred to the fact that the diameters of the chest were increased on inspiration in three directions. A practical application of this was to be found in the posture that a pneumonia patient would naturally take.

Dr. WEBB, closing the discussion, said that he used the pillow, but did not use sand bags. He did, however, use bags of shot, just a few ounces at first, and gradually increasing the amount up to two pounds. The bag was placed on the affected side when the patient was permitted to roll over on his back. He did not consider strapping satisfactory. In answer to Dr. Minor, Dr. Webb said that the respiratory rate decreased when the temperature went down, but was always above normal. No influence on it was exerted by pressure on the diseased side. In regard to drainage, it was their custom to have the patients roll over on the sound side, to promote drainage, especially if there was pus. Turning them on the bad side would make them cough, but they had to get accustomed to that posture. He started them with five minutes a day on the bad side and gradually increased. Seeing the results coming, the patients were willing to keep on with the treatment. He thought that if proper attention was paid by nurses and attendants there would be no trouble with sore sides. He imagined that there was some hyperemia, and that this had to do with the effect. In regard to the question of respiration in the affected lung, the vesicular murmur on that side would be shown by the stethoscope to be very quiet; whereas the breathing on the upper side would be exaggerated. Dr. Webb then stated that the disease was apt to be in the upper lobes at first. In health, the diaphragm would have a wide excursion on the recumbent side; but he did not think that this kept up. He considered the point about the splint-like action of the viscera important. The matter of adhesions, he stated, had been taken into consideration. He had found that the artificial pneumothorax cases were markedly decreased. Two hundred cases had been treated, and among these only three or four had had to have an artificial pneumothorax. Some of the cases were early ones, and among these they had three complete failures—not, however, due to the treatment, but to the indiscretions of the patients. The majority of the other one hundred and ninety-seven patients had an arrested condition and were on exercise.

Tuberculosis and Influenza.—Dr. JOHN B. HAWES, 2d, of Boston, from his experience and that of others during the influenza epidemic, drew the following conclusions with especial regard to tuberculosis: (1) Eternal vigilance the price of safety. One should regard any patient who came down with a cold or other acute symptom, whether he had tuberculosis or not, and whether he dwelt in or outside of a sanatorium, as a possible subject of influenza, and, at all events, a source of contagion. (2) Although he thought it quite probable that the tuberculous patient possessed a certain degree of immunity to influenza, one should not take this for granted, and should make every effort to prevent his contracting that disease. (3) He stated that the treatment of influenza was the same in a tuberculous as in a nontuberculous person. It should be based on rational lines of rest, elimination, and stimulation if necessary. It should be regarded as a serious, but by no means a hopeless or fatal, complication. (4) He considered postinfluenzal bronchitis and debility real and definite clinical entities, but thought that in many cases they served to disguise a newly awakened pulmonary tuberculosis. In every case in which either a cough or prolonged physical depression followed influenza the patient should be kept under careful and constant supervision. (5) The early diagnosis of pulmonary tuberculosis, he maintained, had been made increasingly difficult on account of influenza and its effects. While he admitted that many cases of tuberculosis had been discovered or made active on account of influenza, he was convinced that there were numerous patients who had been wrongly classed as consumptives owing to signs and symptoms, constitutional and referred to the lungs, that were really due to influenza and not to tuberculosis. He thought that care, conservation, and common sense were needed more than ever in handling this difficult problem.

Dr. CHARLES L. MINOR of Asheville said that his experience suggested that influenza woke up a latent tuberculosis. He had noticed no special immunity to influenza among tuberculous persons.

Dr. GORDON WILSON of Baltimore had seen practically no deaths in tuberculous patients in the influenza epidemic of 1918-19. In patients seen since then, who gave a history that influenza had started up a chronic cough, investigation had shown that the cough had been of long standing. His opinion was that after a severe epidemic or influenza with a high mortality rate, there was, if anything, a decreased number of cases of tuberculosis.

Dr. JAMES ALEXANDER MILLER of New York considered the value of the questionnaire method of obtaining information doubtful. He said that during the past ten years there had never been such a large number of cases of tuberculosis in the New York institutions or such a low death rate. He stated that a considerable number of cases, although they had suspicious symptoms, were found, after study and observation, to be postinfluenzal conditions, and not tuberculosis.

Dr. J. B. ELLIOTT of Toronto said that in a sanatorium where the nurses and attendants were prostrated by the epidemic, the tuberculous patients to a great extent escaped. This would look as if the tuberculous did escape contagion in most cases; but if they did contract the disease it had a very harmful effect on them.

Dr. J. PERKINS of Providence stated that influenza had obtained a foothold in the men's ward in the recent epidemic, and a good many of those with chronic tuberculosis had contracted the disease. In those that did get it it proved fatal through pneumonia.

Dr. CARROLL E. EDSON of Denver thought that some of these supposed cases of influenza might have been early pulmonary tuberculosis, the patient not having had influenza at all. Many cases of tuberculosis, latent to a certain point, would begin with an attack of fever, cough, and discomfort, simulating an acute ill-

ness. In attempting to differentiate between mild influenza and a sharp attack of central bronchitis, such as the patients might have had at any other time, he had found that three-fourths of those cases with a clinical diagnosis of influenza had shown the presence of acetone in the urine within twelve hours of the onset of the disease. The acetone continued present during convalescence until the patients really began to feel well.

Dr. ROCHESTER of Buffalo stated that he had found in most cases of influenza an early acidosis, and he had obtained better results by giving alkalies in these cases than in any other way.

Dr. WILLIAM LEROY DUNN of Asheville said that, although he was overseas at the time of the epidemic, his assistant had stated that among the tuberculous patients under his charge there had been no case that he was willing to say was influenza. The attendants and nurses in many cases, however, did have distinct influenza.

Dr. NATHANIEL E. WOOD of Boston said that in Boston the ravages of the influenza epidemic were confined almost entirely to the poorest sections, those from which tuberculous cases were always coming, and he thought it a fair assumption that many persons who later would have developed tuberculosis died during that epidemic. This would be a factor in bringing fewer tuberculosis cases to the sanatorium. Another factor might have been the higher wages, enabling the people to live in greater comfort.

Odds and Ends in Tuberculosis.—Dr. CHARLES O. PROBST of Columbus, Ohio, considered this subject under four heads: tuberculin, temperature, work and rest, and mental influences. While he supposed he would be considered old fashioned in advocating the use of tuberculin in the treatment of tuberculosis, he decided to mention a case in which an improvement of tuberculous eye trouble took place after the discontinuance of local treatment and the administration of tuberculin. In regard to fever, he said he did not feel sure that the normal temperature of the patient was always at the arrow mark on thermometers. He had had a patient who seemed in good health, in whom the temperature was at no time over 98°, and another who always had a temperature of 99°. He advocated the taking of the records every two hours for four days or more. He considered it possible that nervous patients who had been impressed with the importance of slight variations in temperature might give themselves psychical rises when they used the thermometer. Complete rest he did not consider necessary for slight elevations of temperature, if there were no other symptoms, believing that rest in tuberculosis was often overdone. In many cases, he stated, complete arrest of the disease had been accomplished without having the patient stop work. Consciously or unconsciously, he believed, all good physicians make use of psychotherapy, but few do so intelligently. He had heard the president, Dr. Brown, say he thought tuberculin would do good if one had more faith in it. Dr. Probst said that this meant, if he could inspire the patients with more faith in it. He considered the cure of the patients, by any means whatever, as the life work of the physician. Apropos of tuberculin, he mentioned another case, in which massive doses were given to a man with a tuberculide of the buttock, as large as the hand, with involvement of the larynx. The ulceration had resisted local treatment for two years; but in ten months' time, with tuberculin and local treatment, it entirely healed, and had remained so for six or seven years.

Occupation of the Active and Arrested Cases in Tuberculosis.—Dr. BAYART T. CRANE of Rutland, Mass., read this paper, which he divided into four sections, as follows: (*a*) Occupatoonal therapy for active cases; (*b*) choice of occupation for arrested cases; (*c*) an industrial colony for chronic fibroid cases; and (*d*) economic considerations. In considering the first of these, he said that sanatorium treatment would have more professional and lay friends if it were humanized, and if an effort were made to make the life there pleasanter to the patient. Occupation would be of value in this direction, and might also be to a certain extent curative. The term psychotherapy by occupation would better define the object of such a system, intended to alleviate the abnormal nervous states of the patients, such as restlessness, introspection, ennui, etc. He selected the amount of work that each patient was capable of performing, leaving to the instructor and the patient to choose the kind of work. He had found this system curative when other things had failed in about five per cent., and extremely valuable in fifty per cent. An attempt should be made to make these activities gainful to the extent of defraying the cost of the patient's maintenance. The economic problem of the occupation of the tuberculous being one of the largest with which humanity has to deal, the physician must participate in the solution of it, because the physical limitations of these patients were so subtle that the lay mind did not comprehend where safety stopped and danger began. He should be able to define the class of cases which, while still positive, could safely, within limitations, pursue partial or entire self support. He might not, however, have great knowledge of industrial conditions, and so be unable to advise the patient where to find employment that would not overtax his strength and would yet return a sufficient income to provide adequate nourishment and comfort. If the man could not fit the occupation, the occupation must be made to fit the man. An industrial colony should be the next great step in the fight against tuberculosis, and Dr. Crane said that such a colony was being planned in Rutland.

Dr. FRANK A. CRAIG of Philadelphia stated that an attempt had been made at the Phipps Institute, Philadelphia, to provide occupation for such cases; and that since then there had been established at White Haven a training school for nurses, enabling a certain number of tuberculous women to earn their living and retain their health. There are still, however, great need of some occupation for the male patients. The shirtwaist factory started in Philadelphia was not successful financially, although it was from the standpoint of the health of the patients, and it had to be discontinued.

Dr. E. O. OTIS of Boston referred to the fact that the Boston Therapeutic Association had secured the services of a woman who had done army work in this direction. The enterprise had been very successful. Most of the patients, being in the advanced stage of tuberculosis, welcomed anything that would give them something to do. The difficulty was to find something that could be easily made by these patients and that would be readily salable.

Dr. NATHANIEL E. WOOD of Boston said that one reason that Dr. Crane's work had been a success was that he had had the assistance of some business men, who had given their thought and energy to planning the making of things that could be readily sold.

Dr. J. H. ELLIOTT of Toronto made a plea for patients suffering with other chronic diseases of the chest, such as chronic bronchitis with recurrent attacks, emphysema, bronchiecstasis, etc. He thought that provision should be made to give them employment, as well as the tuberculous.

A Study of the Progressive Changes in the Aorta and Lung as Shown by X-Ray in Tuberculosis and Syphilis.—Drs. CLEAVELAND FLOYD, HORACE K. BOUTWELL, and R. L. LEONARD of Boston presented this paper, which was read by Dr. FLOYD. From this study, it seemed to these authors that every case having tuberculosis with syphilis should receive intensive syphilitic treatment, especially if the lesion was not typically one of tuberculosis. The presence of syphilis, they thought, might at times considerably aid in the production of fibrous tissue in the lung. Syphilitic dilatation of the aortic arch, even in well-marked instances, might be improved by prolonged and intensive treatment. Some of the radiograms that Dr. Floyd exhibited showed very little evidence of pulmonary syphilis. The first plate, however, showed very definite signs of changes in the aorta, the arch being much dilated. In three instances the authors found by the *x*-ray a beginning cavity formation.

Dr. DELANCEY ROCHESTER of Buffalo remarked that even before the days of the Wassermann and the *x*-ray the diagnosis of syphilis of the lung had been made. Further observations had led to the definite conclusion that some cases of tuberculosis improved under mercurial treatment.

Dr. WILLIAM CHARLES WHITE of Pittsburgh thought that other organisms than the tubercle bacillus and the *Spirocheta pallida* could produce the symptoms of tuberculosis of the lung. He believed that a thorough study should be made of the air organisms that could produce fibrosis in the lung.

Dr. CARROLL E. EDSON of Denver asked whether in these cases of fibrosis and indeterminate processes with the sputum examination negative to the tubercle bacillus, the examination had been carried out simply with the ordinary stain. He had been finding a large number of cases that had the clinical picture of chronic fibrous pneumonia, in which he did not find tubercle bacilli in the sputum with the ordinary stain, but by sedimentation and staining with the Funk-Weiss process he was able to find them.

Dr. LAWRASON BROWN of Saranac Lake stated that pathologists had always agreed with clinicians that syphilis of the lung was a thing that did not exist. He did not think the therapeutic test safe to go by. The fact that a man got better under antisyphilitic treatment was no evidence that he had syphilis, and not tuberculosis.

Dr. GERALD B. WEBB of Colorado Springs spoke of a case of proved syphilis of the lung that he had seen thirteen years ago in Gohn's Clinic. There were gummata found all through the lungs at postmortem.

Dr. FLOYD, in closing the discussion, said, in answer to Dr. Edson, that the Funk-Weiss stain had not been employed. One case had no expectoration, and in the cases of mixed infection the tubercle bacilli were found. He thought that unless the spirochetes could be demonstrated in the sputum one could not make a diagnosis of syphilis of the lung; and that even then these organisms might come from elsewhere. One must depend on the therapeutic test. One could be morally sure, and that was all.

A Study of Destruction and Repair in Pulmonary Tuberculosis.—Dr. BERTRAM H. WATERS of Loomis, N. Y., considered briefly the occurrence of either marked improvement or the reverse in a patient, often without the slightest apparent change in the environment or routine. He discussed this in rather a speculative way, and illustrated the accompanying pulmonary condition by means of stereograms. He insisted upon the value of the latter in frequently enabling one to forecast what were usually termed relapses, and suggested the importance of a study of the underlying biochemical factors that must precede these "relapses."

Dr. DAVID RUSSELL LYMAN of Wallingford, Conn., thought it difficult to find out what started a case on the downward path, when one had been watching it improving and thought it on the mend. Some way of measuring the definite chemical and physical resistance of the patient was needed, he thought. He had been worried to hear Dr. Waters say that he relied entirely on the *x*-ray, and was relieved to hear him say that he had noticed that the work the patient was doing was tiring him.

Gunshot Wound in Case of Artificial Pneumothorax.—Dr. J. B. ELLIOTT of Toronto, Can., reported a case of moderately advanced tubercle of the lung, for which an artificial pneumothorax was made, resulting in apparent cure. The man appeared so well, indeed, that he was taken into the military service and served in France, performing all the laborious duties incident to the life of a soldier. Finally he received a gunshot wound in the chest and underwent several operations. He was afterward referred to the author, who made a study of his case in order to see what further could be done. It was then discovered that he had an artificial pneumothorax, performed earlier. The case resulted in chronic empyema. The author showed slides illustrating the condition.

Acute Epidemic Encephalitis.—Drs. CHARLES H. MINER and STANLEY FREEMAN of Wilkes-Barre, Pa., presented this paper, which was read by Dr. MINER. It gave studies of a series of cases with marked vascular hypertension, with especial reference to their etiology. From these studies the authors had been led to believe that in any case presenting fever and cranial nerve paralysis (particularly of the third and seventh nerves), accompanied with stupor or lethargy and with muscular fibrillation or tremor, together with a masklike face, a diagnosis of enchepalitis should be seriously considered. They had found the spinal fluid practically normal in all the cases, but believed that spinal puncture should be done when possible, in order to exclude cerebrospinal and tuberculous meningitis, anterior poliomyelitis, and cerebrospinal syphilitis. While there were many other conditions that might be confused with acute epidemic encephalitis, the authors felt that the cases of that disease, as they had seen them, were so characteristic and had so uniformly the same symptom complex that the diagnosis could readily be made by one who had once seen the disease.

Dr. GEORGE MORRIS PIERSOL of Philadelphia considered the cardinal symptoms of lethargy, persistent headache, nervous involvement, etc., the criteria on which to base a diagnosis of acute encephalitis. He had been struck with the occurrence of spasm of the upper segment of the rectus muscle as a cause of the muscular twitchings sometimes seen in these cases. He considered it more than a coincidence that the disease had been reported with greater frequency after epidemics of influenza and suggested that a widespread epidemic of encephalitis might be in the making. In that case the importance of being able to make a correct diagnosis would be apparent.

Dr. JUDSON DALAND of Philadelphia said that his mind turned to the question as to whether the condition might not be influenzal, although the authors had stated that they were unable to trace any relationship between influenza and the cases of encephalitis that they saw. He thought it should be remembered that after every epidemic of influenza there was a large number of carriers, and that the absence of a history of these about a case did not prove that the patient did not come in contact with influenza.

Dr. WILLIAM D. ALSEVER of Syracuse emphasized the possibility of an acute onset, and related cases in which this had occurred. He then referred to the fact that the pathological changes in encephalitis were identical with those in African sleeping sickness, although the organism causing the latter could not be the etiological factor in these cases.

Dr. DELANCEY ROCHESTER of Buffalo emphasized the great importance of lumbar puncture in these cases, and reported an illustrative case in which the condition was proved to be specific meningitis.

Dr. THOMAS A. CLAYTON of Washington, D. C., said that, as in other diseases, it was the first cases seen that gave the greatest trouble in making the diagnosis. He thought there must be many mild cases that were unrecognized and recovered. He suggested that the unusually large number of cases of facial paralysis seen in the last year might be due to this disease. He did not believe that a positive diagnosis could be made without an examination of the spinal fluid, and had been surprised to find that in this series of cases there had not been a decided change in the spinal fluid. In the cases that he had himself seen there had been an increase in the globulin and in the number of lymphocytes.

Dr. CARROLL E. EDSON of Denver reported five cases of illness occurring at the same time in a family, four being typical influenza; and the other, with apparently the same onset, was a distinct case of encephalitis lethargica.

Dr. GORDON WILSON of Baltimore mentioned a case that had been diagnosed by three good doctors as one of postinfluenza psychosis, and was correctly diagnosed as encephalitis lethargica only on account of ptosis. He thought it a question whether many so-called cases of postinfluenzal psychosis were not encephalitis.

Dr. GUY HINSDALE of Hot Springs, Va., asked whether any instances of localized neuritis or of vasomotor paralysis or stasis had been noted in any of these cases.

Dr. CHARLES L. MINOR of Asheville asked concerning the infectiousness of these cases.

Dr. JAMES M. ANDERS of Philadelphia thought it could safely be assumed that this was a microbic infection. It should be regarded as communicable, and precautions should be taken to prevent its spread. He did not believe an abrupt onset to be so rare as one of the speakers had intimated. He then emphasized the fact that there seemed to be a prodromal stage of more or less excitement preceding the lethargic stage. In the stage of excitement, diplopia and ptosis were likely

to be present. The prognosis should be very guarded, as these cases ran no definite course.

Dr. ROBERT WILSON, Jr., of Charleston asked whether the authors of the paper had noticed in their cases the presence of rapid respiration. He had found this symptom constant in five cases that he had had the opportunity of observing, in one of which the respirations had reached forty or fifty a minute.

Dr. MINER, closing the discussion, stated that they had had a very severe epidemic, so that everyone had been exposed to it. They had not, however, found any positive history of a typical attack of marked influenza in any case later than a year or two previous. They had noted an apparently abrupt onset in many cases. On study, however, it was found that the patients had had prodromal symptoms. Dr. Miner then said that if he had understood Dr. Hinsdale's question correctly, they had found the conditions he had asked about.

Concerning the Diagnostic Value of Cardiac Murmurs.—Dr. GLENTWOOD REEVE BUTLER of Brooklyn thought that there must be a very large number of persons who were unhappy because of a mistaken diagnosis of valvular heart disease, usually mitral insufficiency, the mistake having been made because of the axiom that a systolic murmur at the apex spelled organic incompetence of the bicuspid valve. He said there were three chronological types of murmur: diastolic, presystolic, and systolic. In the majority of cases the presence of an aortic diastolic murmur afforded reliable evidence of aortic insufficiency, but even with this murmur present, it was not safe to make the diagnosis without the confirmatory evidence of a water-hammer pulse, throbbing carotids, capillary pulsation, and a pistol-shot sound in the femorals. Presystolic murmurs, he regarded as being usually untrustworthy. To make a diagnosis of mitral stenosis without a definite murmur was unjustifiable, he thought; but even here, he admitted, there were possibilities of error. If the usually reliable diastolic and presystolic murmurs lent themselves to occasional misinterpretation, so, to a vastly greater extent, would the multitude of systolic murmurs. Aortic systolic murmurs, the author stated, were diagnosed by many men as aortic stenosis, they forgetting that such murmurs were very common as the result of slight roughening of the valves or the root of the aorta. They might also be accidental or functional. In reality, aortic stenosis was a rather rare lesion. He considered pulmonary systolic murmurs substantially negligible in the ordinary run of cases. Only when a sign of congenital malformation was it indicative of organic disease. Apical systolic murmurs were claimed by the author to constitute the greatest stumbling block in the way of correct diagnosis. More often they were of cardiorespiratory production. Uncomplicated (primary) mitral insufficiency should be classed among the comparatively infrequent valve lesions. It should not be diagnosed unless, in addition to the murmur, there was evidence of cardiac hypertrophy.

Dr. LAWRENCE LITCHFIELD of Pittsburgh did not believe that it was possible to have a mitral stenosis without an hypertrophy of the left auricle, and felt certain that whenever there was hypertrophy of the left auricle there must be mitral stenosis.

Dr. F. R. PHILLIPS of Charleston had observed small orifices in perfectly sound aortic valves, which permitted a certain amount of fluid to regurgitate under pressure. He said that some years ago, Dr. Porter of New York had called attention to these small openings and the possibility of their creating murmurs. If by stenosis of the mitral valve Dr. Butler had meant something that would prevent the free entrance of blood, then Dr. Phillips had failed to see any instance of mitral stenosis in his laboratory.

Dr. J. PERKINS of Providence related a case that he had seen while on the Medical Advisory Board. The Board had previously passed this man, but later Dr. Perkins, by careful listening, was able to make out a presystolic murmur.

Dr. JUDSON DALAND of Philadelphia had been led to the conclusion that sometimes a pulmonic systolic murmur was due to pressure from a large artery on the pulmonary artery. He called attention to the fact that exercise would often aid in the diagnosis of a mild grade of mitral insufficiency, producing a temporary murmur; and that indeterminable or impure murmurs at the apex could be developed into clear-cut, blowing murmurs by exercise.

Dr. JAMES M. ANDERS of Philadelphia felt sure that any murmur heard in the mid-presystolic or mid-diastolic period was due to mitral stenosis. He stated that occasionally a diastolic murmur of great purity originated in the large veins near the heart.

Dr. J. B. ELLIOTT of Toronto said that one might suspect stenosis on account of the snapping character of the first sound. He suggested that the inhalation of a few minims of amyl nitrite would frequently cause a murmur to appear.

Dr. BUTLER, closing, said that he had referred to actual definite distortions of the valve, or actual organic permanent narrowing of the orifice. He felt that before one could make a diagnosis of a real, true organic mitral stenosis, one must have a presystolic or a mid-diastolic murmur.

The Ultimate Prognosis in Vascular Hypertension.—Dr. G. MORRIS PIERSOL of Philadelphia, in presenting this paper, said that the prognosis in cases of hypertension often depended in a large part on their etiology, the mortality being much greater in nephritics than in any other group, as among his cases five times as many of these had died as among those suffering from other conditions. None of his cases in the climacteric group had had a fatal termination. The period of time from first coming under observation until death was much less among the nephritics than among those with hypertension from other causes. The patient with the highest blood pressure among his cases was known to have had this high blood pressure for eleven years. In all, he studied 134 cases of persistent hypertension, and from this study he concluded that persistent high blood pressure was more common as the result of chronic renal disease than of other causes. He also found hypertension of renal origin somewhat more common in men than in women. Primary hypertension of the climacteric variety, if regarded as a type of hyperpiesis, would make primary hypertension appear to be twice as common in women as in men. The most common causes of death in cases of persistent hypertension were cerebral hemorrhage and cardiac failure. The height of the blood pressure alone would not furnish an adequate basis for prognosis.

Dr CARROLL C. EDSON of Denver asked whether Dr. Piersol had noted any difference in the prognosis with relation to diastolic pressure. In the cases that he had had, he thought that the symptomatology had as much relation to a persistent high diastolic pressure as to a high systolic pressure. He believed that with both a high systolic and a high diastolic pressure the patient was worse off, and the case should have a more unfavorable prognosis than if he had a high systolic pressure only.

Dr. JAMES ALEXANDER MILLER of New York thought that if a patient had a high diastolic and a low systolic pressure his case belonged in the cerebral group; but that with a high diastolic pressure and a corresponding pulse pressure, there was likely to be disturbances of the heart. These cases, he said, represented, in a general way, two groups.

Dr. PHILIP MARVEL of Atlantic City asked whether Dr. Piersol had made a record of the diastolic pressure, and what percentage of the cases studied were over one hundred diastolic. He cited a case that bore out the statement that glandular activity had much to do with the systolic, and perhaps diastolic pressure.

Dr. JUDSON DALAND of Philadelphia believed that primary, or essential, hypertension cases meant a group including various kinds of cases that were not quite understood. He thought that infection lasting two or three years could explain the hypertension in certain cases. Involvement of the ductless glands might also be productive of hypertension in some cases. He requested Dr. Piersol to mention, in closing, the frequency of sudden death in these cases.

Dr. CHARLES L. MINOR of Asheville said that he could not understand how the hypotension of tuberculosis could change into hypertension during the short time that nephritis existed in these cases. He could not believe that arteriosclerosis could have developed during this short period.

Dr. DELANCEY ROCHESTER of Buffalo asked Dr. Piersol what he had found in the eye-grounds, and what relation the findings had to the cases that went on to either death or recovery. He also wished to know what effect the diastolic pressure had in connection with the prognosis.

Dr. CHARLES H. MINER of Wilkes-Barre stated that the prognosis was better in women than in men, and asked Dr. Piersol to give the diagnosis of cases of glandular disease that were not hyperthyroidism.

Dr. PIERSOL, closing the discussion, said that it had occurred to him that it would have been better to have worked up the diastolic pressure more carefully, although both pressures were taken in all the cases. The diastolic pressure had been 110, or over twenty-six out of the forty-two that died, and in nineteen of the forty-two still living. Therefore, nearly the same proportion of patients in both groups had excessive diastolic pressure. As to the bearing of pulse pressure on fatal complications, he had no data. He had been unable to find any relationship, so far as the etiology was concerned, to the diastolic pressure. Some of the questions asked he had not considered in his paper, because he had not the temerity to do so—for instance, the cause of primary hypertension. He did not doubt that infection was a factor in its production. The only sudden deaths in his series were those in which it occurred after a tremendous cerebral hemorrhage or during an attack of angina pectoris. About seven cases had a sudden termination. In regard to the occurrence of hypertension in tuberculosis, he had felt that when a nephritis occurred, something happened to the metabolism that allowed substances to be retained that ought to be eliminated, and that these substances set up an irritation that produced primary or auricular spasm. Ten of the fatal cases had definite changes in their eye-grounds.

The Ductless Glands.—Dr. WILLIAM DUFFIELD ROBINSON of Philadelphia read a paper on this subject, in which he stated that when there was a lack of proper balance caused by the failure of the endocrine glands to function properly, most of the organs of the body would be adversely affected. The endocrine glands, he said, owed their power of stimulating activity in cells in near or distant parts of the body to the fact that they contained or secreted substances known as hormones, or excitants, which were of simple chemical composition, and could pass quickly through the walls of the bloodvessels. He classified these glands into (1) nutritive glands and (2) regulating and stimulating glands; the first were represented by the thyroid, thymus, and hypophysis, and the second by the adrenals. Hormones were classified as acute and chronic, the former being those of the adrenals and the posterior lobe of the pituitary, and the latter those of the anterior lobe of the pituitary and thyroid. The action excited by acutely acting hormones was of only short duration. The condition of the glands could be told by the amount of hormones they secreted. The hormones of one gland might act in association with or in antagonism to the hormones of other ductless glands. The author considered in detail the different endocrine glands and the conditions produced by hypersecretion and hyposecretion of each, and spoke of the interrelation existing between the hypophysis, or pituitary gland, and the thyroid, thymus, suprarenals, and sexual, or gonad, glands. The author then went on to state that when a hormone floated in the blood stream, the cells of that organ requiring this hormone would appropriate the amount it needed. When, however, more was required than was offered by the blood from the endocrine making this hormone, the endocrine making an analogous hormone would supply its hormone to the hungry cell. If these hormones were supplied artificially by giving the patient dried glands or active preparations made from them, the under-supplied cells would take the required number for normal use. He further stated that the emotions acted on the endocrines, and that the endocrines produced emotions. Dr. Robinson thought that what had been proved and what had been indicated as probable showed what wonderful possibilities the future might reveal. Later, this knowledge would no doubt be amplified, and it would be shown how potent in health and in the cause and cure of disease were the hormones of the ductless glands.

Dr. CHARLES C. DEM. SAJOUS of Philadelphia said that adrenalin would not bring up the blood-pressure unless it was abnormally low. He thought that the suggestion that the adrenal secretion was at the foundation of respiration was proving to be true. The pituitary gland was not a secreting organ, but one that had the power to govern the secretions of the other ductless glands. He took the position that one should respect experimental evidence and also take clinical evidence, pathology, and all other data into consideration before reaching conclusions.

Lymphocytosis as a Diagnostic Sign of Focal Infection.—Dr. JUDSON DALAND of Philadelphia stated that this was a preliminary communication, and that he expected to give another in the fall. Relative lymphocytosis, he stated, occurred in 54 per cent. of 100 cases of focal infection with systemic manifestations, but that in only 1 per cent. was the lymphocytosis absolute. Small lymphocytes were increased in 31 per cent., and large lymphocytes were increased in only 11 per cent., and large lymphocytes were decreased in 86 per cent. Leucopenia occurred in 56 per cent., and leucocytosis in only 9 per cent. Therefore, the first factor of importance diagnostically would be the increased number of small lymphocytes; and the second, the association with leucopenia. With these two factors joined, the value of the findings would be very great. Dr. Daland was of the opinion that if these figures were accepted it would be safe to state that constituted what might be called a leucocytic picture, having a certain diagnostic value. By means of it one could recognize the existence of a focus of infection and certain systemic conditions. One could not be sure that the systemic conditions were in distinct association with the focal infection, and must often be undecided whether one should do anything radical regarding the focus of infection. When, however, a lymphocytosis was found in the blood, with a leucopenia associated, he felt satisfied to recommend radical steps concerning the focus of infection. In a few cases he had been able to assure himself that all foci had been removed; and by making leucocytic counts at weekly intervals and at intervals of two weeks, for as long as two months, he had seen the picture in these cases restored to normal.

Dr. GEORGE M. PIERSOL of Philadelphia said that if Dr. Daland's experience were proved by other observations to be correct, this method would prove a most useful, practical, and readily available one. He thought that these results afforded a good example of the value of routine laboratory work in the course of one's practice.

Studies in Vibrations Causing Pulmonary Physical Signs.—Dr. CHARLES M. MONTGOMERY of Philadelphia stated that the physical signs investigated were normal and abnormal vocal fremitus and resonance, whispering pectoriloquy, and bronchial breathing, special attention being given to the following: (1) The difference in characteristics between the spoken voice and the normal pulmonary vocal resonance. (2 The phenomena of (a) the presence of normal vocal fremitus and resonance in the absence of whispering pectoriloquy and bronchial breathing found over normal lung, and (b) diminished vocal fremitus and resonance in association with whispering pectoriloquy and bronchial breathing found in certain pathological conditions.

Dr. JUDSON DALAND of Philadelphia spoke of a case that he had seen in which the anterior part of the chest had been removed for empyema, and he could see the heart beating. There was no lung in contact with the chest, except posteriorly, but one could get excellent vocal fremitus on that side. Dr. Daland thought, therefore, that vibrations of a coarse variety could be transmitted through the lungs and out to the hands.

Dr. J. H. ELLIOTT of Toronto asked whether Dr. Montgomery's idea that the vibrations from the vocal cords were carried to the chest through the bronchial walls was anything other than pure theory, because the speaker thought that the sound waves would be deflected in passing through tissues of varying density, such as the cartilage and the softer tissue of the bronchial walls. He though it more probable that the sound was carried by the air column in the bronchial tree. If these points could be settled, he said, it would help professors to explain to their students the physical

phenomena occurring during an examination of the chest.

Dr. MONTGOMERY, closing, said that there was no question of the great transmissibility of bone, even when surrounded by the muscles. One could get pectoriloquy from the cavity, although in contact with solid tissue all the way through. The speaker said that he had not meant to state that the vibration was carried from the vocal cords down along the walls of the bronchial tree, but that they went from the vocal cords by the aerial route to the walls of the bronchi. He did not know how far the vibrations were carried by direct conduction down the bronchial wall.

The Treatment of Tuberculosis of the Larynx.—Dr. ALEXIUS M. FOSTER of Colorado Springs devoted the principal part of his paper to a discussion of a laryngeal mirror that he had devised for reflecting the rays of the sun upon the diseased part of the larynx. This mirror was made of an alloy of aluminum and magnesium, which reflected 85 per cent. of the actinic rays and absorbed most of the heat rays. The treatment could be given to himself by the patient. The exposure was not longer than thirty seconds at first, and the length of time was gradually worked up to ten minutes. Thirteen cases were reported by the author, who felt that this solar laryngoscope, if properly supervised and supplemented by all the other accepted forms of treatment, constituted a very valuable aid in the treatment of laryngeal tuberculosis. In the absence of Dr. Foster, his paper was read by Dr. Gerald B. Webb of Colorado Springs.

Dr. DELANCEY ROCHESTER of Buffalo was connected with an institution in that city in which the Rollier treatment for tuberculosis was used. He said that they had applied that treatment to the outside of the throat, exposing the bare skin to the sun's rays. A great many patients had improved, and some had obtained complete recovery under this method of treatment.

Dr. CHARLES L. MINOR of Asheville had used the solar laryngoscope in two cases, and had been much pleased with the results. He thought that if doctors treating tuberculosis would always use a laryngoscope they would have better results. He had ceased to look on the treatment of tuberculosis of the larynx as hopeless, unless the pharynx was involved.

Dr. LAWRASON BROWN asked in how many cases this treatment had been applied.

Dr. WEBB, closing the discussion on Dr. Forster's paper, said that it had been applied in upward of seventy-five or one hundred cases. Except in end cases, they had had excellent results. Results were obtained in the larynx, even when the condition in the lung was not improving. He felt that with the lamp they could concentrate the actinic rays on the organ involved, and that it was this concentration that constituted the great value of the remedy. The other points referred to, he said, had all been brought out in the paper, every form of treatment having been considered.

The Use of Intravenous Injection of Calcium Chloride in the Treatment of Pulmonary Tuberculosis.—Drs. PAUL H. RINGER and CHARLES L. MINOR of Asheville stated that their own limited experience and that of others had convinced them that in calcium chloride they had a remedy that would frequently palliate and relieve; and that when they could diagnose their cases early, it might even prove curative. While the results that they presented were not brilliant, and while they were based on but a small number of cases, their significance was such as to encourage the authors to further use of the drug. They felt that they had prolonged the lives of some of their patients, and had made others far more comfortable by the use of this method of treatment. Consequently, they believed that a fair trial should be given it by those who saw enough of such cases to enable them to draw conclusions as to its value. At the same time, they hoped that the reason for its good effect might be worked out in the pharmaceutical laboratries. A table was given showing the results in their sixteen cases.

Dr. JOHN B. HAWES, 2d, of Boston wished to know on what theory this drug worked. It seemed to do no harm and a certain amount of good, and he thought it would be something that those not connected with sanatoria could use when their patients came back from these. He asked whether it was as simple an operation as colostomy, which sometimes accomplished remarkable results.

Dr. WALTER C. KLOTZ of Paris, France, thought that if it would shorten the coagulation period, the injection of calcium salts by the intravenous method would be useful on account of the distressing effects produced on the stomach when given by the mouth. He said that French physicians were still giving calcium salts with the idea of counteracting the demineralization that occurs in tuberculosis.

Dr. WILLIAM LEROY DUNN of Asheville had used calcium chloride in ten cases, in some of which he had obtained distinct and often more or less permanent improvement. In still others, however, there was absolutely no improvement at all. He thought that when the dosage and the interval between doses had been more carefully worked out a larger percentage of good results would be obtained.

Dr. CARROLL E. EDSON of Denver thought that if this were a curative measure, and not merely a palliative one, the intervals between doses should be shortening, rather than lengthening.

BERTRAM H. WATERS of Loomis, N. Y., was of the opinion that anything should be tried that offered any improvement whatever. He felt that he was getting about as good results by the use of calcium lactate by mouth as could be obtained by the injection of calcium chloride.

Dr. LAWRASON BROWN of Saranac Lake said that one should bear in mind that intestinal tuberculosis had long and remarkable periods of remission, and that it was hard to tell whether it was what was done for the patient or something within himself that worked the change.

Dr. MINOR said that their results had been so satisfactory that they felt that anyone handling such cases should give this method of treatment a fair trial. They had not been able to figure out any pharmacology with reference to calcium in intestinal tuberculosis, but hoped to find out something about it later.

Dr. RINGER, closing, said that they had looked on calcium chloride entirely from a palliative standpoint. The impression that they had gained that with the continuance of the use of the drug, it lost its effect, would be in line with that theory. They had rather strayed away from the principle at first adopted, to wa' for the reappearance of the diarrheic symptoms anc pain, and tried to anticipate them by giving the injections more frequently, hoping that this interval would work better.

Election of Officers.—The following officers were elected: *President*, Dr. Carroll E. Edson of Denver; *Secretary and Treasurer*, Dr. Arthur K. Stone of Framingham Center, Mass.; *Recorder*, Dr. John Lloyd of Rochester, N. Y.

The Association was invited to meet next year at Asheville, but the acceptance of this invitation will depend upon the action of the Council.

Syphilis and Lethargic Encephalitis.—Jeanselme states that the coexistence of these two affections in the same patient is difficult of diagnosis. Thus in a man of twenty-nine, an old syphilitic, there was a continuous somnolence with diffuse motor pareses in the extremities suggesting a cerebellar origin. There was plenty of evidence of nervous syphilis, such as headache and delirium and all in all had encephalitis been present it would have been almost impossible to recognize it. It was evidently decided that both affections coexisted.—*Gazette des Hôpitaux*.

Gangrene of the Penis in Old Men.—De San Antonio of Madrid saw recently two cases which much resembled each other and which were unlike anything he had hitherto seen. The first patient was a man of sixty-five who had contracted a venereal sore, which had evidently been vigorously cauterized, the resulting inflammation having been attended by sphacelation. The second patient was also over sixty, and was a stable helper, doing rough and dirty work and addicted to drink. The gangrene in his case was of the subpreputial type, beginning in an ulcer. In both cases the process was selflimited, recovery occurring under simple antiseptic measures.—*La Medicina Ibera*.

Miscellany.

Syphilis in Africa.—The entire history of syphilis in the African continent has yet to be written. The subject has been revived by the war, for many Africans took part in the latter on French soil and were treated for syphilis, ancient and recent. Roy, a well known writer on exotic medicine, contributes an article on the subject in the *Union médicale du Canada* for May, 1920, xlix, 5. He has personally visited twenty-two African colonies and found among certain aborigines that syphilis was termed the "white man's disease." Evidently in Southern African pure blood there is no tradition of any autochthonous malady. The author has found that syphilis is very rare in equatorial and periequatorial Africa, especially the hereditary form. It is almost certain that the disease was brought there in modern times by the whites and that it has made but little headway. This limits the subject of old African syphilis to the Northern and Northeastern regions. Among the theories of origin of European syphilis there was one which derived it from Northern Africa. There is no evidence that Portuguese navigators brought the disease from Africa in the XIV century, but the author believes that the great upheaval in Spain from the expulsion of the Moors in 1492 was responsible for much dissemination of the infection, although at the time Columbus had not yet returned from America. While admitting a pre-Columbian syphilis in America which may have found its way to Europe the author holds that East Asia is the cradle of the disease, which spread both East to the New World in prehistoric times and gradually westward, infecting in time Arabia and Northern Africa. It is impossible to differentiate between the older and post-Columbian syphilis in the early infection of North Africa, but the author insists, despite the recent propaganda of Bloch, that this part of the world was syphilised centuries before the Columbian era. The old immunity of South Africa may not extend to the Hottentot and Bushman, now largely extinct, which tribes have an infusion of Asiatic blood.

A Society for the Study of Influenza.—Announcement is made in *El Siglo Medico* that at a session of the Real Academia Nacional de Medicine of Spain on the 7th of last February it was decided to form a permanent committee for investigating the etiology, symptomatology, and therapy of influenza, which would have the scope of a national society and would fraternize with similar bodies in other countries. As none of the latter are mentioned by name we may infer that Spain has taken the initiative in the matter. In regard to the etiology it is assumed—although actively denied in some quarters—that influenza is truly endemic in an area which comprises Russian Turkestan and extends to the borders of China. From this focus it moves west on stated occasions. For some unknown reason it has never spread to the East and has never crossed Behring's Strait to attack North America. This immunity could result from the sparse population eastward or from the absence of trade routes. Having invaded Europe the germ remains behind in the organisms of the victims and gives rise to secondary waves of infection. This is shown in the so-called Spanish influenza, for Spain is not the natural home of the malady, yet during that episode it was Spain and not Turkestan which infected Europe. No one germ can be held responsible for influenza as a whole, this being evident from the bacteriological reports of widely separated countries. The protein character of the disease is shown by unusual experiences, as the mysterious death of a tuberculous subject in the first few days of the Spanish epidemic. Later it was apparent that the victim had been unable to withstand an attack of the new malady, which clinically was expressed only by extreme asthenia and some dyspnea. The death had been certified as due to tuberculosis before the real state of affairs had been recognized. In theory treatment should be almost synonymous with disintoxication by promoting the action of the skin, kidneys, intestines, and lungs, and this should be accomplished rapidly by intensive diaphoresis and by the injection of diuretics such as urea. In some cases venesection up to a pint of blood followed by intravenous serum injections will greatly stimulate diuresis. Next to this line of treatment abscess of fixation appears to be the logical remedy.

Belgian Students Entertained in Paris.—Eighty students from the University of Brussels were entertained by the medical students of the University of Paris in the Students' House last spring. Professor Roger, dean of the Medical Faculty, presided and the General Association of French Physicians co-operated in the function. A new orchestra composed of French medical students made its début on this occasion. Of the selections played Handel's Largo is singled out as especially well rendered. A number of students gave vocal selections, assisted by distinguished professionals, including women. Two of the latter, Mesdames Leconte and Granier, rendered *Gros Chagrin*, the chef d'œuvre of Courteline, regarded by the French as their greatest comic modern author. The decorations were by students and are highly commended. Of the eighty Belgian students of whom seventy-five were medical and five pharmaceutical, every one had a war record, and all wore decorations. They reached Paris Sunday, March 21, and as soon as they had been escorted to the Students' House, "wine of honor" was served. On the following Tuesday a banquet was held. One week later the party visited Versailles. During the interval hospitals and clinics were visited. The movement seems to have been motivated by the desire universally felt for a close alliance in the future between France and Belgium. There is also a tendency toward international federations of medical and other students throughout the world, the first step in this direction going back to 1900 at Paris. There is further a tendency toward Pan-Frankish and Pan-Latin rapprochements and toward an understanding between the Franks or French-speaking races on the one hand and the new Republics of Poland, Czecho-Slovakia and Jugo-Slavia and the kingdom of Greece. Dr. Helme, who reports the function, does not, however, assign any special significance to this event.

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Original Articles.

"SUBCONSCIOUSNESS" AND DREAMS.

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NEW YORK.

I.

THE conception of the existence of mentality of which we are not aware—usually spoken of as subconsciousness—is an hypothesis so widely accepted nowadays that it may not seem to require elucidation; nevertheless it may be well to consider briefly certain of the grounds we have for this acceptance, inasmuch as the hypothesis involves implications that are often overlooked.

If we study cases of clear consciousness, we find that some of them can be, and some cannot be, recalled.

I am perfectly sure that I talked with a man who was introduced to me yesterday, and that I constantly mentioned his name, which was then in clear consciousness; but to-day I cannot, for the life of me, recall his name.

Closely allied with such cases are others where we have no appreciation that any clear consciousness occurred in connection with them in the past, until the fact is proven by evidence apart from the state involved. I may say that I do not recall that I knew the stranger's name at the time of our conversation; but my introducer may remind me that I took his card, read it, and noted his address in my diary; and there I find it.

Again I may talk for an hour with the stranger without realizing that I have ever met him, and thus have before had clear consciousness of his personality. But the mention of Cambridge may lead me to say, "Why, I met you ten years ago at the Darwin celebration!" Such cases are closely allied with those last mentioned, but they differ in this: that in the case just mentioned I have no inkling whatever that any clear consciousness in regard to the matter had previously occurred, and will never appreciate the fact unless some unusual situation brings its recall. It will be at once realized that the cases last mentioned are of the type familiar to psychoanalysts. In comparing them with the other more common types of experience it becomes clear that in psychoanalysis we are dealing with phenomena that are not sharply differentiated from matters of everyday occurrence.

The time that elapses before such sudden recall as we have considered varies very greatly, and at times is so short that we are inclined to assume that the clear consciousness was there all the time, even when it was not appreciated; and this assumption is strengthened by the fact that in many cases close attention to states of clear consciousness results in the appearance, within the very body of the state considered, of elements which did not at first seem to be there. This is what happens in all cases of analysis.

All this quite naturally leads to the hypothesis that there is at all times a large amount of mentality which does not, and some which cannot, come into clear consciousness—mentality which is subconscious, to use the current phrase; an hypothesis which is strengthened in the fact that it offers an explanation of those cases where a conclusion which would normally be reached by processes of reasoning, by steps within clear consciousness, is sometimes reached without any clear consciousness of these initial steps. Such cases in the last generation were described by the term "unconscious cerebration," and call for no illustration here. It is worth noting, however, that they are closely allied to experiences that are familiar to all of us. We go to bed worried because of the apparent impossibility of finding the solution of some problem. We awaken the next morning with the solution clearly in mind.

II.

The strongest corroboration of the hypothesis under consideration is found, however, if we consider the nature of the brain activities which correspond with consciousness. We have much evidence that special mental items that are in clear consciousness exist in correspondence with activities in what we call certain special brain parts. Now the brain is a highly complex system of minor systems of nerve ganglia. It is so thoroughly systematized that we may speak of it as always active *as a whole*, while life lasts. Thus what we call a special brain activity is really no other than an emphatic activity within a part of an all-active system.

Correspondingly introspective analysis shows us also that consciousness is a psychic system of minor systems of simplex psychic parts; and it would thus appear that what we call a mental item in clear consciousness, which corresponds with a neururgic emphasis, is no other than a psychic emphasis within the systemic whole of the mentality of the moment under consideration.

As we are able to note the special emphatic brain activity only as standing in contrast with the mass of unemphatic activities in the brain as a whole, so we may assume that we note in clear consciousness those psychic emphases, or mental items, only as standing in contrast with a mass of unemphatic psychic parts, some of which are always too unemphatic to appear in clear consciousness.

If we agree that the active brain is thus thoroughly systematized, it is apparent that we cannot look upon any minor system within it as a quite separate entity which only at times comes into action. The most we can say is that upon occasion its efficiency becomes prominent.

Correspondingly, if we think of consciousness as thoroughly systematized, we cannot look upon any minor psychic system within it as a quite separate entity which upon occasion becomes efficient. In other words, we cannot conceive of the mind as a bundle of separate "faculties," as was once the habit of thought. And this view is accepted by all modern psychologists who are very wary of anything that looks like a return to the discredited "faculty psychology."

The assumption of the existence of subconscious mentality is again corroborated in the fact that it enables us to gain a clear conception of what happens when we experience a change of "threshold," as it is called. If, as you read this paper, the door of your library were suddenly burst open and you found yourself confronted by an assassin, the brain which had been mildly active in certain parts would become violently active in other parts—so violently active that the activities of the parts that were previously emphatic in relation to the whole brain situation would no longer be thus relatively emphatic. Correspondingly, in consciousness, the elements of the argument I have been placing before you would in such a case at once disappear from clear consciousness, to be displaced by very different and very vivid mental items; the steps in the argument would become too unemphatic to appear as psychic emphases, while the mental items relating to anger, or fear, would become the emphatic elements in the newly aroused mental setting.

It is to be noted here that the more widely separated the two grades of nerve activity are, the more unlikely is the recall, in the newly appearing mental phase, of the mental items of the displaced mental phase. A gentle knock on my library door drives out of my mind, for the moment only, the points I am here trying to make, and I presently return to my writing without difficulty. If, however, I were disturbed by a cry of fire, and rushed to extinguish a conflagration, the thought of the present moment would be so utterly lost in the vivid experiences of the fire fighter that, when I returned to my desk, I should almost certainly have to start the train of thought all over again.

One other important point must be noted here, viz., that the brain activities which we speak of as special activities are what they are partly because the are under the control of the central brain system. And correspondingly the mental items that appear in clear consciousness are what they are partly because they are under control, because they are manipulated, so to speak, are ordered, are more or less logically constrained, by the self.

III

Turning now to consider the application of these facts to the explanation of the nature of dreams, it is to be noted in the first place that, if we are justified in the position taken in Part II above, then in accepting the existence of subconscious mental states we do so on grounds that compel us to maintain that we are never lacking in some mode of consciousness so long as the brain is alive. The most that we can hold is that in conditions of coma and of deep sleep the consciousness is usually of such a nature that it cannot be recalled in our normal waking life.

In the second place; inasmuch as the conditions of clear consciousness in waking life are always coupled with some measure of central control, we may assume that this central control has to do with the appearance of clear consciousness, and that where such clear consciousness is lacking, central control must be wanting.

In the third place; we may note that of all shifting of "thresholds," one of the most extreme is the change from deep sleep to the waking state. We should therefore expect to find that after awakening it will be difficult to recall mental items belonging to the sleeping state. But we should except that, where the shifting of "threshold" involved in awakening is relatively gradual, certain mental items of the sleep consciousness will be at times likely to attach themselves by association with certain mental items of the wide-awake consciousness, and in such cases we should expect, when we awake, to observe the recall, in more or less clear form, of some of the items of the sleep consciousness.

Such recalls are what we call our dreams.

The correctness of this view is corroborated in many ways. In the first place it is to be noted that, if the transition from very deep sleep to wide-awakeness is very sudden, recall of the deep sleep mental items will be unlikely to occur. This would mean that we will not be aware of having been dreaming when we awake fully and suddenly from sound sleep. And this implication of our view is certainly corroborated by experience.

Again, we should expect to note in our dreams a lack of that central control which is a characteristic of our wide-awake consciousness; and this expectation is met in experience; for our dreams are very noticeably characterized by disconnectedness and haphazardness, by a fortuitous development of lightly related mental items without the critical selection which is characteristic of our wide-awake rational life.

That this view is correct is again indicated by certain waking experiences accompanying lassitude, which is allied with the sleep state. Then we, more or less deliberately, relax the central control, "letting ourselves go" as we say. Then the imagination tends to run riot, and we experience mental streams so clearly allied with our dream streams that they are actually colloquially spoken of as "day dreams."

It thus appears that the nature of our dreams is clearly statable in terms of that part of consciousness of which we are aware. As Bergson well says, "The birth of a dream is then no mystery. It resembles the birth of all our perceptions. The mechanism of the dream is the same, in general, as that of normal perception." As in wide-awake life we build up in a flash the most complex of mental structures around some very simple percept, so we do in our dream life; this being describable, in the one case as in the other, as the sudden formation of a new mental pattern due to the emphasis of efficiencies already existing but unrecognized.

Some of our dreams are more or less coherent

and logical, others are not; and this is true also of the mental streams of waking life. In the main, however, our dreams are incoherent and non-logical, lacking the central control characteristic of our wide-awake life which we think of as the normal state of our consciousness.

That in dreams we often revive mental streams that have long since faded into the body of subawareness is merely proof of the fact that the readjustment of efficiencies that occurred in that dim past were permanent readjustments.

That the dream consciousness is closely related to the consciousness of insanity is natural in consideration of the fact that insanity is in the main evidenced by a lack of control by the ego system, which we have seen is also a characteristic of the dream consciousness.

IV

In closing I may perhaps be allowed to quote some sections of an article already published by me in England in *Mind* N. S. No. 98, indicating the relation of this view to that brought into prominence by Freud.

In his "The Interpretation of Dreams" (to which page numbers refer) he asks us to make a sharp distinction between consciousness, "foreconsciousness" and the unconscious. It will be apparent from what I have said above in relation to the "faculty psychology" that I see no ground for making this distinction.

Stripped of all illustrative material, Freud's theory may be stated as follows. His main interest is centered upon the thesis that every dream is the fulfillment of an unconscious wish. He conceives of this wish as an active entity which strives to rise into full consciousness and to effect its realization, this being thwarted by the action of another entity which he designates as the "censor." "The psychic activity in dream formation resolves itself into two functions—the provision of the dream thoughts" which are unconscious, "and the transformation of these into the dream content." This latter activity is "peculiar to dream life and characteristic of it, . . . something qualitatively altogether different from waking thought, and therefore not in any way comparable to it. It does not, in general, think, calculate, or judge at all, but limits itself to transforming. . . . This product, the dream, must at any cost be withdrawn from the censor" (p. 401 f.); this being accomplished by a variety of devices. The dream under his view would not occur unless it had a special function, which is thus described: "The dream has taken it upon itself to bring the liberated excitement of the unconscious back under the domination of the foreconscious; it thus affords relief for the excitement of the unconscious, and acts as a safety-valve for the latter" (p. 457 f.).

In all this Freud gives especial prominence to the conception of "the censor" which is described as a psychic system, or clever psychic entity, which resists the "penetration to consciousness of the dream thoughts" (p. 409), and which our author likens (p. 419) "to the Russian newspaper censor on the frontier, who allows to fall into the hands of his protected readers only those foreign journals that have passed under the black pencil." When the censor fears that the dream thought will escape his vigilance he resorts to all sorts of artifices to forestall its persistency. He changes the dream so that it becomes repugnant rather than attractive (p. 135). He molds the dream by distortion (p. 226); by displacement and condensation (p. 286 f.); by substitutions (p. 314); by the suppression and inversion of pleasure-pain and emotional reactions (p. 375); by making it appear foolish and disconnected (pp. 339 f., 419 f.); by forcing us to forget it upon awakening (p. 410 f.). Never, indeed, should we have a dream but for the fact that "the sleeping state makes dream formation possible by diminishing the endopsychic factor" (p. 416).

It seems clear that the psychologist must see in this theory the building of a huge structure upon a very slim and unstable foundation. It is to be agreed, of course, that the psychic system of which we are aware in waking life, molded as it has been, and is, by the social influences that surround us, prevents the fruition of desires, and frustrates the development of thought trains, which are inimical to our welfare as social beings. But this acknowledgment does not warrant us in holding that this wideawake consciousness is an entity so separate and diverse from the other psychic systems within us as our author would have us believe. All the evidence before us leads to the view that consciousness is fundamentally of the same nature through and through; that differences of systemic form occur within it; but that these are always in some measure correlated and are constantly more or less influential in determining the nature of that field of consciousness of which we are aware; this being quite compatible with the fact that, when we feel consciousness to be less than fully alert, prominence is gained by other psychic systems than that which is evidenced in moments of full alertness.

Passing over the final labored and obscure elaboration of this censorship (p. 426 ff.), which points to another censor governing "the transition from the foreconscious to the occupation of consciousness" (p. 490), we may turn to the main thesis, viz., that "the content of the dream is the fulfillment of a wish; its motive is a wish" (p. 100). Mr. Carr has called attention to a looseness of thought here. The most that Freud can claim is that we have in dreams what Mr. Carr calls the indulgence, rather than the fulfillment, of a wish.

The author's thesis in this particular is based upon his analysis of dream contents which, if allowed to develop, very frequently, if not usually, bring into prominence some wish which in the dream is felt to be realized. This fact none will deny, but question at once arises whether this is a special characteristic of dream consciousness. It surely is true that the development of the thoughts which arise in every-day wideawake life also constantly yields wishes that are immediately followed by pictures of the consequences of their imagined fulfillment. In this characteristic of dream life we therefore find no unique psychic functioning.

But in dream life, as in wideawake life, there are many cases where wishes are not observable. This fact, however, does not balk our theorist, who warns us that his "doctrine does not rest upon the acceptance of the manifest dream content, but has reference to the thought content which is found to lie behind the dream by the process of interpretation"

(p. 114). And here he displays extraordinary ingenuity in ferreting out dream wishes where none at first appears, by methods which, by the way, would yield very similar results if applied to normal waking consciousness. In his other writings our author has given evidence of a morbid tendency to overemphasize the potency of erotic influences in all of experience, and in the field here considered the results of this preconception are conspicuous, leading him to improbable and revolting explanations. It is true that these influences are very powerful in our adult lives; it may be true also that they have been powerful in infantile life, and that their early activity may have resultants which are felt as we come to maturity. It is to be noted, however, that the traces thus left are likely to appear, not only in dream life, but also in wideawake life when we allow our thoughts to flow without restriction. All this may be granted, however, without forcing us to follow our author in his insistence that practically all such dream wishes must have this erotic origin.

Finally, when we turn to our author's thesis that the dream has a special function, we find ourselves naturally led to assume a sceptical attitude by the fact that throughout the whole of his studies evidence constantly appears which leads us to note the closest of relations between our wideawake and our dream consciousness. This our author accepts or denies as occasion requires. He agrees "that all the material composing the content of the dream in some way originates in experience" (p. 7); that "the experiences of the previous day furnish the immediate material for its content" (p. 192); that the dream thoughts "are usually found to be a complex of thoughts and memories of the most intricate possible construction, and to possess all the properties of the thought processes which are known to us from waking life" (p. 289); and even goes so far as to say that Aristotle was correct in holding that "the dream is a continuation of thinking in sleep" (p. 436). Yet, as we have seen before, he bases his theory upon the assumption that there is an activity in the transformation of dream thoughts into dream content which is "something qualitatively altogether different from waking thought, and therefore not in any way comparable to it;" and he finally asks us to believe that "it is quite impossible to explain the dream as a psychic process" (p. 405).

A REPORT OF ONE THOUSAND HEART PATIENTS SUBJECTED TO A COMPLETE CARDIAC EXAMINATION WITH AN ACCOUNT OF THE THERAPEUTIC RESULTS.*

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THIS paper constitutes an attempt to formulate some points in the therapeutic instruction that the author has obtained from the study of the reaction of persons suffering from heart disease to such therapeutic procedures as were instituted while they were subjected to observations by modern cardiological methods. It has been found impracticable to classify them according to the standard of nomenclature adopted by hospitals. This is essentially founded upon pathological anatomy while all modern cardiological methods lay particular emphasis on function.

One of the most interesting points is connected with auricular heart conditions and centers around the use of digitalis. Auricular fibrillation occurred in 4.5 per cent. of the thousand and was usually treated with digitalis. In a large number of these hearts over a long period of time, it was observed that a very fair portion required much less digitalis as time went along and a few of them established a permanent partial heart block that made the use of the drug entirely unnecessary. This happened while the character of the disorder remained otherwise unchanged. Of course, in these conditions the continuous use of the drug has proved satisfactory when intelligently regulated, but there have also been other people who became unexpectedly well on the continuous use of the drug over periods covering years at a time. This has been true especially in older people who, before the use of digitalis was instituted, had been subject to frequent attacks of broken compensation, and yet when they took from a grain to a grain and a half of the powdered leaves every day have continued in remarkably good condition for a period of two or three years at a time and sometimes regained the normal cardiac rhythm. The conclusion is very definite that a senile heart reacts very well indeed to the continuous use of digitalis in small doses.

Two per cent. of the thousand cases examined showed by the electrocardiograph that they were suffering from bundle-branch lesions. Perhaps one-half of these were definitely benefited by the use of digitalis. Realizing the pathology of the disease as consisting of an interruption of the conductivity in one of the two branches of the auriculoventricular bundle, it might have been supposed that there was danger of producing complete block. This has not occurred in any instance and is to be explained by the fact that the trouble was founded upon structural change rather than chemical change. No doubt in a partial block due to toxic causes it would be very unwise to use digitalis because the muscle would probably be susceptible to this effect in a high degree from the drug. In the bundle-branch lesions founded on localized myocardial change it has not been found that the bundle was any more susceptible than in the normal heart.

Ventricular premature beats occurred in 4 per cent. of all these people and under so many different circumstances that it is difficult to form any classification. Certainly in the vast majority of instances they were not of serious clinical importance. They were found in people who are apparently perfectly well in every other respect and again in hearts far along the path of degeneration, and involved in conditions of fibrillation, tachycardia, and extremely weak heart muscle. No specific medication has been discovered for this condition, though in many persons it became

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less marked or disappeared when the general metabolism of the individual was duly controlled.

The systematic use of the orthodiagram in conjunction with the electrocardiograph has revealed an unexpected frequency of conditions which cannot be otherwise interpreted except as congenital defects. These hearts, which are best called "infantile" because they represent a failure to pass entirely from the infantile to the adult type, are characterized by a relative right-sided predominance, by a typical shape of the heart when seen by *x*-ray, by a persistence of sinus arrhythmis, which, of course, is characteristic of childhood, by a history showing inability to take part in active exercises since childhood and a marked tendency to attacks of palpitation, and the presence of murmurs in the pulmonary area. Since my attention has been called to this type of heart, I have been encountering it at various ages and it seems to account for the development of very high blood pressure in some people, both young and old, where it is otherwise unexplainable. I do not venture to explain the exact mechanism, but this seems to happen for compensatory reasons. These people reacted very well to general hygienic management and to the circumstances that their condition was thoroughly explained to them after it had been somewhat of a mystery to many observers who had seen them previously.

Without the help of the orthodiagram and the electrocardiogram it seems to me that it is often absolutely impossible to classify these infantile hearts. I have not had time to determine the exact percentage that occurred in the group under consideration, but they were at least as frequent as the bundle-branch lesions.

The value of considering the heart as a mechanism whose energy is obtained by the chemical processes involved in making use of food products has become more and more evident. The heart is an engine actuated by the explosion of food products just as the automobile is actuated by the explosion of gas in its cylinders. The fuel that burns up cleanest and leaves the least residue, giving the greatest amount of energy, is the best fuel for the heart and for the engine. This is true in a high degree of starches, sugars, and fats, while the nitrogenous foods produce little energy in proportion to their bulk and leave an abundant residue of nitrogenous waste that must be dealt with. Nitrogenous food is like the bricks that go to make the furnace; as many as can be used for repair, are useful; any more than that are only in the way. It has seemed to me that hearts have manifested much more strength on a lactovegetarian diet than on a diet which consisted principally of flesh food.

This, however, raises the great question of flatulence that is ever present as the tormentor of the heart specialist. Through some nervous mechanism a weak heart muscle reflexly causes a debility of the stomach and intestines that deprives them of their ability to deal with gas and even promotes its formation. The popular idea is that this gas is due to the chemical changes that take place in carbohydrates and an attempt is often made to correct it by substituting nitrogenous foods. However, this in turn leads to a weakness of the heart and in the long run only increases the difficulty. On the other hand, an abundance of carbohydrates with the exercise that is allowable when the heart is properly sustained will lead in the long run to more gastric comfort and a much nearer approach to a condition of health. I have found the fear of carbohydrates a very important element to be dealt with in many persons with weak hearts and weak stomachs. The precise knowledge obtained by a complete examination gives us the courage to be radical in this matter.

In this group of heart patients which represents almost entirely those who had been pronounced such very definitely by several physicians before they came for examination, it has been found that constipation is often habitual and the general condition did not justify serious attempts to treat this in a radical way. For that reason the policy has been adopted in many instances of recommending the use of a laxative pill regularly every night in such dosage as was found necessary. The abuse of salines is so definite a factor in many cardiovascular-renal sufferers that we have absolutely discontinued the use of them and this with much satisfaction. Castor oil, however, has been used freely, but always with the admonition of allowing the bowels 48 hours' rest after its use. Paraldehyde in teaspoonful doses in water or some flavored mixture has been found a most satisfactory hypnotic and one that has not lead to any habit.

Nitroglycerin has been used freely in doses of 1/225th of a grain which the person is instructed to carry and use symptomatically for any emergency that might arise.

Theobromine sodium salicylate has proved very useful in some instances of marked edema, but it had to be given in a sufficient dosage—20 grains on the tongue followed by half a glass of water every two hours.

In dealing with flatulence we have used very freely a tablet of the following formula:

Sodium bicarbonate, pancreatin pure, papain, combined with flavoring and effervescent salt.

A constant effort has been made to improve the morale of heart sufferers and to teach them that exercise up to the point where it did no harm, did good—that physical fatigue might prove to them a great blessing as bringing natural rest and refreshment. As a matter of policy it has been found best in the practice devoted exclusively to heart conditions to forego the function of prognosis, except insofar as it consisted of an expression of confidence in the outcome of treatment. The demand for fixing a definite period of duration of life for the friends of heart patients has often been hard to satisfy, but most of them have yielded to the statement that our duty ended when we had made a complete study of the condition and advised the best treatment in our power.

In addition to everything else the psychotherapy of heart disease is of vast importance, but that itself, of course, does not allow of a very definite description.

This study has emphasized once again—first, the extreme value of digitalis as a remedy in cardiac disease with the conclusion that there is no necessity for a particular attempt to go outside

of digitalis in the use of analogous drugs. If any man ever could consider his mastery of the use of digitalis complete, then it would be time enough to take up something else. The second conclusion is the vast superiority of hygienic treatment, including hydrotherapy, graduated exercises, and psychotherapy, over an attempt at specific medication. The third conclusion is that at the time when heart patients reach the heart specialist it is usually too late to expect any special result from the so-called removal of specific causes as of focal infections.

I hope the Society will pardon this rather sketchy paper. When I sent the title to the secretary I had every intention of sitting down with my thousand records and becoming very statistical—instead of that I am submitting to you a lot of these records for your inspection.

109 East Sixty-first Street.

ENDOCRINOLOGY AND THE HEART.*

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In the year 1893 I first made use of thyroid extract in the treatment of myxedema, achieving a result that seemed to me marvelously successful.[1] The cure was effected in 6 months. In 1896 I was equally forunate with it in a case of very pronounced Graves' disease.[2] The cure took about 2 years in this instance.

The adrenal gland I began using with success prior to 1905, as a heart stimulant, but did not, of course, find it so effective as digitalis. Under the name suprarenal extract I gave it three times a day, in doses of from 1 to 3 grains. I then used it alternately with some derivative of digitalis as a succedaneum. It may be remembered that Oliver and Schaefer[3], some years previously, found that the adrenal secretion stimulated the heart. Two years later, Abel[4] of Baltimore gave the name epinephrin to its potent principle, known now also as adrenalin, suprarenalin, adrenin, etc.

According to Sajous,[5] adrenalin activates the heart as follows: (1) By direct action of the glandular secretion on the muscular tissues of the cardiac cavities, and (2) by its stimulating power on the cerebrospinal nerves which govern the muscles of the heart.

Rhythmic contractions are thereby induced and maintained by the active principles. It is also indirectly activated by a certain proportion of the secretion when forced through the Thebesian channels into the walls of the heart, where it undergoes oxidation and conversion into material that eventually is controlled by the pituitary body.

There are three clinical manifestations of adrenal insufficiency, according to my personal classification: (1) the acute or temporary form, (2) the chronic or subacute, and (3) the recurring.

Among the prominent signs of adrenal insufficiency (hypoadrenia), are muscular asthenia, sensitiveness to cold, hypotension, weak cardiac action and pulse, subnormal temperature, loss of appetite, anemia, slow metabolism, indigestion, constipation, and psychoasthenia, perhaps Sergent's white line,

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a dry skin, and no capacity for sustained effort. Now the pituitary (posterior lobe), as a remedial agent, raises depressed arterial tension and tends to correct arrhythmia. On the other hand, it is held that an excessive secretion leads to giantism and acromegalia, while a continued under-secretion produces defective growth and infantilism. The action of the posterior lobe is very similar to that of the adrenals in that it increases blood pressure, oxidation, metabolism, and nutrition, but it is much more continued than that of the adrenal, helping also to prolong the former's action. It is also connected in function with both the thyroid and parathyroids and some other ductless glands.

My experience in these cases has been limited, but the clinical results have been remarkable. Thus far I may say I have had no cases that have failed to yield more or less to treatment, as illustrated by the following:[1]

Case I.—L., a young lady of 30, was seen by me in 1916. She was pale, frail, and suffering from general and nervous debility. Pulse weak, but rate normal. Maximal systolic pressure, 90; hemoglobin, 70; some menorrhagia, controlled by cotarnine hydrochloride in ¾-grain doses, three times a day. After digitalis, strophanthus, iron, quinine, and strychnine had been used unsuccessfully, I gave Armour's dried adrenal gland in 2-grain doses, three times a day. The pulse quickly responded, the systolic pressure rising to 115, but there was a disagreeable fullness of the head. Accordingly, the dose of adrenal gland was reduced to 1½ grains three times a day, and there was added Armour's dried pituitary gland (posterior lobe) grain 1/10 with grain ½ of the citrate of quinine and iron. This prescription promptly effected a cure, and during the three years and more that have now elapsed, there has been no return of the adrenal inadequacy, and the patient has led an active and rather strenuous life. This I would call an acute case.

Case II.—A young lady, just out of school, was referred to me by her Canadian physician, in 1917. She was well developed, had grown very rapidly, weighed 132 pounds, and had been athletically inclined. During the preceding two years she had led an unusually active life. During this period her pulse had fallen to 45 at one time, and it was arrhythmic, while the systolic pressure was only 115. The family were neuropaths. On examination I found the radial rate 76-89; there were no intermissions, but the impulses were of uneven strength. Pressure, maximal systolic, 85; diastolic, 55; range, 30; hemoglobin, 55-60; amenorrhea; spinal anemia. I prescribed Parke, Davis & Co.'s dried adrenal gland, grain ¾, also Parke, Davis & Co.'s posterior lobe of the pituitary, grain 1/20; iron citrate, grain ¼. The adrenal was to be gradually increased to 2 grains, the posterior lobe of pituitary to 1 grain, if necessary, then iron and strychnine, if desirable to replace the citrate of iron. I saw her only once, but from a report subsequently received from her attending physician the young lady followed the adrenal and pituitary treatment for several months, improving slowly but gradually. At the time of his writing me, she was taking long walks and attending usual social functions, while the heart circulation was normal. Apparently it was only necessary for her to regulate her diet closely and avoid too much exercise, to be practically well, without having recourse again to endocrines. This might be called a subacute case.

Case III.—A married woman, now 58 years of age, who had applied to me for an eczema of her hands 23 years ago, and had been in a hospital for acute rheumatism and mitral disease at the age of 21, came under my care a second time in 1906. In 1916, I was called to see her again, as a surgical operation was under consideration. Medical methods, however, prevailed. The case was one of colonic impaction. Two years later she applied to me with right exophthalmus, tremor, facial paresis, and mental depression. There was no goiter. She was given 2¼ grains of thyroid extract per day, increased within a month, to 10 grains. Un-

der this treatment she was so far relieved as to be put on iron and quinine; though for cardiac weakness she was given digitalin and strophanthin in doses of grain 1/100 three times a day; later, digalen, and later still digitoxin. The maximum pressure rose to 122, but the pulse rate fell to 44 under the digitoxin, though under the iron and arsenic the hemoglobin had risen from 65 to 90. Digitalis preparations were then abandoned. In March last, the maximal pressure had fallen to 88. Under the thyroid extract, the exophthalmus had disappeared. Accordingly, dried adrenal gland, 1½ grains, and the posterior lobe of the pituitary, grain 1/10, were now given her three times a day. Improvement was immediate and marked. There was no further indication of adrenal inadequacy until recently, when the same treatment was adopted for one week, with relief of the symptoms. As, however, there is some cardiac inefficency, the patient is now taking digitalis, iron, and quinine. Here we have an example of hyperthyroidism followed by hypothyroidism of a recurring character.

The following case is illustrative of hypothyroidism successfully treated in a patient with aortic disease and diabetes.

CASE IV.—A well-known physician and teacher of this city, aged 57, weight 183 lbs., but himself under my care in December of 1915. He had been suffering from palpitation, but was at the time free from it and from pain of any kind referable to the heart. Radials firm but not hard; rhythm normal but rate quite variable; no impulse; aortic regurgitation but no thrill; apex 1½ centimeter inside of nipple. Liver low and large. Spleen not palpable. Tenderness over the region of the pancreas. Old pleurisy over lower right lobe. Grayish sputum in the morning. Had suffered previously from pneumonia. Intestinal indigestion. Systolic blood pressure 120, diastolic 90; pulse 30. Anemia was said to exist. He was put on digitalis, strophanthus, and glonoin, and advised to take regular outdoor exercise daily, be sparing in his diet, omitting starches and sugars. He returned to see me recently, suffering from a moderate diabetes mellitus, but he was not physically incapacitated for professional work. Blood pressure, systolic 136; diastolic 106 (pulse 30). According to my tables the systolic pressure was now about normal for his age, though the diastolic was high, while the pulse pressure still was low; in fact, exactly the same as it was when first taken by me. He was again put on the former treatment but returning in a week, the following symptoms, positive and negative, established the fact that in addition to his aortic disease, hypotension, intestinal indigestion, and anemia, he now had a subnormal temperature (96°), a dry skin, with incapacity for sustained work, and headaches, without goiter or tremor. Superficial fat abundant. Pulse rate variable, about 68. These new symptoms were those of hypothyroidism. His digitalis, strophanthus, and glonoin were, however, continued as before, three times a day in 1/100 grain doses of each, but to each tablet was added adrenalin, 1½ grains, and pituitary (posterior lobe), 1/10 grain. Nine days later came news over the telephone that he felt like another man. This case was probably one of hypothyroidism with an acute exacerbation.

These instances not only illustrate the close relationship Graves' disease bears to adrenal insufficiency, but show that thyroid extract, the adrenal gland, and the pituitary bodies can be relied on in the control of diseases that were formerly uncontrollable.

Owing to the unfavorable results that have sometimes followed the use of epinephrin hypodermically, and its inertness by the mouth, I prefer both the desiccated thyroid, adrenal, and pituitary glands in my practice. For some years I have been in the habit of giving Armour's or Parke Davis & Co.'s dried suprarenal extract in 2½-grain capsules, each, three times a day, adding 1/10 grain of the posterior lobe of the pituitary to supplement the action of the former.

As the chief objects of this paper have been to emphasize the clinical aspects of ductless-gland diseases, I will venture the following statements as the results of my experience.

1. Endocrinological vagaries are mostly confined to the female sex or to males of a feminine type.

2. While we have effectual results from the larger doses of the glandular extracts, such as are permissible according to the statements of our pharmaceutical handbooks, we may get better results by smaller dosage. It is better to begin with moderate doses of the thyroid, suprarenal gland, or pituitary, rather than to give large doses and have to suspend them temporarily or altogether, as has been done sometimes in the past.

3. The endocrines are more effective when given in combination with one another. The pituitary usually sets the others going.

4. In many cases, especially when anemia is marked, they may advantageously be combined with either iron, quinine, or strychnine.

5. The thyroid now in use in this country is mostly obtained from swine whose glands have been found to contain more free iodine than the sheep; the contents are more stable also; besides the thyroids of sheep are more apt to be diseased.

6. Thyroids are supposed to retain their active qualities, after desiccation, for 4 or 5 years, if properly preserved.

7. In desiccated suprarenals and pituitary bodies the active principles are less stable than in the thyroids. Whether the dry extracts preserve their therapeutic values for more than 18 months is not certain.

8. To ensure that all these glandular extracts are potent, as far as possible they should be obtained from reliable sources only. Otherwise they may be either harmful or inert. In my personal experience, however, I have invariably been furnished with satisfactory extracts by the great pharmaceutical houses.

Endocrinology is offering a promising field for investigation, and I feel confident that in the near future it will yield us additional facts of great practical importance. At the same time we should realize that notwithstanding it has already won for itself a positive position, it presents many unsolved problems. Under these circumstances it may easily be discredited by either ignorance of its present limitations or the too ardent claims of propagandists.

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7 EAST EIGHTIETH STREET.

The Medical School at Porto Alegre, Brazil.—This institution was nominally founded in 1898, but apparently the formal opening has only recently taken place. This has been commemorated by the founding of a periodical, the *Archivos Rio-Grandensis de Medicina*. There is a numerous faculty of nearly fifty members, professors, clinical professors, and alternates. The college has just graduated a class of twenty students. The Medical Society of Porto Alegre was founded in 1908 and the *Archivos* is the official organ.

THE TREATMENT OF CARDIAC ARRHYTHMIA.*

By JAMES M. ANDERS, M.D., LL.D.

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IN order to understand the various forms of abnormal heart mechanism, it is necessary to possess a knowledge of the normal mechanism. The heart beat is known to arise in the sinoauricular node, lying near to the mouth of the superior vena cava, the stimulus passing through the auriculo-ventricular conducting system, which has its origin in the septum of the auricle and carries the impulses from auricle to ventricle. Now, it is important to recollect that when lesions of the sino-auricular node exist and disturb the normal rhythmic heart beat, other centers lying in the junctional tissues between auricle and ventricle elaborate and send rhythmic impulses to the ventricle.

By means of electrocardiography we are able to determine definitely the direction of contraction of each subdivision of the heart, both in normal and abnormal cycles, and to record the same in curves. Our knowledge of the arrhythmias has been greatly advanced by the studies of Wenkelbach, Thomas Lewis, J. Mackenzie, Walter B. James, Lewellys F. Barker, Ross V. Patterson, Louis F. Bishop, James E. Talley, and others, as the result of observations with the electrocardiograph.

The treatment of the succeeding types of arrhythmia will be here discussed: (1) Sinus arrhythmia. (2) Extrasystole (premature contractions). (3) Auricular fibrillation. (4) Auricular flutter. (5) Heart-block. (6) Simple paroxysmal tachycardia. (7) Pulsus alternans.

1. *Sinus Arrhythmia.*—There are three recognized types: (*a*) Respiratory irregularity (for which there is no special treatment).

(*b*) Irregularity independent of respiration. This type is sometimes observed in healthy young subjects, and in connection with the slow pulse met with during convalescence from the acute affections, as well as after exercise. The indications are for rest and the use of a mild cardiac stimulant such as aromatic spirit of ammonia or strychnine, but not digitalis, which aggravates the condition.

(*c*) Cessation of the heart action. In this variety the standstill of the heart is accompanied by syncopal attacks. While the nature of the exciting cause is difficult to determine in special cases, in all it is the result of vagal discharges due to the action of some pathologic excitant, as pressure from an aneurysm (*e.g.* Neuberger and Edinger's case). These syncopal attacks should receive prompt attention when they occur. The patient should quickly assume the recumbent posture and diffusible stimulants should be administered. Causative treatment when practicable should be carried out.

2. *Extrasystole (Premature Contractions).*—The premature beat is associated with a great variety of conditions which cannot, owing to the exigencies of time and space, be considered, but it is to be recollected that it often accompanies grave diseases of the heart. For practical purposes the cases as a whole are divisible into two groups:

(*a*) Those associated with gross organic affections involving the valves and myocardium, and (*b*) those occurring in hearts which present no other symptoms, or the functional group. It has been well said, however, by Lewis that "The presence of premature contractions is an indication of disturbance of cardiac nutrition, whether temporary or permanent, but it is an aspect that should not be allowed undue prominence."[1]

(*a*) The intermissions that are met with in connection with grave affections of the heart are more commonly unperceived by the patient than those associated with functional disturbances of this organ.

Among etiologic factors are: fatigue in those predisposed; toxic agents such as tea, coffee, alcohol, and tobacco; certain drugs, *e.g.* digitalis, aconite, and reflex influences, which produce cardiac arrhythmia in affections of the liver, lungs, and kidneys. In the management of any given case, associated with valve lesions or other morbid states, it is important to search for the presence of one or more of the causative agencies mentioned above and, if found, to make a bold attempt to remove them. In a case of mitral incompetency with frequent extrasystole of ventricular origin as shown by the long pause, which I saw recently, the discontinuance of the immoderate use of coffee and tea as beverages was followed by decided improvement as to both frequency and severity of the premature contractions. Fatigue in sufferers from premature contractions belong to class (*a*) or those presenting organic lesions, tends to aggravate this symptom and should be guarded against by timely medical advice. It is also necessary to insist upon an added amount of physical and mental rest in such cases, since the labor of the organ has been increased by the increased frequency of the extrasystoles.

It is currently and correctly stated that digitalis is contraindicated as a rule in premature contraction, although cases that are encountered in the stage of decompensation of chronic valvulitis may be, as I have repeatedly observed, distinctly benefited by the drug. In such instances it should be combined with small doses of nitroglycerin—a remedy that also has a favorable effect in other forms of cardiac arrhythmia. The beneficial influence of digitalis in these cases is most probably due to an improved cardiac nutrition, which it brings about by improving the circulation in the heart muscle. The fact remains, however, that drugs, digitalis in particular, usually exert harmful effects in cases of extrasystole. In this type of the condition the bromides, which are often advised, should be omitted.

(*b*) Functional extrasystole or that of reflex origin: In these cases one may find a predominating neurotic element which must be combated. Again, there is often a history of the abuse of tea, coffee, alcohol, or tobacco, as before stated, all of which should be promptly discontinued. In the direction of causal treatment lies our principal hope of relieving the functional type of the condition. It has been more especially in cases of premature contractions occurring in hearts presenting no other signs, that were caused by excessive smoking, in which the writer has seen satisfactory results from a removal of the exciting cause.

*Read at the annual meeting of the American Therapeutic Association, Philadelphia, May 7 and 8, 1920.

A correction of the dietary in cases of reflex origin, *e.g.* those due to indigestible and coarse foodstuffs, sometimes proves effective. The condiiton is usually most troublesome after lying down at night, hence the evening meal should be quite light, dinner being taken at mid-day. The regulation of the habits and mode of life is important for all subjects of extrasystole. Remedies which aid digestion and general tonics when indicated should be employed. In examples of the functional type of extrasystole, methodic physical training, to strengthen the heart muscle and favor systemic development, is indicated.

3. *Auricular Fibrillation.*—In no other type of arrhythmia can the same degree of success be achieved as in auricular fibrillation. In this condition members of the digitalis group are clearly indicated, and the guide to the physician as regards sufficiency of dosage is the rate of heart beat. The immense majority of the cases in young subjects is caused by rheumatism or chorea, and here digitalis or one of its derivatives easily controls the rate by inducing a partial degree of "heart block," and thus preventing the impulses originating in the auricle from reaching the ventricle. Absolute rest in bed should also be insisted upon until the heart rate falls below 90 per minute. Indeed, in cases in which a favorable reaction to digitalis occurs, it is well to keep the patient at rest until the rate is nearly or quite normal. The drug should be continued after he rises from bed, the dose not to exceed that necessary to maintain the retardation.

In older subjects and in the non-rheumatic cases, digitalis sometimes fails to affect the heart rate owing to advanced myocardial degeneration as a rule, and rarely it causes nausea and other distressing gastric symptoms. In these recourse may be had to other remedies, *e.g.* strophanthus. Lewis, Bohan, and others laud in these circumstances tincture of strophanthus or tincture of squills in doses of 10 minims to be pushed in the same manner as digitalis. Universal experience, however, has shown them to be far less reliable than digitalis, hence they are to be given preference only in cases in which the latter has failed for the reasons above advanced. The use of strophanthinin intravenously has also been advocated in selected cases; the dose should not exceed gr. 1/100 at four to seven-day intervals.

The hygienic details, including the diet which should consist of nutritious, easily degestible solids, are matters of great importance. It is customary to find auricular fibrillation associated with marked cardiac dilatation, so that after the patient leaves his bed he should be warned of the unfavorable effect of fatigue, heavy manual labor, strenuous sports, and the like.

4. *Auricular Flutter.*—This condition, which is almost always associated with heart-block, may be paroxysmal in character. Its intimate association with heart-block is shown by the fact that the ventricular rate is either one-half or one-fourth that of the auricle. While many writers regard auricular flutter as a resultant of auricular fibrillation, they contend that it differs from the latter in three particulars: (*a*) the auricle contracts as a whole; (*b*) the regular stimulus originates in the usual area, while in fibrillation abnormal impulses arise in many areas; and (*c*) the extreme rate of the new auricular rhythm (200-350).

The treatment of this condition is similar to that of auricular fibrillation, namely by digitalis medication and absolute rest. It is to be recollected that if allowed to go untreated the condition tends to merge into auricular fibrillation.

5. *Heart-Block.*—The recognition of the grade of heart-block is necessary to successful management, and this is possible only by the use of the graphic methods furnished by the polygraph and galvanometer, which supply definite records of the systoles of the auricles and ventricles. The fact is now recognized that heart-block and the Adams-Stokes syndrome are not synonymous terms, but minor grades of the former exist without convulsions. The signs of myocardial and valvular lesions are also to be noted if present, before adopting any measure of treatment. The presence, when the block develops, of an acute infectious process or an actively progressive lesion, calls for rest in bed and appropriate treatment for the underlying causative conditions.

The more chronic forms associated with more or less dilatation and often dropsy, should receive cardiac stimulants, including digitalis. Despite the fact that digitalis increases the degree of the block, the drug is useful in these cases, even in those manifesting arterioscelerotic changes. Digitalis, as pointed out by Eggleston and others, is no longer regarded as a vasoconstrictor; neither does it raise the peripheral blood-pressure, as was formerly supposed, unless it be abnormally low. Salvarsan or neosalvarsan is used in cases of luetic origin when the myocardium is not too seriously damaged. Mercury is given during the intervals and the Wassermann test of the blood is to be carried out in the usual manner. The iodides have been exhibited in massive doses with good effect; they are used with advantage when salvarsan is contraindicated. For the fits when they occur little can be done, although numerous remedies have been counselled in the past, including adrenalin.

In the so-called functional form in which the heart muscle and valves are functionally efficient, atropine is employed; it often changes the ratio between the auricular and ventricular beat, so as to cause the block to disappear. The use of digitalis has been condemned in cases of partial block which it is apt to convert into a complete form, but as already intimated it may be given without restraint in such cases, if demanded by the presence of cardiac dilatation. Instances of incomplete heart-block, which are not uncommon, however, demand no special treatment *per se*, as a rule, As pointed out by Patterson,[3] in complete block, no hesitation in digitalis medication whatever need occur, "since the bundle function is already in complete abeyance."

In concluding, the management of individual cases of heart-block resolves itself into measures calculated to conserve the heart strength, but due consideration must also be given to the patient's general health and associated conditions.

6. *Simple Paroxysmal Tachycardia.*—In this type of disturbance of the normal mechanism a new center of pathologic impulse formation develops in some portion of the heart wall other than the pace-

maker, and dominates the movements of the whole heart, the rate varying from 100 to 200. The principal associated lesions are chronic valvulitis (mitral stenosis in particular) and myocardial degeneration. In about one-third of the cases no other signs of cardiac, arterial, or renal disease exist.

During the attacks, both local and general agencies are employed. It may be reasonably doubted whether we are aware of any remedy that will cut short a paroxysm of tachycardia. Given cases, more especially those in which more or less dilatation is associated, yield to digitalis in rapidly ascending dosage until nausea, diarrhea, or headache supervenes. After the toxc effects have subsided, following the method proposed by Lewis,[3] the maximum dose tolerated without discomfort may be exhibited for several weeks. Later on the prescribed amount may be reduced to about 5 drops thrice daily. Should the heart rate begin to rise, however, the dose is to be increased. Patterson[4] has well said that most sufferers from simple paroxysmal tachycardia will need digitalis continuously or intermittently for the rest of their lives in variable amounts. The claim has been made that the paroxysm has ceased shortly after the intravenous injection of digitalin (gr. 1/100) or strophanthin (gr. 1/250). It is well to recollect that digitalis acts by inducing a partial heart-block.

In all cases, other measures when the patient is first seen, such as rest in bed and those called for by special symptoms, must be instituted. In an example of tachycardia which fell under personal observation, a brisk purge with relief of marked flatulence, abolished the paroxysm.

In a small percentage of instances the assumption of a given posture proves effective, although it has not been my good fortune to witness a case thus apparently aborted. Firm pressure upon the right vagus nerve as it lies in the carotid sheath until the carotid pulse wave is obliterated, is worthy of a trial. I have observed excellent results from the application of an ice bag over the precordium in a few instances, and feel that this measure should never be omitted from consideration, at least. A mustard plaster may exert a beneficial effect, if precordial pains be complained of by the patient. The fact that spontaneous relief occurs abruptly in this condition makes our estimate of the value of the different agents advised, more or less conjectural.

7. *Pulsus Alternans.*—Alternation of the heart is of unknown origin, although it may be looked upon from the standpoint of treatment as a form of exhaustion from overtaxation—mental or physical, or both. Individual cases must therefore be subjected to a critical review with the object of ascertaining the causative factors. If found to be chiefly physical overwork, then an increased amount of bodily rest is demanded together with a curtailment of muscular exertion. On the other hand, cases due principally to mental overtaxation call for a lessening of the stress of mind, and a lengthening of the period of daily rest. Such patients often present associated morbid conditions, *e.g.* high blood pressure, renal disease, angina and Cheyne-Stokes breathing, and these are to be met on accepted therapeutic principles.

There is a class of cases of alternation of the heart in which the rate is accelerated; it may be associated with simple paroxysmal tachycardia. When it is an accompaniment of the latter disorder, the cautious use of digitalis is sometimes serviceable. In the more serious form seen in elderly subjects with a heart rate not above the normal limits, this drug is not to be advised. Here safety demands reliance upon rest, the while the heart's burden is lessened to the greatest possible extent.

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THE PROBLEM OF THE AILING MEDICAL PROFESSION AND ITS SOLUTION.

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WITHIN the past decade the author has frequently commented in public and private, on the unfriendly attitude of the laity in general to the medical profession. This attitude in recent years has constantly grown more and more hostile so that at the present time the younger members of the profession are almost ashamed to declare in a mixed gathering that they are regular practitioners of medicine lest by doing so they may offend the delicate sensibilities of some "healer" practising in the name of one or other of the various "scientific systems" of therapy now in vogue. But bad as it is this is not the worst feature of the situation. The younger men fired with the spirit of scientific achievement might afford to overlook the affected scorn of their rivals and of the uninformed public were it not for the deplorable fact that after long years of preparation they enter upon the practice of medicine only to find that what they had been taught in the medical school and the hospital is often more of a hindrance than a help to them in their struggle against competitors whose "system of practice" relieves them of the necessity of diagnosing disease and whose only concern is the routine employment of some form or other of remedy usually of a mechanical nature. A former student of mine who is about to open an office consulted me recently as to the selection of a location. He had gone through the regular curriculum of preliminary, premedical medical, and hospital years of training after which he took a position with a steamship company at a small salary so as to lay by a moderate reserve to tide him over the lean years of early practice. The young man was naturally worried about his prospects and felt inclined to regret that he had undertaken the study of medicine.

Knowing him to be a reliable and fairly successful student I was at a loss to account for his attitude until he informed me that an acquaintance of his who had little or no advantage in the way of preliminary education and who had been employed at ordinary manual labor until about one year ago when, after a few months' course, he began prac-

tising as a chiropractor. To-day this man's income averages over $650 a month and our young representative of modern medicine feels keenly that there is "Something rotten in the state of Denmark," though where the rottenness begins is a question too deep for his page-crammed and otherwise preoccupied mind. By a strange coincidence on the very same day that this young man consulted me a young society matron informed me of an accident that had happened to one of her summer home neighbors. It appeared that my patient's friend had sustained severe injuries as the result of a fall from a horse and had been unconscious, so the story goes, for some hours. After the accident some one suggested calling in a regular practitioner but friends intervened saying, "A regular doctor will do nothing for her but ask questions and say when to expect him back. Get an osteopath."

Such is the condition of affairs that confronts the young medical man of to-day starting out to practice according to the traditions of the regular profession; and it is quite pertinent for him to ask us his seniors in the profession, and more especially his teachers in the medical schools and hospitals, what steps, if any, we have taken, or have under consideration, to protect the young practitioner or at least to equip him so that the struggle of his earlier years in the practice of scientific medicine may not be a painful and ignominious one against hopeless odds. The answer, if one has to be given to such a question here, is that no steps have been taken and none is under consideration which can materially aid our younger colleagues whom we yearly or quarterly toss into the maelstrom of competition with scientifically unencumbered rivals and then, with callous disregard, abandon to their fate. Not the least important result of such abandonment by their elders in the profession has been a tendency among the younger practitioners to commercialize their calling at the expense of the time-honored ethical traditions. This statement may painfully surprise many among the laity who, deep in their hearts, still admire the regular profession but perhaps it is just as well to remind these favorably disposed individuals that admiration alone will not sustain a profession whose lofty altruistic ideals are heavily counterbalanced with numerous earthly needs.

To appreciate its full significance the problem of medical practice must be squarely investigated from the standpoint of the laity as well as of the professional man thoroughly conversant with the technical aspect of the question. On the part of the laity it is often asserted that patients seek outside aid only after they have found that the physician practising in the regular way "did them no good." Many of these individuals insist that all the regular doctor ever does for them is take their name and address, ask a few questions about the family and personal history, and then "prescribe pills" after which he politely shows them the door telling them to report on a certain date. Others complain that the doctor never tells the patient anything about himself; that when he comes to the doctor's office with what seems to him to be merely a slight trouble of no significance, the man of science, grave in manner and tone, gives him to understand that his condition may be serious but professes to be powerless to diagnose the case until he has had an *x*-ray and half a dozen other laboratory reports. In the meantime agonies untold must be endured as a result of the suspense created by the doctor's all too conscientious attitude toward the patient and his illness. Is it any wonder that these patients who, for the most part belong to the class suffering from functional as opposed to organic disorders, rush for solace from their fears of what may be the matter with them to the "practitioner" of whatever system who with a standardized pigeon-hole diagnosis gives them immediate and positive assurance that he can cure them? These patients are very human. What they need at the moment is a little human help in the way of sympathetic understanding and assurance and these they get cheerfully and without delay, from almost any kind of a quack but not from your modern up-to-date physician who for the most part is too wrapt in the distant prospect of laboratory findings to sense the needs of the agonized human being sitting at his elbow. In the light of these facts, for facts of not infrequent occurrence they unfortunately are, the attitude of the individual of average enlightenment towards the medical profession is likely to be one prompted by the dictates of self interest rather than by those of reason and far-seeing justice. The patient who has obtained relief from his sufferings after treatment by an outside healer naturally feels grateful beyond bounds towards one whom he regards as his benefactor and savior. The average individual in this state of mind is beyond argument and reason. His side of the question, which to him seems to be the only side, he states clearly and with all the outward appearance of conviction and finality, as follows: "Well, he helped *me* and it makes little difference to me and my family under what system he practises. The proof the pudding is in the eating, and there you are."

This kind of argument is heard so frequently of late that it will repay the reader if we examine it at some length. In the first place, assuming that the outside healer actually did help the patient, it might be asked: By virtue of what kind of ministration did he help the patient? Was the patient benefited because of the peculiar system under which the healer practised, or was it because of something altogether extraneous to the system? The patient may insist that the point here raised does not concern him. But is this true? If it can be shown that similar results in similar cases can be and are obtained by different forms of treatment given by healers practising under widely different systems some of which sanction physical means whilst others sanction purely mental means (suggestion), what becomes of the claims of certain classes of healers to legal recognition on the strength of practising a "scientific system of therapy" which on the most superficial investigation discloses itself to be not only unscientific as dispensing actually, if not nominally, with the necessity of diagnosis but wholly unnecessary and superfluous since the results obtained by its practitioners bear no essential relation to the system of practice and can be obtained in many other ways independently of the system? If these things be so, and they have all the outward and inward signs of truth, how are we to fix the *moral status* of the

healer who, for instance, makes a snap diagnosis of "gall-bladder trouble" in a woman suffering from a manually palpable sarcoma of the kidney and proceeds to treat her by massage which tends to disseminate the disease throughout the body and hasten death? or of the "practitioner" who, after a ready made diagnosis of "trouble resulting from a dislocated cervical vertebra" proceeded to reduce a dislocation which had no existence in fact in a patient who all this time was suffering from epidemic encephalitis and who later on died in the hospital from this disease? If argument along these lines does not appeal to the individual sufferer who seeks relief at any cost it may be pertinent to ask that better informed portion of the community consisting of persons of culture who feel themselves constrained to advise supposedly less well informed sufferers to take treatment from some special exponent of this or that particular system, how they manage to evade the *moral issue* involved in recommending charlatans inside or outside the profession, who either lie directly and wilfully, *e.g.* in the matter of diagnosis, or manifest such a reckless disregard for truth that constructive intent to deceive becomes an inevitable implication. A further question that might be put to these cultured guides of suffering humanity is: Do you mean by your patronage of unscientific systems of therapy to disavow all attempts at healing based on scientific principles, and, if not, where are you, and the public at large, going to find a supply of scientifically trained medical men to care for you to-morrow when you wake up to the reality of your present folly? The fallacy under which the laity labors and especially all those who believe they have been benefited by various kinds of "practitioners" closely resembles the well known fallacy of *inference by added determinants* which is fairly exemplified in the two following examples: (1) A cottage is a house; therefore a *large cottage* is a *large house.* (2) A dwarf is a man; therefore a *large dwarf* is a *large man.* The fact that Silas Brown, having found a tender area on the spine of a neurotic patient, even as did Hippocrates two thousand years ago, lied to the patient in saying that a "dislocated vertebra" or a "maladjusted spine" was the cause of the tenderness and of the rest of the patient's ailments; and having so lied, proceeded to remove this fictitious cause of the patient's troubles by a pretended reduction of the supposedly dislocated vertebra or maladjusted spine, does not prove, even in the event that the patient felt benefited after the treatment, that the *system* under which Silas Brown "trained" and "practised" was a scientific system of therapy any more than it proves that such a system is universally applicable without regard to the nature of the ailment or possible damage to the patient. In fact it proves nothing at all as regards the scientific merits or shortcomings of the system. All it proves strictly is that somehow or other the patient was benefited *after* though not necessarily *because of* the particular form of treatment avowedly administered by Silas Brown just as many neurotics in similar circumstances are benefited by the fantastic philtrums and potions prescribed or dispensed by fortune tellers and others. To the wary and open-eyed it proves that treatment not based on scientific diagnosis may, by some happy chance, be actually followed by improvement instead of disaster. The writer wonders if the cultured few, who seem to have hitherto overlooked the moral untenability of their position, having read what is here written, will open their eyes and adjust their conduct in accordance with truth and reason; or put down their heads and plunge forward in response to their baser, instinctive urges of self-interest or wounded pride.

Looking at the problem from the standpoint of one who not only has an abiding faith in scientific medicine and in its mission, but who from years of experience both as teacher and pracititioner, has had abundant opportunity to study the question from the *inside,* it would seem to be nothing short of foolish to attempt to deny that in one broad section of the field of therapy the profession has utterly failed to give adequate service to the ailing public. In the old days, before the impersonal laboratory machine had completely superseded the humane factor in practice, the needs of the multitude suffering from minor mental and nervous disorders were in great measure met by the sympathetic ministrations of the kindly family doctor to whom these sufferers, overflowing with faith and expectancy, came as to their friend and deliverer. But all that has been changed since the advent of routine laboratory diagnosis; and now, what with fear of the cost of laboratory reports and of drugs, etc., not to mention the oftentimes insignificant therapeutic results, the average person prefers to take his chances with any kind of irregular healer sooner than risk a visit to the representative of modern impersonal therapy. This failure of the profession to minister to the wants of those suffering from nervous and mental disorders is nothing new. Witness the scene between Macbeth and his physician (Act V sc. iii):

Macbeth. Canst thou not minister to a mind diseas'd,
Pluck from the memory a rooted sorrow,
Raze out the written troubles of the brain,
And with some sweet oblivious antidote
Cleanse the stuff'd bosom of that perilous stuff,
Which weighs upon the heart?
Doctor. Therein the patient must minister unto himself.
Macbeth. Throw physic to the dogs; I'll none of it.

This colloquy pithily states the problem as it presented itself to both physician and layman in Shakespeare's time; and Macbeth's reply to the confessed helplessness of the physician represents fairly the position the profession of medicine, wherever it proves inadequate, holds to-day in the public esteem. It will be urged, and with justice, that scientific medicine has made great progress in recent years, that in fact matters have changed considerably since Shakespeare's day; but from the standpoint of the laity the change seems to have been in many directions for the worse. This is the only hypothesis in view to account for legislation, already enacted in several States, and all but enacted in many other States, placing healers, who practise in the name of so-called scientific systems, and whose preparatory training is a joke from the scientific point of view, upon practically an equal

footing with the regular practitioner of medicine who has spent from ten to fifteen years of arduous preparation before being admitted to practice. Judging by the popularity into which these outside healers have come in recent years it would seem that the contempt of the laity for the regular profession has become, if anything, more acute and more generalized than it was in Shakespeare's time. And the reason for this, for it has a reason and a sufficient one, rests on the actual inadequacy of the profession to meet the needs of the ailing public. This last statement is a bitter pill for those of us who believe in scientific medicine, but making faces will not help us any more than making trips to Albany to secure the Governor's veto of bills that have already passed both houses of the legislature. It would be more to the point if we stopped for a moment linking ourselves optimistically with the achievements of modern science—realities though these be, yet realities it must be confessed that as yet have not found general application for the relief of the suffering masses—and tried to study the situation from the point of view of the neglected public. As men imbued with the spirit of truth let us face the situation, intolerably disagreeable as it is, and applying the methods of that science in whose name we practise let us proceed to an investigation of the low estate into which our honorable profession has fallen, in one direction at least, in the eyes of the laity.

Causes of the Profession's Failure.—We have already stated that with the advent of laboratory diagnosis the human factor in practice waned. The newer methods of examination had a tendency to focus the practitioner's attention upon this or that particular organ, that might happen to be diseased or suspected, leaving out of consideration or at all events very much in the background, the general effects which the illness might register as a whole in the patient's personality. It is here precisely that the modern practitioner has ignominiously failed where his otherwise incompetent rival has met with a considerable degree of success. It seems incredible, in the light of the great advances that have been made in the elucidation of the mechanisms involved in both mental and physical disorders, as well as in physical and mental therapy, that the regularly trained physician after his years of study and experience in the medical school and hospital should have any serious rival in the esteem of the public. This anomalous situation is to be explained only by the fact that our teachers, and more particularly those responsible for the teaching curricula in our medical schools and hospitals, seem to have overlooked one of the main objects of medicine which is the *relief of human suffering*. The fact that up to quite recently neurology was rated as a *secondary subject* in our medical schools shows clearly in what esteem those responsible for our teaching curricula held neurology, and perhaps even now reflects the lethargic attitude of the bodies governing medical education, and of the profession in general, towards a problem, neglect of which has already undermined the foundations of our higher standards of medical education to such an extent that the very existence of the scientific medicine of our fathers is threatened. The failure of the profession is the immediate consequence of our failure to give the students in our medical schools and hospitals proper practical instruction in neurology and the allied subjects, psychiatry and psychotherapy. Without adequate instruction in these subjects the young practitioner is not only not able to diagnose or treat properly the ninety per cent. or more of all his cases that seek relief from ailments the genesis of which lies ninety per cent. or over within the psychic domain; but he is blissfully unaware of what scientific therapy has to offer for the relief of such cases and he continues to mistreat them until the unfortunate sufferers are driven in desperation to seek help elsewhere outside the ranks of the regular profession. The profession has as yet never been in a position to offer the public in an organized, systematic manner such service as science has long ago placed at its disposal for the benefit of those afflicted with mild nervous and mental disorders because such organized service can never be realized until a much closer affiliation than as yet exists, has been effected between the medical school and the hospital and between the hospital and the general practitioner on the firing line.

But a cause deeper lying than any yet mentioned stands behind the failure of the profession and that is the materialistic conception of life with which medical men have, more or less unconsciously, become imbued, to the detriment of their own efficiency as practitioners, from contact with those who regard the laboratory and the method of the laboratory as the sum and measure of all truth. Within its proper sphere of application, *i.e.* in the *natural sciences*, the laboratory method or the method of induction is perhaps indispensable; but this method can by no means replace either the deductive method which is the method of mathematics or the introspective method which is the method used in all psychological investigations properly so called. The mechanistic hypothesis in which all vital manifestations are regarded as the outcome of the physicochemical properties of matter has long ago been discarded as inadequate even by those supposedly representing the advance guard of modern European thought. Only laboratory scientists, with some notable exceptions such as Haldane the Oxford physiologist and a few others, have clung to this fetich of an outworn fallacy; but the unfortunate part of it is that the teachers of our medical students have blindly accepted the misapplied, erroneously extended method of the laboratory and continue to exploit the materialistic conception of man's nature and of his ailments to the infinite detriment of the profession and of the ailing public. With a rigid insistence on the part of their teachers upon the materialistic conception of disease it is no wonder that the regular practitioners of medicine turned out yearly by our medical schools practically confine their efforts to physical methods of therapy to the exclusion of psychic methods. This is one of the first fruits of the blind acceptance by the teachers of medicine of the mechanistic philosophy of laboratory scientists, viz., the restriction of the regular practitioner of medicine to the employment of but *one arm*—the physical one—of the therapeutic service to the exclusion of the psychic arm, although this latter, because of its wider sphere of application, if for no other reason, is, in the majority of

ordinary ailments, perhaps the more important of the two. In the practice of to-day each of these arms is entitled to its place and in any given case of illness each has its indications and cannot be supplanted by the other. All illness has its mental as well as its physical aspect and the properly trained physician should be ready to avail himself of every legitimate means to help his patient. As the aim of scientific medicine is not confined to the prevention and cure of disease but extends also to the relief of human suffering, so the ministrations of the practitioner are not necessarily at an end when physical remedies fail. There still remains the psychic arm with the ever present possibility of human fallibility. The most pathetic not to say tragic figure imaginable is that of the physician who with the best of intentions has given up a case as incurable which through ignorance or oversight he has incorrectly diagnosed. Patients rashly and prematurely condemned in this manner to death or hopeless torture are not likely to think kindly of the doctor or of his profession; nor are they likely to prove amiable in argument. If we regular practitioners of medicine could but see ourselves as others see us trying with the aid of our laboratory reports and pill boxes and even our scalpels, with none of which is there ground for complaint when used in their proper places, trying to

"Pluck from the memory a rooted sorrow,"
or to
"Raze out the written troubles of the brain,"

we would begin to understand why it is that the public who have in vain long and anxiously knocked at our doors, have turned from us and have wandered into the wilderness where, under the ægis of legislative sanction they burn incense at the altars of strange divinities.

Solution of the Problem.—Is there a remedy for the situation? There is, but it does not consist in legislation prohibiting our rivals for popular favor from practising. Nor does it consist in legislation prescribing courses of study in our medical schools and the infliction of penalties upon schools that for the moment find themselves unable to comply with the *letter* no matter how well they live up to the *spirit* of the law. The real remedy for the situation is to put the regular profession in a position to meet the needs of the ailing public in a systematic organized manner. The first step towards such organized service should be the establishment, in every general hospital throughout the country, of an independent neurological service under the supervision of an attending neurologist who should be allowed to have three or more adjunct attending neurologists serving under him. Under the present system the position of the neurologist upon the hospital staff is that of consultant. This means that in so far as the deliberations of the medical staff are concerned the neurologist is a mere outsider which, in view of the advantage to be derived from group diagnosis and treatment, is a distinct loss not only to the neurologist and the members of the medical board but also to all those afflicted with nervous and mental disorders who seek hospital aid. With the establishment in each general hospital throughout the land of a neurological service on equal footing with the medical and surgical services, the next step would be to organize the service so that patients suffering from mild nervous and mental disorders may have, from the outset, the benefits of scientific treatment such as is possible only in the hospital with its specially trained nursing, social service, and other staffs. The establishment of such an organized neurological service in our general hospitals would come as a great relief to the general practitioner and neurologist alike who, under present conditions, are often at their wits end to know just what to do with psychoneurotic patients brought to them in the acute stages of their malady when such patients are not fit subjects for psychoanalysis and allied forms of treatment. Under ordinary circumstances many of these patients after a period of unsuccessful because inappropriate treatment find their way into the hands of outside healers under whose care the surface manifestations of the functional disability often disappear. As all such cases are made the most of in discrediting the profession when proper provision has been made for their scientific treatment in the general hospital where they can be seen daily by the attending neurologist or one of his adjuncts, an effective blow will at last have been dealt to the many irregular forms of therapeutic exploitation which at present menace the future of scientific medicine. The advantages of an independent neurological service in our general hospitals are numerous and of vital importance not only to the public welfare and to the hospital and all officially connected with it, but to the medical profession in general. It is only with the establishment of such a service that the practical teaching of scientific psychotherapy can ever become a reality. Let our medical schools and hospitals but give the public a few years output of young men properly trained in scientific psychotherapy and the regular profession will rapidly and deservedly rise again in popular favor. To the writer it seems absurd that the properly trained medical man should have, outside the ranks of the profession, any serious rival in the field of therapy; but if the teachers of medicine and more especially those responsible for the curricula in our medical schools and hospitals, after years of boisterous effort to obtain high standards of medical education must confess their inability to deal effectively with the situation, only one of two courses remains open to them in logical consistency, viz., to try other methods or to abandon all attempts to maintain high standards. What is the use of exacting years of preparation from our young men in the name of the public welfare when the public itself gives preference to rivals practising under systems that require no scientific training worthy of the name and dispense with the necessity of diagnosis? On the face of it the position of our medical educators is exceedingly bad as matters stand. But the position of the public in this important question is no better. Their pragmatic attitude in the matter is not only selfish but incredibly shortsighted. To-day they are satisfied with the flimsiest kind of empirical therapy offered by men of no scientific training; to-morrow, when the need arises, they will clamor for scientific help which will not be forthcoming. They tell us that whatever cures them satisfies them; that the test of a remedy is not whether it is well grounded on scientific principles but whether it "works."

Smug pragmatism such as this may sound reasonable enough to the bulk of the community with eyes only for their own needs of the moment; but for the man of culture with an eye for the future it carries cold comfort. If matters continue as they are it will soon not be a question of the public choosing between the scientifically trained men of the medical profession and the exploiters of pretendedly scientific systems of therapy. In a very short time only one class of therapeutics will be available for the masses who for long years to come will be compelled to take their chances with practitioners working in the dark, using the trial and error method, which may seem logical enough in desperate conditions where no other method offers any hope, but which in the ordinary run of cases amounts to little more than reckless gambling with life and health. In spite of appearances, however, in the author's opinion the position of the medical profession is not quite hopeless. The public, not without reason, have resented the blindly autocratic attitude of the regular practitioner, and taking the matter into their own hands have gone on a rampage of radical reform. Their attitude towards the profession just now is very similar to the avengeful attitude which labor the world over has taken towards capital and with similar disadvantages to themselves. As in the case of labor the solution of the problem cannot be worked out by labor alone without compensatory adjustment on the part of capital so this medical problem cannot be solved by the public frantically pulling against the profession. At a conservative estimate it may be admitted that of all the ailments for which relief is sought 90 per cent. or over, are self limited and tend to get well. It may also be admitted that in over 90 per cent. of all human ailments the psychic is the dominating factor. Taking these statements as approximately representing the facts in the case it would seem that the pressing need of the public is *doctors and more doctors ready and able to give this* 90 *per cent. or over of the ailing public, service* in the way of prompt diagnosis and treatment without subjecting every frightened unfortunate who comes with an insignificant toeache to the ordeal of examination by an interminable string of specialists and the intolerable burden of unnecessary laboratory fees. Nothing here stated should be construed as antagonistic to legitimate laboratory or consultation service. The routine infliction of such service upon a bewildered public where it is not at all indicated is quite another matter. Keen observers will have noted that the main support of outside healers comes, not from the very poor who cannot afford to pay specialists' and laboratory fees, but from the well-to-do who naturally resent the expense involved in a visit to the modern regular practitioner. It cannot be denied that outside healers have sprung up in response to the public demand. What is significant in their daily growing numbers is the fact that they are becoming legalized in one State after another and are already clamoring at our hospital doors for the right to practise upon equal footing with the regular practitioner of medicine. Something here for medical economists to consider: for in a very short time, if matters continue as they are, the regular profession in spite of its highly vaunted educational standards will be absorbed by its more practical if less sophisticated rivals. Two facts should be stressed here for the benefit of the profession. One is that the position of the public is not without grounds for justification and the other is that the public, although at present in a fury of resentment against the regular profession, have not as yet completely lost their heads. At heart they are still true to the profession and if the latter has sense enough to come down off its high horse and offer service such as only the regular profession, when properly organized, has in its gift to offer, it will soon become apparent that, when given the chance to distinguish between them, the public still knows the difference between real gems, even though they be a little off color and marred by numerous flaws, and the glittering rhinestones which for the moment seem to have captivated the popular fancy. The need of the hour is a constructive policy as outlined above. Whoever takes the initiative in adopting such a policy and putting it into practice will prove himself a real benefactor not only of the ancient and honorable profession of medicine but of humanity at large.

244 West 101st Street.

HEMANGIOMA AND LYMPHANGIOMA, THEIR RESPONSE TO THE INJECTION OF BOILING WATER.

By FRANCIS REDER, M.D.,

ST. LOUIS.

A HEMANGIOMA is a tumor composed of an abnormal formation of blood vessels produced from a matrix of angioblasts. A lymphangioma is a tumor composed of an abnormal formation of lymph vessels also produced from a matrix of angioblasts. These tumors are congenital in their origin and clinically are considered non-malignant, although their histological formation closely resembles that of certain types of malignancy.

Angioma and lymphangioma are closely allied to endothelioma, their cellular elements lining the walls of the vascular spaces possessing the shape and arrangement of the mother soil.

In differentiating a vascular tumor of an angiomatous nature from a varicose vein or an aneurysm, the character of the formation must be taken into consideration. The growth of a normal blood vessel is furnished by the angioblasts. It is the essential tissue element. When such a blood vessel has reached its requisite normal size, the process becomes stationary.

In the development of an angioma there is no limitation, and the function of the angioblasts and their product of tissue proliferation results in the formation of atypical blood vessels, which constitute the essential tumor tissue of a hemangioma.

The growth of an angioma is governed by the formation of new blood spaces coalescing with existing older blood spaces. When the tissue proliferation is a rapid one, the tumor grows correspondingly in size.

In a varicose vessel or an aneurysm, such a process of proliferation does not take place, the size and form of the tumor being caused by a weakening of the wall, the result of disease. The differentiation of a lymphangioma from elephantiasis arabum is

borne out on similar lines. New vessels are formed by angioblasts in the walls of preexisting lymph spaces by a process of budding. These new lymphatic channels coalesce and communciate with the older lymph channels, the process extending to places where, in normal conditions, no lymphatics are found. In elephantiasis arabum the lymphatic enlargement is a dilatation of a diseased preexisting vessel.

On an anatomic basis hemangiomata and lymphangiomata can be classified into three species: The capillary variety, the cavernous variety, and the plexiform variety of the angiomata and the cystic variety of the lymphangiomata.

The capillary variety of angiomata is the incipient form of vascular tumor. As a rule the tumor tissue does not extend beyond the subcutaneous cellular tissue. This form is of little clinical significance.

The cavernous variety has its seat in the deep connective tissue. Its formation presents a distinct tumor. This form is of much clinical importance.

The third variety of hemangiomata, the plexiform species, is very rare. It is also known as "aneurysm by anastomsis" or "circoid aneurysm." Such an angioma may consist of arteries only, or of veins, or of arteries and veins in equal proportion. When the arterial element predominates, a marked tortuosity of the vessels is apparent.

The cystic variety of lymphangiomata differs from the cavernous insofar that the individual separate spaces arising from new and dilated lymph channels possess forms which correspond with their origin. They are more or less globular in shape and more prone to a progressive growth. than the cavernous.

Hemangiomata and lymphangiomata have many fundamental points of structure in common, and a differentiation between them should present no difficulties. The content of the former is blood, that of the latter lymph. A hemangioma has a bluish discoloration and the tumor can be usually emptied of its content by gentle pressure. A lymphangioma is generally colorless. Occasionally the walls of a lymphatic cyst will harbor blood vessels which will impart to it a blue or pink discoloration. The contents of a lymphangiomata cannot be expressed, the tumor on account of its firmness and elasticity will however permit of a certain degree of compression.

Angiomata are met with more frequently than lymphangiomata. In my experience in a ratio of 15 of the former to 1 of the latter.

With this preamble concluded, let us consider the treatment of these vascular tumors with the injection of boiling water.

These neoplasms may develop in any part of the body, but the face seems to be the preferable region for the angiomata. It is therefore significant that any treatment instituted should invite the least amount of disfigurement through scar formation.

Of all surgical measures the ideal treatment is excision. This is the method of election, provided the tumor is favorably situated and the operation can be undertaken without the danger of great hemorrhage or the loss of important structures.

Excision of a vascular tumor situated in the face demands the most serious contemplation, and should be undertaken only when there is convincing evidence that other methods of a less radical nature are unsuited. Of the less radical measures the injection of boiling water is deserving of earnest consideration.

This measure was originated by Dr. John A. Wyeth. It possesses a distinct advantage over all other coagulating methods, especially the irritating injections of chemical substances, which possess little or no merit, and are often harmful. The object of the treatment is to destroy the growth with all its constituent elements by an interstitial action. Boiling water injected into a hemangioma or a lymphangioma will by coagulation convert the contents of the tumor into a compact mass, causing a vascular blockade by aseptic thrombosis. The subsequent course is a degenerative tissue metamorphosis of a granular or fatty nature, resulting in the gradual obliteration (partial or complete) of the tumor.

The injection of boiling water into a hemangioma has been a most encouraging procedure, the tumor invariably disappearing in from 4 weeks to 4 months, the time for obliteration being governed by the size and location of the tumor. About 200 hemangiomata have been subjected by me to this method of treatment, and the results have been very satisfactory. Some of these tumors were hopelessly inoperable.

When the results of the lymphangiomata injected with boiling water are reviewed, they contrast negatively with the good results obtained in hemangiomata.

It was noted that the injection of boiling water into a hemangioma was followed by very mild systemic disturbances, whereas the reaction in a lmyphangioma was often violent. In the series of 200 cases of hemangioma 5 became infected. These infected cases responded promptly to aseptic wound treatment.

In a series of 8 lymphangiomata injected with boiling water 2 became infected. The infections were undoubtedly of a hematogenous nature, in the one case resulting from a sore throat and in the other from an ulcerated tooth. These patients were seriously sick, the severest systemic disturbances lasting from 10 to 14 days. The parts involved (in one case the hand, in the other the foot) presented the clinical characteristics of a phlegmonous inflammation. There were present chills, with a temperature of 104° to 105°, delirium, and vomiting. The inflammatory condition did not result in suppuration in either case. Both patients recovered after a protracted convalescence.

The predisposition to infection of an injected lymphangioma must be ascribed to the low resisting power of the coagulated lymph. With an injected hemangioma such a predisposition does not seem to exist, presumably because blood being a tissue of high resisting power, bacterial invasion becomes more difficult. The response from the injection of boiling water in the 8 cases of lmyphangioma, although not as encouraging as the results achieved in the angiomata, was satisfactory.

It may be said that in two cases the tumor entirely disappeared. In the remaining six cases the tumor was reduced to about two-thirds its normal size. A second or third hot water injection, given in four instances, had little influence upon any further shrinkage of the tumor. In those cases where the lym-

phangioma involved the hand or the foot, together with some of the fingers and toes, the injection caused a marked decrease in the size of the hand or foot. The enlarged fingers or toes, however, were affected to only a small degree.

Although the response from an injected lymphangioma does not give the encouragement an injected hemangioma does, the measure of injecting a lymphangioma with boiling water is a most valuable asset, especially in those cases where an operative procedure is contraindicated and where intervention seems imperative.

THE PHARMACEUTICAL ASPECTS OF NATIONAL HEALTH INSURANCE.*

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VERY briefly, the results of an extended investigation into the pharmaceutical aspects of National Health Insurance, may be summarized as follows:

The subject has heretofore received entirely inadequate public consideration, largely because of its very technical aspects affecting a single and rather isolated profession. Under National Health Insurance the Government assumed responsibility for the supply of the necessary medicines and surgical appliances in the case of insured persons, resulting in a so-called "panel system," under which druggists willing to do so supply medicines under special contractual conditions to insured persons on the basis of a script, furnished by the attending physician. The theoretical assumption, based upon very inadequate investigation was that on the average 1s. 6d. per insured person ought to be sufficient to provide drugs for the insured population. But it has been said that "In order that they might, as they ought, be absolutely safe, they added by way of reserve another 6d.—the floating 6d.—to which, or to the unexpended balance of which, the doctor has the reversionary right.

It must be self-evident that any such theoretical assumption of per capita cost would necessarily result in the adaptation of a governmental measure to the amount available for distribution, rather than that the adjustment would be in the direction of an adequate and proper supply of drugs for the insured population. It has also been said in this connection that "It is obvious that to fix a definite sum to meet an obligation which is indefinite in amount, is, after all, in accordance with the doctrine of average, upon which the whole principle of insurance is based." This would be perfectly sound, if it could be said with entire truth that insurance principles in the accepted sense of the term regulate the operation of National Health Insurance. This not only is not the case, but as said in an address on the drug fund, prepared by the Scottish Association of Insurance Committees, "The peculiarity in this instance is that after the regulations are framed the drug fund is kept free from liability in case of shortage and the risk is put upon the chemist who sells his goods and is bound to supply his goods on the order of the doctor—without the right of refusal, even though he may be of the opinion that the individual doctor is acting extravagantly."

These introductory remarks emphasize the numerous difficulties of drug administration under National Health Insurance, resulting during the present parliamentary session in the floating 6d. being done away with and, as far as I understand the present situation, in the assumption of the entire cost of medicines by the government. Overprescribing is the penalty of the physician who, aside from cases of sheer negligence, must frequently think more of his patient than of drug economy. But to avoid over-prescribing, an immense range of schedules, fees, and allowances has to be kept constantly in mind, a serious additional clerical task upon an often over-worked general practitioner.

A description of drug practice under the act presents a most interesting aspect of government interference in what heretofore has been almost exclusively a field of private enterprise. As observed in the report of the Association of Scottish Insurance Committees, "It is doubtful if there is to be found in any commercial dealings such an anomalous situation as we find here." The situation has been enormously complicated by making it to the personal interest of the doctor to practice economy in drug prescribing, in that the so-called floating 6d., or the difference between the 1s. 6d. definitely assigned and the 6d. additional indefinitely assigned to the drug fund, accrued to the benefit of the practitioners' fund and became available for distribution at the end of the year. There being the further complication of a very considerable rise in drug prices; of the impossibility of securing certain drugs at all; of the national importance of rigorous economy in prescribing for general reasons in consequence of the war, and the difficulties of securing adequate technically trained dispensing assistants. Before I proceed, it is necessary to point out a fact not generally known. It was the customary practice of English physicians previous to the passage of National Health Insurance to do their own dispensing, or compounding of medicine, as part of an inclusive fee. Under the law this practice is now practically prohibited, except in remote rural sections, and an immense amount of additional business has, therefore, been given to practising druggists, but upon the basis of a capitation fee, held to be totally inadequate in many cases. A second point to be kept in mind is that a different rule of practice prevails in Scotland than in England, and possibly Wales and Ireland, so that in this case, as in others, it is not correct to speak of the system as one of "National" Health Insurance.

A review of the numerous negotiations between the associated druggists or the pharmaceutical societies of England and Wales and Scotland on the one hand and of the government on the other, would be utterly impossible at the present time. The negotiations, unfortunately, are not as much a matter of public interest as the corresponding negotiations of the British Medical Association, and the facts are, therefore, not made a matter of general record. But from such documentary evidence as has been placed at my disposal, includ-

*Abstract of an address delivered before the Cleveland Academy of Medicine, August 18, 1920.

ing the reports of so-called Drug Pricing Committees, I do not hesitate to say that the system or the method has become of prior importance to the objective of providing articles and proper medicines to the insured population. The chemists are in much the same position as the doctors, in that the bills rendered are frequently not paid in full, but discounted on the basis of the drug allowances, from 1s. 6d. to 2s. per capita. Of course, there is much division of opinion and in some respects much good has resulted from a change which would not be necessary in this or in many other countries, in which doctors, by preference, do not do their own dispensing. A bureaucracy necessary to administer a drug fund with a first regard to public economy in matters involving millions of small transactions—running into many millions, when all the facts are taken into account—must needs assume gigantic proportions. The so-called Price Checking Bureaus came into existence as a matter of necessity and they fulfill, in many respects, a very useful public purpose. They are under-staffed and underpaid, since the function is but half understood by the public, interested rather in an adequate supply of medicine than in the attainment of the highest degree of economy in drug dispensing.

There is a further point, to which it is necessary to direct attention, and that is the prevailing practice in Great Britain to give the preference to stock medicines, rather than to prescriptions written out in conformity to the principles of therapeutics. Stock medicines are legally authorized in Great Britain; approved as to their composition by the Ministry of Health; and dispensed in large quantities, not because of a clear recognition that they are to the best interest of the patient, but because a considerable economy is effected in dispensing cost. Every Insurance Committee, therefore, has its own local pharmacopeia, in which are embodied local preferences or prejudices, differing frequently from other communities, making a standard pharmaceutical practice difficult, if not impossible. It is clearly recognized that the use of stock mixtures has been economical because of the reduced fee which is allowed in many areas, but the major underlying cause is the continued habit of drug-taking in England, forcibly expressed in "a minute consultation and a bottle of medicine."

Every prescription under the present system is, therefore, subjected to careful examination by persons experienced in drug-pricing and in most, if not all, areas the panel chemists no longer enter the prices themselves, but merely give the quantity of the drug dispensed and the name. Thus, at least thirty million prescriptions are priced, examined and subsequently tested and verified, or re-examined by sub-committees of the local pharmaceutical society. The prices charged are generally net, or the cost of the drugs wholesale, to which there is allowed to be added a dispensing fee, or a so-called establishment charge. The amount of clerical labor involved in these multitudinous operations is enormous and the resulting chances of errors and disputes or misunderstandings are considerable. It, however, may be said that it is the present rule, in England at least, that the ingredients are paid for at cost and that, in addition thereto, a fee of 3s. 5d. is given in respect of all compounded drugs, medicaments and preparations, a fee of 2d. in respect of all single drugs, and a cost of 33 per cent. is allowed in respect of specified appliances. In addition to these, there is a dispensing fee of approximately 3d., it being estimated that an actively employed pharmaceutical assistant can earn on this basis an average of about 3s. an hour. In other words, there is the same trade union standard as in the case of medical practitioners, whose services have also been rated by the hour, to arrive at a compromise agreement as to the capitation fee.

STATUS OF THE LUETIN TEST.

By LOUIS HANNAH, M.D.,

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WHEN first deciding to employ the luetin test, I entertained high hopes of its efficiency in at least a worthy percentage of syphilitic cases, on account of the credence accorded it by writers of standard text-books and the claims of the originator of the test (based on experiments) as to its specificity and value when positive. However, my experience with this method of diagnosis—being careful of technique—has been utterly disappointing, and in this connection I wish to state some of the facts which might be of significance.

In the application of approximately one hundred luetin tests, in unselected cases, I at first observed a few apparently positive reactions in isolated instances. Later, however, having learned that antisyphilitic treatment (with special reference to mercury) intensified the reactions, I began to administer potassium iodide and mercury in all cases for two or three days prior to application of the tests. Becoming suspicious of the frequency of positive reactions, following the iodide and mercury treatment, I reported to Dr. Noguchi a series of 30 consecutive such instances—referring, however, to only the administration of mercury—and in reply he stated that certain investigators had observed these pseudo-reactions after the ingestion of potassium iodide. Noguchi, nevertheless, recognizes a distinction between the true and the false luetin reactions, in that the former seems more delayed. As to this point which he makes, I wish to say that from my relatively few observations I conclude that it is too nearly impossible to differentiate the true from the false lesions to make the test of any value, for the following reasons: all reactions after potassium iodide were progressive, and exhibited all the stages—papular, vesicular, and pustular, or so-called torpid type—ascribed to the specific test; the lesions after potassium iodide presented the typical copper-colored appearance of certain syphilides; all positive reactions without iodide or mercury appeared within 48 hours, though much less intense than the drug reactions.

Of the 100 cases referred to there were eleven which exhibited persistent lesions, following the test without iodide or mercury, that might be considered positive. Five of this number gave definite histories of lues, and none responded to antisyphilitic treatment. In a considerable number of other instances there were doubtful reactions in the

form of very small papules, which disappeared in from three to five days; so that positive responses to the test would seem to occur frequently as the result of nonspecific sensitization by the injected protein. Possibly the demarkation between the specific luetin and the traumatic or other inflammatory reactions might be more apparent and easily recognized if the virus were applied through an abrasion of the skin instead of by the intradermic method. I add this suggestion for the reason that in my experience with the tuberculin test I found that the cutaneous method, with its control, is clear-cut and dependable, whereas I have never elicited a positive response, even in known cases of tuberculosis, by intracutaneous injection of tuberculin. Possibly, also, other preparations of the luetic extract, besides the one now in use, might perfect the luetin test, as in applying Old Tuberculin Human, O. T. Bovine, Bouillon Filtrate Human, and B. F. Bovine, a positive reaction often occurs from the filtrate, while the Old Tuberculin remains negative, when applied to the same individual and at the same time.

Since potassium iodide had previously always been administered in combination with mercury, in order to determine whether or not mercury produced reactions similar to those of the iodide I applied the luetin test to ten apparently normal individuals, with negative results in nine cases and a slightly positive reaction in one after forty-eight hours. On the fourth day, before defervescence of the true luetin reaction would have occurred, bichloride of mercury was administered and continued for four days. Results in all cases, after two weeks' observation, were negative; neither was the positive test intensified. It is well also to state that I have seen a number of reactions to the potassium iodide when given several days after applying the luetin, so that the delay in giving mercury could not have accounted for its failure to provoke reactions. In a later experiment on six of the above individuals, positive results were attained after the ingestion of potassium iodide. From these experiments I assumed that the drug reactions were due solely to the iodide.

In conclusion, I wish to say that having seen no reports in the current literature on the records of the luetin test, whereby its standard of efficiency might be established, my impression is that, unless the medical world or proper authorities are in accord with the status assigned to the test, it should be eliminated from standard text books—until perfected—as one of the methods for the diagnosis of syphilis. It is far from my purpose to discredit the efforts in this particular investigation of as eminent an authority as Noguchi, but I do consider that the profession should be spared the expense and disappointment of employing a method of diagnosis that is uncertain and misleading. It would be worth while to know what conclusions others have reached in regard to the luetin test.

Fixation Abscess in the Treatment of Lethargic Encephalitis.—Netter has treated a series of nineteen patients having this malady with artificial turpentine abscess and has lost but two patients. The author has now seen personally seventy-eight cases, and bearing in mind that the mild ease at onset may end fatally, he would test the turpentine abscess in all cases.—*Gazette des Hôpitaux.*

Medicolegal Notes.

Right of Hospital to Refuse to Allow Physician of Another School to Practise Therein.—In an action by a physician to enjoin members of a hospital staff and the hospital from preventing him from practising medicine in the hospital, the Texas Court of Civil Appeals holds that a voluntary association has the power to enact laws governing the admission of members and to prescribe the necessary qualification for membership. Membership therein is a privilege which the society may accord or withhold at its pleasure, with which a court of equity will not interfere, even though the arbitrary rejection of the candidate may prejudice his material interest. Courts sometimes interfere where members have been wrongfully excluded or expelled, but as a rule they do not interfere with the right of an association to make laws or rules unless they are against good morals or violate the laws of the State. The court considers such a society as the Potter County Medical Association, of which the defendants are members, is legitimate and lawful. If it is an organization which is largely composed of the defendant doctors, and if it does directly or indirectly affect the plaintiff's material interest or in some degree affect him as a nonmember, this would not justify the courts in denouncing it as an illegal or unlawful conspiracy. The association has the right to advance its purpose or interest and that of its members by all legitimate means. If it deemed the plaintiff an osteopath, and that as such he was supporting an exclusive system, the association and its members were within their rights, under its rules, in rejecting him as a member. They also had the right to refuse to assist him in operations. They could, if they deemed it to the interest of medicine or surgery, or the welfare of humanity, agree among themselves not to assist him in surgery if they did so in good faith and with no intent to injure him. To compel them to receive him into fellowship and accept his view would be to impose his will upon them and to force the medical world to accept his theory of the healing art. Courts have no such power. The plaintiff has an equal right to ignore the defendants'theories and practice as they have his. Each has selected his school of practice, and neither has the right to impose upon the other his peculiar views, but each is free to choose his own and follow the methods believed by them to be the wisest and best. Having so elected, there could be no just ground of complaint that in the competition of these schools and as resultant therefrom loss of material interest is sustained or professional reputation suffers or is eclipsed. If without malice or evil intent the defendants did interfere with the plaintiff's privilege, if they did so serve some legitimate right or interest of their own, they could do such acts themselves or cause others to do them so long as no definite legal right of the plaintiff was violated. A rule by the defendant doctors that there should be present at least three physicians at a major operation was held not to affect the plaintiff. He was not a party to the rule; he was under no legal or moral obligation to observe it. The court did not think the State statute of 1907, creating a board of medical examiners, defining medicine, etc., was designed to force one system of medicine to recognize all other systems as equal to its own, or to force it to affiliate with or accept members from other systems into its association under a penalty of mandamus, injunction, or damages, on the ground of discrimination. It holds that the governing body of a hospital may refuse to permit physicians professing a certain system of medicine to practise in the hospital and adopt such regulations as are proper or deemed by it necessary or expedient to improve the hospital, and require of those using its equipment that they possess specific medical learning and equipment in order to receive a membership on the medical staff. To accomplish this it was at liberty to employ a committee, as it did in this case, to standardize the sanitarium. If in good faith, with no evil intent to injure or oppress, the doctors who were so appointed did formulate the rules of standardization and name the staff as directed, they had the right to do so subject to no other control than the governing authorities of the institution.—Harris v. Thomas (Tex.), 217 S. W. 1069.

MEDICAL RECORD.

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THE SITE AND NUMBER OF DUODENAL ULCERS.

AUTOPSY records and operation reports show that duodenal ulcer is usually single. Collin's statistics, comprising two hundred and thirty-three cases, including ulcers located on the four portions of the duodenum, give the following results: There was a single ulcer in one hundred and ninety-five cases, two ulcers in twenty-six, in three cases there were three, in four cases four, and in five cases there were five or more. Therefore, duodenal ulcer is a single lesion in 83.6 per cent. of cases according to Collin. The statistics of American surgeons show that a single ulcer exists in 95 per cent. of the cases, and in those compiled by Ricard and Panchet in France, from 80 per cent. to 90 per cent. These figures have not, however, an absolute value. Seventeen cases collected in Hartmann's service, at Paris, by Houdard, show that in sixteen the ulcer was single, while in one there were two ulcers, one near the pylorus, the other in the third portion of the duodenum. The starting-point of the first ulcer, which later had invaded the pylorus was, it is true, not very exactly determined.

The coincidence of gastric and duodenal ulcers has now become an established fact, and many instances have been reported; there are forty-eight cases out of a total of one hundred and eighty-nine cases of duodenal ulcer reported by Moynihan, while the case referred to by Houdard is, perhaps, another example. Quite recently Petrem published fifteen cases of duodenal ulcer, all of which presented gastric ulcers as well. It is important to be aware of these facts, because they should oblige the surgeon to explore the duodenum even if a gastric or pyloric ulcer has been found which could account for the symptoms offered by the patient.

The site of the ulcer must be regarded from two points of view, namely, on the walls of the duodenum and the various segments of this organ. It is generally conceded that the majority of ulcers are seated in the first portion of the duodenum, on the first four centimeters to the right of the pylorus, Moynihan's statistics showing that this is so in 95 per cent. of the cases. In Collin's autopsy statistics—a total of 262 cases—242 times the ulcer was in the first portion, 14 times in the second, 3 in the third and 3 in the fourth. Perry and Shaw's autopsy statistics of 143 cases give 125 ulcers in the first portion, 16 in the second, and one each in the third and fourth portions. Therefore, by combining the above figures—a total of 405 cases—there are 367 in the first portion, 30 in the second, and 4 each in the third and fourth portions. Hartmann's statistics show 13 ulcers in the first portion, 3 in the second and 1 in the third. Therefore, the ulcer is seated beyond the first portion in quite a good proportion of cases, but it should be remarked that in the latter statistics only cases of ulcer distinctly duodenal are considered. What is important to recall is that a duodenal ulcer of the second, third and fourth portions may alone exist or coexist with another in the first portion, so that the entire duodenum should invariably be explored at operation, and that this obligation still holds even when the first portion appears normal. This eventually is unquestionably the most frequent. The situation of the ulcer in relation to the pylorus is rather variable. Collin's statistics are interesting because they are based on precise anatomical observation. They show that out of a total of 242 cases of ulcer in the first observation 2 were astraddle on the pylorus, 4 encroached upon the pylorus, 74 were tangential to it, while 162 were situated from two to four centimeters from the pylorus. Therefore, about 33 per cent. were intimately related to the pylorus. Codman has also found duodenal ulcers in this situation and he insists on this type met with occasionally and which may escape notice if the examination is not carefully made.

The difficulty of making an exact localization of the seat of the ulcer by external examination at operation is well known and it has been quite conclusively shown that the pyloric vein is not a landmark of any precision in locating the ulcer.

The seat of the ulcer in relation to the walls should be considered, and Collin's statistics will again give more exact data than those obtained by rapid examination at operation, often rendered difficult by adhesions. When the site has been noted we find, for ulcers of the first portion, 68 were on the anterior wall, 3 on the anterosuperior, 39 on the posterior, 2 posteroinferior, 6 posterosuperior, 10 on the upper border and 1 on the lower border. In ulcer of the second portion 3 were on the internal wall, 2 on the posterior, and 1 on the external wall. In those of the third portion the site was noted in only 1, and this was on the anterosuperior wall. In those of the fourth portion 2 were on the anterosuperior and 1 on the posterosuperior wall. Therefore, ulcers of the first portion are usually seated in front and are visible at examination of the region, but it must be recalled that those seated on the posterior wall are far from being exceptional, so that the entire duodenum should invariably be explored.

It may, perhaps, be logical to admit that the reason that duodenal ulcer is more prone to occur in the first portion is because the mucosa is here in contact with acid chyme which the biliary and pancreatic secretions have not yet neutralized. The

first portion also comes up in front of the pylorus and the gastric contents directly surge against it each time the sphincter opens, so that the anterior wall is more directly acted upon and is the more common site of ulcer.

REPUGNANCE TO MEAT IN CANCER OF THE STOMACH.

SAVIGNAC discusses this subject at length in the *Journal de Médecine* de Paris for Aug. 5, 1920, xxxix, 15. He insists that a repugnance to meat occurs early in the history of the case and is of diagnostic value. But classic writers on cancer of the stomach do not, strange to say, mention this behavior. The repugnance is specific and does not, at least early in the disease, extend to other articles of food. In eliciting the information one should never ask a leading question about the appetite for meat, but the patient should be given every opportunity to answer the question in his own way. He may, for example, be asked what kinds of food he mostly craves or enjoys, and a number of ordinary articles of diet should be enumerated for him to select from. If a meal consisting of beefsteak and potatoes, an egg, a glass of milk, and preserved fruit is suggested, he will be pretty sure to say that he dislikes meat. But great tact is necessary to bring out the fact of specific disgust, for the patient may have a general repugnance to all food or he may be a vegetarian from choice. True repugnance can be predicated only when the subject, having taken a morsel of meat into his mouth, spits it out either at once or when, having masticated it, he is unable to swallow it. This reaction must be permanent and not transitory. Needless to say the meat must have been properly prepared and be acceptable to the average man. The cancer subject having acquired this repugnance to meat never regains his tolerance. While there may be repugnance to any kind of meat it is often limited to red meats, while tolerating fish and chicken. The dislike referred to does not in any way depend on dysphagia or the fear of swallowing a bolus of meat.

It being granted that this peculiar disgust for meat is present, how may the feeling be explained? In cancer of the esophagus the author has seen a good appetite and even a liking for meats. As a rule in serious affections of the alimentary canal with disturbance of appetite there is no repugnance to meat unless there is refusal of all food, as in insanity and hysterical anorexia. Hence the great value of the symptom in differential diagnosis. Nevertheless there is much difficulty at first in differentiating cancer from nephritis and uremia in subjects who enter the office with pallor and complain of dietetic disorders. In any condition in which dry mouth and throat are due to lack of saliva a repugnance to meat may be due to inability to masticate and insalivate the food, and this condition the author has found common in the uremic and pre-uremic. The latter conditions may be excluded by the necessary blood and urinary tests. Generally speaking the cancer patient may show this repugnance while still in apparent health, before he has begun to show emaciation and pallor and gastric symptoms associated with involvement of the pylorus. The author states that in 95 per cent. of men who suddenly discover a permanent repugnance to meat one should strongly suspect with reason a beginning cancer of the stomach. There should, of course, be selection—the men should be of the cancer age so-called, etc. There is a minority that never presents this symptom, just as there is a minority that retains all the enjoyment of food and eats to excess if allowed. Apparently the cause is not in the stomach itself, for the symptom has been seen in all forms of cancer, in ulcerated and nonulcerated alike, and in all locations. The symptom which naturally suggests itself is achylia gastrica but according to the author this is not the cause, for he has found the disgust in cases in which the gastric juice was normally present and even in excess. The absorption of some product of the cancer hardly explains the condition, and we have only the hypothesis left of a specific biological reaction, perhaps a defense reaction.

THE COMPLETE EXTIRPATION OF THYROGLOSSAL CYSTS.

THYROGLOSSAL cysts are rather uncommon, yet it seems remarkable that only 31 such cases were found in 86,000 consecutive patients examined at the Mayo Clinic. In that series the cysts appeared at various ages from birth to 53 years, the majority being found in patients between the ages of 20 and 25 years. In 25 of these cases the cysts were in the midline of the neck near the hyoid bone. When these cysts are opened and drained, instead of being entirely dissected out, a persistent sinus remains or there is an intermittent filling and discharge at the cyst, except in the very rare cases where infection of the tract is followed by destruction of the secreting epithelium lining the cyst and thyroglossal duct. Ordinarily, infection follows simple drainage operations and a sinus persists for months or years or for life or until the entire secretory tract is extirpated by operation. In the series at the Mayo Clinic referred to by Sistrunk (*Annals of Surgery*, February, 1920) many of the patients had sinuses which had persisted for periods varying from six months to twenty-nine years.

It is evident that there is but one sure way to cure the condition, namely, complete excision of the cyst and of its prolongation, if one exists, up the thyroglossal duct to the foramen cecum at the base of the tongue. Fortunately, in many cases the upper portion of the tract is obliterated; yet the lumen of the duct is so small and often so hard to identify, particularly after infection of the cyst, that sometimes after the surgeon has removed a cyst in the hyoid region and has felt sure that there is no prolongation upwards, he is chagrined at the return of the patient some months later with a reformed cyst, showing that there was a minute lumen in the thyroglossal duct and that the lining cells were still actively secreting.

In view of the ever-present possibility of such a contingency, the thorough method of excision advocated by Sistrunk would seem justifiable in practically all cases. As he says, the majority of operations for the cure of thyroglossal cysts are unsuccessful unless the epithelium-lined tract running from the cyst to the foramen cecum is completely removed. As a rule, the cyst and the portion of the tract lying below the hyoid may be dissected out without difficulty, but above this the tract is usually so small and friable that it is broken off easily and consequently is difficult to remove. Hence, instead of attempting to isolate and remove the duct by itself, Sistrunk removes the duct with the tissues surrounding it for a distance about an eighth of an inch on all sides.

The operation which Sistrunk describes in detail presents too great difficulties for the relatively inexperienced operator, but such a man does an injustice to the patient in attempting any sort of an operation for thyroglossal cyst, since anything short of complete extirpation usually means recurrence and a much more difficult operation for the competent surgeon who ultimately gets these maltreated cases and has to begin his operation through a mass of scar tissue. Whatever the method, radical extirpation is work that requires an expert surgeon; and to him Sistrunk's method should appeal.

The Gastric Pouches in Biloculation of the Stomach.

The difference in size of the gastric pouches in bilocular stomach—a cause of many mistakes during the preradioscopic era of gastric surgery—is most usually dependent upon the narrowness of the stenosis, which provokes an enormous distention of the cardiac pouch, or upon the association of a pyloric stenosis with a midgastric lesion. The latter coincidence is rather frequent and the cases collected by Santy (Thèse de Lyons, 1915) in reference to excision show that in 15 per cent. of mediogastric stenoses pyloric narrowing was also present. Spannaus has met with this association much more frequently than Santy, because the thirty-four cases he reports from Küttner's clinic (*Beiträge zur klin. Chir.*, Bd. lxxv) include six of pyloric stenosis, otherwise 17 per cent. An extreme smallness of the cardiac pouch is, no matter what has been said to the contrary, relatively rare; it may be simulated by a pushing of the midgastric stenosis to the left side in instances where a marked dilatation of the pyloric pouch exists. The very high site of the ulcer near the cardia should theoretically result in high seated stenoses and small cardiac pouches. Realized to a certain extent in practice, this type of biloculation with an inaccessible upper segment is much more commonly the result of adhesions arising posteriorly to the pouch which, being thus fixed, cannot be drawn down. The fundus of the stomach is therefore only exceptionally the seat of the stenosis. Torsion of the pyloric pouch is a condition rather frequently encountered during operation. Sometimes the torsion of the pyloric segment—which revolves around the long axis of the stomach so that the greater curvature is uppermost—has only begun, in which case it simply contributes to exaggerate the signs of midgastric stenosis. On the contrary, at other times it assumes the character of a genuine complication, in which case the torsion is a complete one, realizing a true volvulus with accidents of occlusion likewise acting upon the loops of small intestine and transverse colon which are carried along with the movement of rotation. Such instances have been recorded by Boucart, Clément, Reinecke, and others. The torsion around a vertical axis passing through the stenosis has occurred in such a way that, the anterior surfaces of the two pouches coming in contact, a genuine anterior spur is formed projecting into the gastric cavity, thus exaggerating the effect of the stenosis. A classical example of this condition has been published by Saake.

The Voluntary Apneic Pause.

The literature of this subject is somewhat scattered and Professor Sabrazes has rendered a service in collecting numerous data for an article in his journal, the *Gazette hêbdomadaire des sciences médicales de Bordeaux* for June 20, 1920, xli, 25. He himself made a contribution to the subject in 1902 and by means of a split-second watch made the average interval 20 to 25 seconds, while 30 to 35 seconds is exceptional. Voluntary apnea is known to vary in different pathological states and in mitral insufficiency with asystole it does not exceed 5 to 10 seconds. It is understood that in these tests there is no preliminary forced inspiration, for apnea under these circumstances has its own laws. In mitral insufficiency after compensation has been reestablished by digitalis, the interval is slightly prolonged—from 10 to 15 seconds. It is of interest to note that in pulmonary tuberculosis, even if advanced, the interval is not notably shortened. The author announced in his early paper that the blood pressure rises during the apneic pause, and that the oscillations of the head (so-called sign of Musset) may appear or become more noticeable during the pause. In the study of miscellaneous individuals the breath is not always completely held and a slight amount of respiration then persists. Again the subject may take a deeper inspiration than normal before holding his breath: in such cases the test is vitiated and the interval may be 40 to 50 seconds. Quite recently Binet and Bourgeois have written on this subject and mention only intervals following deep inspiration. They place the average interval at 50 seconds. In aviation tests subjects whose pause is 45 seconds or less were deemed unsuited for respiration in high altitudes. Other data are given, but the author does not allude to the relations of voluntary apnea to tolerance of anesthesia nor to the long intervals seen in special individuals such as divers.

Progress in Cryotherapy.

In a summary of this subject by Lortat-Jacob in the electroradiological and physiotherapeutical number of *La Médecine*, June, 1920, i, 9, credit is given to various Americans for the introduction of refrigeration, liquid air, and carbonic acid snow into dermatology. The French have not been idle. Sa-

bouraud, Paytrier, and the author have used the snow freely in practice, while Bordas and Béclère have devised apparatus for application of this substance, as have also the author and Vitry in common. In addition to the dermatologists some of the surgeons have applied the snow to cases of lupus erythematosus. Delbet has been able to collect notes of 80 cases of this malady thus treated, going back as far as 1907. Of this number 12 patients were lost sight of, and one is still under treatment. Of 67 others 26 were completely cured and 36 much improved, while 4 have had relapses and but one was a total failure. Since Delbet's paper Mathias has reported 7 other cases with one cure, 2 improvements, 2 failures, and 2 patients still under treatment. At the Finsen Institute at Copenhagen the use of the Finsen light for this malady has been totally abandoned for cryotherapy. Della Favera has reported 10 cases of erythematous lupus treated by the snow and every one completely cured, and Le Bris also reports excellent results. As for lupus vulgaris, a few cures have been reported by Zeisler, Delbet, Marcou, and others, including the author. Superficial epithelioma has been cured by Zeisler, Martin, Nobl, Della Favera, Marcou, Mathias, and the author. Various kinds of nævus and angioma have often been reported as cured by this resource, and while some of these are small others are extensive. The author removed a large port wine mark occupying the half of the face in eleven sessions of 30 seconds each, and Bernay an angioma the size of a mandarin orange. In keloids and scar keloid the snow is the remedy of choice. Good results have also followed its use in tattoo marks, chloasma, freckles, xanthoma, and radiodermatitis.

Botulism or Lethargic Encephalitis.

De Rezende contributes an article with this title to the *Brazil-Medico* for June 5, 1920, xxxiv, 23. The patient presented a most unusual picture when first seen. He was at the time waiting on a physician in a restaurant and was seen to present ptosis. Asked about himself he complained of feeling ill and said he had double vision. He was advised to go home, but some delay resulted and it was not until three days later that he came under medical care. He then presented fever of 40° C. (140° F.) and delirium. This phase passed off and was succeeded by one of extreme prostration, accompanied by somnolence. Ptosis was still present, but diplopia seemed to have disappeared. The diagnosis at this period appeared clear—encephalitis lethargica. To register the peculiar physiognomy a photograph was taken and is reproduced in the journal. The subject improved in temperature and in his mental state. At this juncture Doctor Machado, who had been asked to see the patient, noted urticaria over the chest, which diffused itself over most of the surface and became more and more confluent. This phenomenon made the diagnosis somewhat doubtful and an attempt was made to exclude definitely certain other affections. The latest edition of the work of Purves Stewart on Diseases of the Nervous System (1920) specially calls attention to the remarkable similarity between lethargic encephalitis and botulism. The presence of certain symptoms, such as erythema and dryness of the mouth, makes for botulism. The patient during the outbreak of the eruption had suffered from dryness of the lips and tongue. His occupation as waiter in a restaurant may have exposed him to the *Bacillus botulinus*. Nevertheless encephalitis lethargica has also presented rashes. The diagnosis seems to have been left unsettled.

News of the Week.

Boys and Girls Drug Users.—In a report made by Albert Weber of New York, chairman of the Committee on Narcotic Drugs and Crime of the American Institute of Criminal Law and Criminology, at its annual meeting held in Indianapolis last week, the statement was made that 75 per cent. of the narcotic drug addicts in the United States are boys and girls approximating 16 years of age.

Proposed Radium Institute.—Effort is being made to secure a vote of credit of 2,500,000 francs from the Paris municipal council for the purpose of establishing a radium institute in Paris, to be directed by Mme. Curie, joint discoverer with her late husband of radium. This move is said to be the outcome of the recent announcement by Mme. Curie of important changes in the method of the therapeutic use of radium.

Wall Street Generous to Downtown Hospital.—After the recent explosion in the New York financial district Wall Street gave substantial expression of appreciation of the prompt and efficient aid rendered by the Broad Street Hospital to the victims of the disaster. Subscriptions were taken up on the Stock Exchange, the Cotton Exchange, the Consolidated Exchange, the Produce Exchange, and on the Broad Street curb. The sudden emergency is said to have practically cleaned out the hospital and the donations were urgently needed for replenishing the stock of medicines, drugs, and other supplies.

Volunteer Hospital Needs Funds.—A plea has been issued by General Ballington Booth, president of the Volunteer Hospital, located in the financial district of New York City, for $5,000 which is very much needed for the general work of the institution.

Central Housing Commission Suggested.—Dr. Royal S. Copeland, Health Commissioner of New York City, has announced his intention of going before the special session of the Legislature this month with recommendations dealing with the housing question. He will propose the appointing of a Central Housing Commission "with power to handle all rent problems, to determine what is essential construction, to pass on all plans for building operations, to determine zones for dwelling construction, to seize houses withheld from occupancy because of exorbitant rent demanded and rent them at reasonable prices to the homeless." The commission should have the authority to erect buildings for the laboring classes, and to determine the conditions under which they should be rented or sold, and to offer bonuses to private individuals who will erect homes. The Legislature, according to Commissioner Copeland, should grant the city power to issue bonds for building purposes.

Microscopist Wanted.—The United States Civil Service Commission announces an examination for

microscopist to fill a vacancy in the office of the Surgeon General, Army Medical Museum, Washington, D. C. Applications must be filed with the Civil Service Commission in Washington, or the Secretary of the local Civil Service Board, before Oct. 19.

Obituary Notes.—Dr. JOHN JOHNSON KYLE of Los Angeles, Cal., formerly of Indianapolis, Ind., died Aug. 29 from pneumonia, at the age of fifty-one. He was graduated from Miami Medical College, Cincinnati, in 1889, and specialized in otolaryngology. He was professor of rhinology, laryngology and otology in Indiana University, Medical Department, at Indianapolis, from 1900 to 1912. Upon his removal to California he became affiliated in the same capacity with the College of Physicians and Surgeons, University of Southern California. During the Spanish-American War Dr. Kyle served as Major with the One Hundred and Sixtieth Indiana Volunteer Infantry, and as acting brigade surgeon; during the World War he served as Major, M. R. C., U. S. Army, receiving his discharge in Jan., 1918. He was a fellow of the American College of Surgeons, member of the American Medican Association, Association of Military Surgeons, the American Laryngological, Rhinological and Otological Society, the American Academy of Ophthalmology and Oto-Laryngology, and various State and local medical bodies.

Dr. HENRY BULLWINKEL of Brooklyn, N. Y., died Sept. 14, at the age of fifty-five. He was graduated in medicine from the Bellevue Hospital Medical College with the class of 1888.

Dr. JAMES T. GIBSON of Yonkers, N. Y., died Sept. 16 at Ramapo Farm, Ramsey, N. J., at the age of sixty-four. He was graduated from Bellevue Hospital Medical College in 1886. He was a member of the Medical Societies of the County of Westchester and of the State of New York.

Dr. R. H. ANDREWS of Philadelphia, editor of the *Medical Summary*, died Sept. 17, at the age of seventy. He was graduated from the University of Pennsylvania School of Medicine in 1874, beginning the practice of medicine in Kulpsville, Montgomery County, Pa. In 1876 he moved to Lansdale, Pa., where he became proprietor of a daily newspaper, continuing, meanwhile, the practice of medicine. The *Medical Summary* was founded in 1879, and in 1900 Dr. Andrews retired from active practice to devote his time to his editorial duties.

Correspondence.

PARA-COCCYGEAL FISTULA.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—You will admit that it was rather a strange coincidence that there was a little group of surgeons who were much interested in para-coccygeal fistula for a period of weeks, when suddenly a timely editorial upon that very subject appeared in the MEDICAL RECORD, which appearance served to add new concern to what had been rather a desultory exchange of ideas. It rendered methodical the unmethodical sort of inquiry that is generally known as "picking brains," which is but a term for a quest for information. Among the aforesaid group was Dr. Frink who had had quite a number of cases of the condition and he thought that sacro-coccygeal infundibuliform fistulas were not found among children, therefore I showed him three patients aged 18 months, 26 years, and 53 years. Some other medical men were rather surprised that I could go at once and produce from my clinic three well marked cases of a condition that they had never so much as seen. Whereas I was quite equally surprised to learn that the condition was considered rare. It is useless to regret now that careful records were not kept concerning the condition; but the truth is that most of the examples were revealed by an examination that had for its initiation the exploration of damage due to trolley or other accident; consequently any and all sorts of fistulæ became minor issues. All that can be said is, that it is now apparent that its lack of notice or mention is quite equaled by the lack of success that follows its usual, though very unsatisfactory treatment. And this is stated because the cases that drift into the writer's hands have generally been operated upon again and again while, so far as any curative results or improvement have been observed, a fair conclusion would be that those cases might better have been let alone. Some of them had fistula openings on both sides of the lumbar spinous processes with scars from the operation at or near the sacro-coccygeal junction. Additional scars and longer canals were the apparent changes and could hardly be rated as improvements. The roofing over by a heavy cicatrix confined the pus, but allowed and ensured subdermal burrowing. For the purposes of this letter Dr. Frink has been written to so that the following words have been quoted from his reply. "Speaking of coccygeal fistula, resulting from the breaking down of a pyo-nidal cyst or a cyst located on the ventral surface of the coccyx to which it lies close and near the distal end of which it is attached; such a cyst often contains hair. While I have had a number of cases among adults I never saw the condition in an infant until I saw your case last week (July 27), the cases I have had have been operated upon before they ever came into my hands, some were operated upon four times and still all the bad conditions returned because not one of the patients had had any portion of his coccyx removed. With my experience I do not believe that the condition can be cured without bone removal, to the minimum extent of the terminal coccygeal segment. Such a removal enables one to attack the cyst wall and to remove that. I have cut out the entire fistulous track, the whole coccyx together with the tissue that lay upon the ventral side of the bone with the cyst included in the mass, which whole mass I have then submitted to the laboratory for examination and section whereby it was demonstrated that the proximal terminal of the entire tract was to be found in the cyst that was located as stated above. In the actual operation the position of the patient using a general anesthetic is of importance and should be a true chest or a reversed Trendelenburg with the patient's face downward (prone) while the table should be raised. A vertical incision should be made over the coccyx with an elipse surrounding the fistulous opening;

the incision should be deep and it should be prolonged to the tip of the bone itself. When properly made the incision frees the entire tract but leaves it embedded in fatty tissue so that one may view a pedicle extending deeper and to the ventral surface of the bone. At this point your chisel-knife is of great use in cutting away the ligaments at the side of the coccyx and also in penetrating between the segments that have been selected for removal, in addition to the distal segment. After penetration the chisel-knife is used to pry up the bone in such a way as to put the ventral attachments on the stretch, thus making it easy to clamp and divide them. The bone is freed and together with the mass is removed, the clamped ligamentous attachments are held in such a way as to be included in the deep stitches that are now inserted and a proper support of the lower end of the rectum and of its sphincters is made sure and the depth of the opening that is to be healed is at once reduced. These sutures are of No. 3 twenty-day chromic catgut, are interrupted and are three in number; above which the wound is generally closed with deep silkworm gut stitches, and a small twisted drain of catgut is inserted. The dressing is of purple with a gauze pad well strapped down upon it. The after-treatment is merely a repetition of purple and tight dressings, but the patient gets out of bed in a day or two."

I think that every patient at the Knickerbocker Hospital was out of bed the day after operation. If there was any exception it would surely have made an impression. In studying the whole matter the writer has been impressed with the fact that the infundibulum or canal was congenital and a relation to the dermoid family because, as the doctor states, hair is often in the pyo-nidal cyst; but it is found elsewhere in the tract also, while the mouth of the canal is frequently stopped by a tuft of living projecting hairs or by a structure that is similar to a hair-mole with its hairs following the usual darkening and hypertrophy that come with advancing years. When the track of the canal may be felt below such a plug containing hair, the case calls for further investigation even though a probe may rarely be passed unless the canal is much dilated through being converted into a pus carrier.

Many infundibula are to be discovered through search that are not and apparently never have been inflamed so that it would seem quite possible that an infection has a rectal source. Some patients demonstrate a rectal fistula that has broken into the pyo-nidal cyst or into its canal, for they yet possess the connection *in toto*, but others show that there has once been a hole in the rectal wall with the cicatrix of a tract that once existed therefrom. Both hole and tract are now healed; but the infected cyst or canal has become pyogenic on its own account, as an independent incubator. Call the condition a blind external fistula if you wish; but also call to mind that when the pus does get into the cyst or the infundibulum it is bothering some hospitals a good deal, for the final clean-up appears to be coming into the present writer's hands. The whole appearance of the condition may be so misleading that the junior assistant incises a furuncle in the midcoccygeal region, after which small error various members of the visiting staff convince themselves that they cannot or do not seem to be able to correct that error or to do anything else that is really worth the doing. If the writer has helped one such it is a sufficient excuse for his letter.

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CESAREAN SECTION VS. CRANIOTOMY.

TO THE EDITOR OF THE MEDICAL RECOTD:

SIR:—In the article by Dr. R. A. Bartholomew, on "The Prevention of Peritonitis in a Case of Intrapartum Infection Subjected to Extraperitoneal Cesarean Section," in the MEDICAL RECORD of June 26, the author proves that the method of operating was successful in preventing peritonitis. I beg to be excused for expressing the belief that several readers would like to know the internal measurements of the pelvis in the case described; and if the conjugata vera was above 5.5 cm., I would suggest that craniotomy by means of Tarnier's basiotribe, which reduces the *base* of the skull, would have been preferable. The basiotribe is the most efficient instrument for these cases. . . When difficulties arise in bringing an intact base through the superior strait of the pelvis, I use the sharp hook to put the base upon its side. These are the only cases in which the old-fashioned sharp hook is still an excellent aid to the accoucheur.

HUBERT M. BOSHOUWERS, M.D.

VALPARAISO, CHILE.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, August 27, 1920.

What Governs Heredity.—Views as to heredity do not agree and the question will be earnestly discussed at the meeting of the British Association, which is now being held at Cardiff in Wales. The botanical, the zoological, and the geological sections will be vigorously employed in discussing the problem of heredity and the factors that influence it. Miss Saunders presides over the botanical section and will deal with the subject from the point of view of a convinced Mendelian, querying only the ideas of Morgan the American Mendelian with regard to the mechanism of inheritance. Miss Saunders concludes that so far as experimental evidence goes, all the variations which a child or a chicken or a sweet pea exhibit are shut up in the egg or the germinal egg cells from which they spring, and that outer circumstances or environment cannot alter these in the slightest degree, simply because they are immutable. But by no means all those who attend the meeting are hard and fast Mendelians. Their contentions will be hotly disputed, among others by Dr. F. A. Bather, the president of the geological section, by Professor Dendy and Dr. Ruggles Gates. Mr. Stanley Gardiner, president of the Zoological Section, is expected to side with the followers of Mendel, of whom in Great Britain Professor William Bates is the high priest. The Mendelian theory

is that nothing can change what the germ cell can or will do except another germ cell that fuses with it. Supporters of this idea stand in a strong position because they have been able to experiment in this direction and in spite of many failures have had some successes, notably have produced certain valuable kinds of wheat by carrying their theories into execution. Their opponents stoutly assert that the Mendelians claim too much and that their successes do not justify such extravagant claims. Why take for granted on these grounds that neither environment in nature, nor the other cells of the animal or plant which are in proximity to the germ cells are impotent to affect them? The meeting of the British association over and above the deeply fascinating question of inheritance will discuss many matters pertaining to medical science. For example, the new section of psychology bristles with papers on the psychology of industrial life. I shall in succeeding letters consider in some detail certain subjects debated at the meeting which may be of concern to medical readers.

Rats and the Reported Plague in Paris.—Plague has been reported in Paris and although the report lacks official confirmation credence is given to it in many quarters. The *Sunday Observer* of August 22 makes reference to the matter in its Paris correspondence and states that rats are being blamed for the reported appearance of plague in the French metropolis and goes on to say that it is time something were done with the Paris rat. If you are abroad after nightfall dozens of rats will be seen emerging from the gratings around the trees. The sewers swarm with rats. Eugene Sue, in his gruesome and realistic description of the "Mysteries of Paris," devotes a considerable space to a vivid word picture of the condition of the Paris sewers and of the hordes or rather armies of rats. According to his account the rats which infest or dominate underground Paris are well disciplined and under able leadership. The Paris correspondent of the London Sunday newspaper in a further part of his letter says that with regard to the plague, while there seems no reason to doubt that what is euphemistically called *"mal de Yersin"* is really the pest there is not any occasion for alarm. He ends the paragraph on the subject with the statement that there is not the slightest fear of an epidemic, provided there is no negligence. There appears, then, to be little doubt but that plague exists in Paris. It is true that with the enforcement of up-to-date scientific measures the disease cannot spread, but the fact that plague has found its way to the very center of civilization affords a striking object lesson on the necessity for the wholesale destruction of rats. Without the aid of the rat plague cannot be propagated and for this reason alone the most untiring and energetic efforts should be made to get rid of the pestilential rodent. Last year a country-wide campaign in Great Britain against the rat was inaugurated and advertised, but from want of support and especially of proper organization, little appears to have been done. It is difficult to convince the ordinary citizen that the rat is a serious public menace and in particular that he is a grave menace to health. Moreover, the problem is an international one. The rat conveys plague from the Far East because he is carried on ships which go to and fro. The campaign against the cunning beast must therefore be well organized and international if it is to be successful.

Alcohol and Its Influence on Body and Mind.—Sir Frederick W. Mott, a British neurologist of the widest experience, gave a lecture on body and mind at the thirty-first congress of the Royal Sanitary Institute held at Birmingham on July 19 to 24, 1920. In the course of this lecture he discussed alcohol and its influence on body and mind. He pointed out that, like syphilis, it is a race poison and that owing to its widespread abuse it is the most important cause of disorders of conduct and crimes of violence, as prison statistics show. But Mott also drew attention to this very important fact and one which practically unknown to the layman and frequently misunderstood by the medical man that alcohol is not so potent a cause of insanity as asylum statistics would seem to indicate. Why then, he asks, is it assumed to be such a cause of increase of insanity? Firstly, because the data upon which the statistics are made are unreliable. Secondly, because potential lunatics, epileptics, and the feeble-minded have only a narrow margin of highest control, and a relatively small quantity is sufficient to make them anti-social, and thus reveal the unsound mind, so that they become certifiable. Mott gave statistics in support of these conclusions. There is thus no doubt that persons who have suffered with head injury or brain disease are intolerant of alcohol. The speaker emphasized the self-evident truth that alcohol and syphilis work together in undermining the constitution and that alcohol plays an important part in the spread of venereal disease. Mott holds the view that control of the liquor traffic, especially of the sale of spirits, is necessary in the public interest, but he does not favor absolute prohibition. The sale of alcoholic beverages in the form of light beers and wines seems to be a reasonable mode of dealing with the question, and not likely to cause the widespread discontent that total prohibition would.

Hospitals on the Rates.—Clause 2 of the Ministry of Health Bill, presented by Dr. Addison, the Minister of Health in the House of Commons, on August 16, contains the following: (1) The council of a county shall have the power (a) to supply and maintain hospitals for the treatment of illnesses and diseases generally, or for the treatment of any particular illness or disease, or any particular class of illnesses or diseases, and (b) to contribute, on such terms and conditions as may be approved by the Minister, to any voluntary hospitals or similar institutions within their area, and (c) to undertake the maintenance of any poor-law hospitals or infirmaries within their area, and (d) to establish and maintain or to contribute toward the cost of or otherwise aid in establishing or maintaining an ambulance service for dealing with cases of accident or illness within their area. (2) The councils of two or more counties may, with the consent of the Minister and subject to such conditions as he may prescribe,

combine for the purpose of supplying and maintaining hospitals under this section, and where any councils so combine they may appoint a joint committee under section 81 of the Local Government Act, 1885, and that section shall have effect accordingly. Divested of legal phraseology this bill conveys obliquely the policy of the Ministry of Health with respect to the voluntary hospitals, namely, that local authorities may contribute to the maintenance of voluntary hospitals and other voluntary institutions. Thus, it seems likely in the near future that hospitals will be rate-aided to this extent; that the public health authorities will pay for those patients who, were there no such institutions available, would become a charge upon the rates during illness. It appears also probable that ere much time has elapsed the pay-ward system will be introduced into the British hospitals generally. This, it is to be presumed, is the purpose of the bill.

Malaria in England.—Mosquitos are prevalent in parts of England and taking into consideration the fact that there are thousands of ex-service men in the country who are laden with malaria, the matter cannot be dismissed lightly. In the *Morning Post* of August 18 last there appeared a striking and well reasoned leading article in which while it was pointed out that indigenous cases of malaria are rare in London, as indeed they are everywhere in Great Britain, except, perhaps, in the southeastern counties, emphasis was rightly laid upon the part played by the mosquito in spreading the disease. But after all it is not the rare or comparatively rare indigenous cases of the infection by which the disease is spread. A very important factor in the propagation of malaria is the presence of cases of the malady from which the anopheline mosquito may acquire the virus, which it not only transmits, but which undergoes a definite cycle of development in its body. According to authorities here there are three species of anopheles in Great Britain which are known to be malaria carriers. These principally congregate in the vicinity of the big city centers as London, Liverpool, Manchester, and Glasgow, where are also many ex-soldiers who have come infected with malaria from mosquito infested countries and districts, such as Palestine, Salonika, India, and the east and west coasts of Africa. There does exist, therefore, a certain amount of danger of outbreaks of malaria among the community at large. On the southeast coast there are breeding places and anopheles have been found. It is a question then whether treatment of breeding places and other precautions should not be taken against the spread of malaria, on the principle that prevention is better than cure.

Obituary.—A great English surgeon has passed away recently at Sheffield in the person of Lieut.-Colonel Sinclair White, late Professor of Surgery University of Sheffield, at the age of 61. He had just retired from active practice. His career was proof, if such proof is needed, of what a man can achieve by his own unaided efforts provided he possesses brains and will power. He came to Sheffield forty years ago after finishing a brilliant student's course at Queen's College, Galway. He commenced in Sheffield in a modest way and for many years his work was of a very uphill nature. However, after struggling and succeeding, he received his first surgical appointment in connection with the Sheffield Hospital for Sick Children, which was followed by his appointment to the Royal Hospital, Sheffield, and finally he was asked to join the staff of the Royal Infirmary as surgeon. From then on he made rapid strides as an operating surgeon, and was regarded as a master of his craft, resourceful and able to meet any eventuality. He did magnificent work during the war, and his name in this direction is well known to American surgeons. The strain of the war work undoubtedly hastened the breakdown, which ended fatally. Sinclair White was a man who was not so well known as he deserved to be. He did not write, because his surgical experience came so late in life that he was too busy to do so. But he will be remembered by all who knew him as a really great surgeon.

OUR LETTER FROM GENEVA.

(From Our Own Correspondent.)

GENEVA, Sept. 1, 1920.

Control of Venereal Disease in Denmark.—Since the control of venereal disease is now occupying the minds of the medical profession in all countries, it may be of interest to refer to the laws applied in Denmark, as they have unquestionably borne fruit. Paragraph 181 of the criminal law reads: "Whoever, knowing or suspecting that he has a venereal disease, has sexual relations with a person (free from such infection) may be sentenced to imprisonment, or when there are aggravating circumstances, to labor in a house of correction." There is no control over prostitution by the police, as in many other European countries, but a prison sentence or prison with hard labor can be given by the courts to those who keep brothels, incite minors or others to debauch, or who rent rooms for immoral purposes. Paragraph 181 is applicable to anyone who, in the above-mentioned circumstances, infects his or her conjugal partner if a claim to that effect be made within one year. If a person infects another person who is unaware that there was danger of infection, the former shall be compelled not only to pay the expenses of treatment of the person he has infected, but also damages for loss of time or suffering that the disease may have caused.

Any person with a venereal disease, whether he has or not means for paying for treatment, can be treated at the expense of the public revenues, and he must submit to such treatment unless he can prove that he is being properly cared for by his own physician. If the case is such that transmission of the disease to others can be prevented only by isolation of the infected person, or if the latter does not observe prescriptions destined to prevent contagion, he can be interned in a hospital for treatment. All beneficiaries of public charity who are found to have a venereal disease will be detained in a hospital for treatment. When, during or at the end of treatment, it may be necessary—on account of the danger of transmission—to keep the subject under observation, the physician should order the patient to return at regular intervals or furnish

a written proof that he has followed treatment with another physician. The city physician furnishes the patient with the necessary printed forms for this purpose. If the patient does not furnish this proof, the competent public medical authorities are to be notified and the patient compelled to present himself at the consultation bureau, otherwise he is liable to arrest.

Any physician who examines or treats a person for a venereal disease must call the patient's attention to the contagious nature of the affection and the legal consequences resulting from transmission of his disease to another. The physician must also especially see that the person does not marry so long as danger of transmission of the disease exists. In their weekly reports to the city physician or district physician, physicians must expressly certify that they have conformed to the above rules and indicate the number of persons to whom they have given the necessary instructions. Otherwise the physician is liable to a fine of 200 crowns (about $56). Anyone who gives a false name, profession, or address to a doctor is liable to criminal proceedings.

A syphilitic infant can be nursed only by its mother. On the other hand, a wet nurse knowing or suspecting that she has syphilis cannot nurse the child of another. A child is considered suspect of syphilis—even when it has not presented symptoms—when its parents have contracted syphilis less than seven years before or when the birth dates more than three months after they have contracted the disease.

Foreign Physicians Flocking to Switzerland.—On account of the precarious economic conditions of many European countries the number of foreign physicians desiring to come to practise in Switzerland, especially in health resorts, is greatly increasing. Thirty-eight came up for examination before the Federal board for examination in 1919. The situation is somewhat complicated by the fact that certain countries, particularly Germany, refuse the right to practise in their territory, even when the physician has received his M.D. from one of their universities. He may, however, receive the right to practise if he becomes a naturalized German citizen. This question has been recently examined by the Swiss Service of Public Hygiene and the discussion ended with the conclusion that the best means was to make the Federal examinations and also the conditions for admission to the preliminary examinations more severe. Among these it was suggested that all foreign candidates for admission to the Swiss medical schools should be required to have resided a certain number of years in Switzerland, during which they had prepared for and passed their preliminary examinations for the universities. In 1919 there were 1,021 examinations of candidates in medical schools, while in 1918 there were 907, 858 in 1917, and 705 in 1914. The increase was almost exclusively in medical examinations, which were 298 in 1918 and 389 in 1919, while the number of examinations for dentists, pharmacists, and veterinary surgeons remained about the same as in 1918. The number of examinations in the natural sciences was 358 in 1919 and 353 in 1918. It may be concluded from these figures that the present afflux of candidates for examinations in medicine is simply the consequence of the general upheaval in university studies throughout Central European countries.

The 1,021 examinations—170 of which were unsuccessful—were as follows: 900 examinations for the first time with 133 unsuccessful results=14.8 per cent.; 100 examinations for the second time with 35 failures=35 per cent.; and 21 examinations for the third time, with 2 failures=9.5 per cent. Of the 1,021 candidates 969 were Swiss, the remaining 52 being foreigners, Germany heading the list with 18, Poles 8, Russians 5, French 4, Galicians 3, Roumanians, Austrians, and Greeks each 2, while there was 1 each from England, Spain, Serbia, Portugal, Italy, Belgium, Luxembourg, and Holland. For a small country like Switzerland, with a population of some five millions, the above figures are interesting.

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 9, 1920, clxxxiii, 11.

1. William T. G. Morton, the Discoverer and Revealer of Surgical Anesthesia: A Plea for His Place in the Hall of Fame. S. Adolphus Knopf.
2. Gastric and Duodenal Ulcers: Typical and Atypical Forms; the Relative Values of Diagnostic Procedures. C. W. McClure and L. Reynolds.
3. Implantation Methods in Cosmetic Rhinoplasty. Seymour Oppenheimer.
4. Bio-Kinetic Therapeutics. J. Madison Taylor.
5. Endometritis: Its Pathology and Differentiation from Malignancy. W. Claude Usher.

2. Gastric and Duodenal Ulcers.—McClure and Reynolds present material from the medical clinic and the radiographic department of the Peter Bent Brigham Hospital, Boston. In order to appreciate better and to evaluate more properly the significance of the different diagnostic methods as aids in diagnosis and to comprehend better their relative importance, they made an analysis of the records of eighty selected cases of duodenal and gastric ulcer. Fifty-five diagnoses were confirmed by operation. In the remaining cases the *x*-ray findings or frank hematemesis made the accuracy of the diagnosis practically certain. Forty-six of the cases occurred in men and thirty-four in women. From this analysis they formulate the following conclusions: The symptomatology of peptic ulcer may be divided into typical and atypical groups. The typical type, by the aid of radiographic findings, may be diagnosed with a high degree of accuracy. In the diagnosis of the atypical class *x*-ray studies are of the utmost value; in many cases the diagnosis cannot be made without the aid of radiographic findings. *X*-ray studies should form a part of the physical examination of every gastrointestinal case. Their importance in the diagnosis of peptic ulcer is second only to that of the history of the case. *X*-ray studies are the most efficient and accurate aids in the differentiation between functional and organic pyloric obstruction, and between ulcer and cancer. In the great majority of cases laboratory findings are of less value as an aid in the diagnosis of peptic ulcer than those obtained from radiographic studies. The laboratory findings valuable in diagnosis are gross amount of blood in the vomitus or gastric contents, the frequent vomiting of old food residues, and tarry stools. Findings of less value are the persistent presence of occult blood in the stools, the presence of food residue in the gastric contents, and the presence of free hydrochloric acid in the gastric contents.

New York Medical Journal.

September 11, 1920, cxii, 11.

1. Medical Men in the American Revolution. (*To be continued.*) Louis C. Duncan.
2. Historical Notes on the Practice of Medicine in New York City. G. L. Rohdenburg.
4. Bio-Kinetic Therapeutics. J. Madison Taylor.
4. The Relationship of the Anemias to Life Insurance. H. Z. Giffin.

5. Intravenous Medication. Charles Greene Cumston.
6. Clinical Significance of Cardiac Murmurs. Frank A. Jones.
7. Fissure Fracture of the Tibia. Jacob Grossman.
8. The Intravenous Treatment of Malaria. B. S. Wyatt.
9. Proper Equipment for a Rural Physician. Melville A. Hays.

4. The Relationship of the Anemias to Life Insurance.—H. Z. Giffin holds that the increase in the incidence of pernicious anemia makes it advisable to consider this disease separately in mortality statistics, rather than to include it among anemias in general. Medical examiners should be required to report the hemoglobin estimation of each applicant. Blood smears forwarded to the laboratory of the central offices by examining physicians would be of great assistance in eliminating for insurance applicants with pernicious anemia and leucemia. The refusal of all applicants with anemia without a definite understanding concerning the possibility of later reapplication and acceptance may be a serious injustice to the individual. Applicants with anemia from chronic recurrent hemorrhage, anemia from insufficiencies of diet, or as a result of functional dysphagia, may be expected to recover within one year at most after proper treatment, and should be given the privilege of reapplication at a subsequent time. Applicants who have had splenectomy for splenic anemia, provided cirrhosis of the liver, gall-bladder disease, and thrombosis of splenic vessels are not present, might be considered acceptable risks for term insurance after having been well for five years following operation. Applicants who have recovered following splenectomy for hemolytic jaundice may safely be considered for a more liberal form of policy if they have remained well for five years.

Journal of the American Medical Association.

September 11, 1920, lxxv, 11.

1. Disposition of the Ureter in Surgical Conditions of the Bladder When the Ureteral Orifices Are Involved. William E. Lower.
2. Acute Infectious Myoclonus Multiplex and Epidemic Myoclonus Multiplex (Epidemic Encephalitis). J. Ramsay Hunt.
3. Acute Methyl Alcohol Poisoning. Raphael Isaacs.
4. Mercurochrome-220: A Clinical and Laboratory Report on Its Use in Ophthalmology. W. B. Lancaster, F. L. Burnett and L. H. Gaus.
5. Sympathetic Ophthalmia: Report of Four Cases in Which the Condition Was Treated with Large Doses of Sodium Salicylate. Herbert Moulton.
6. Appendicitis Caused by Endameba Histolytica, with Post-Operative Amebic Ulcer Perforation of Cecum. E. P. Hogan.
7. Mixed Tumors of the Throat, Mouth and Face. G. B. New.
8. Experimental Implantation of Foreign Tissue Into the Lumen of Large Arteries. John P. Jones.

2. Acute Infectious Myoclonus Multiplex and Epidemic Myoclonus Multiplex (Epidemic Encephalitis).—J. Ramsay Hunt calls attention to the fact that the condition under discussion may appear in sporadic and in epidemic form. The isolated or sporadic form is quite rare. He reports two cases coming within this category. Epidemic myoclonus multiplex, on the other hand, has been of frequent occurrence during the last winter, and represents a special type of epidemic encephalitis. He reports seven cases of the epidemic form. From the study of these cases he draws the following conclusions: The acute infectious myoclonus multiplex may be regarded as a definite clinical type of acute neural infection. In its epidemic form, it is a part of the large clinical group that has been so prevalent during the last two years in this country and in Europe—the epidemic of lethargic encephalitis. The relation of the sporadic to the epidemic type of infectious myoclonus multiplex is still problematic, although it would appear probable that they are of similar origin, and that the epidemic encephalitis has been appearing for a considerable time unrecognized, in certain sporadic forms. That the disorder is of infectious origin and referable to a microorganism or its toxic product is made clear by the mode of onset, course and general symptomatology. As to special etiologic considerations, it would appear likely that a special strain of the organism has acquired an affinity for certain tissues of the nervous system, and in this way the peculiar and very limited clinical reaction of infectious myoclonus multiplex has been produced. Other factors of a more theoretical nature may also be considered, as exhaustion or biologic inferiority of certain neural systems which render them more susceptible to the deleterious influences of disease. To those who are interested in the theory of the elective localization of bacteria, the organisms or virus obtained from cases of this clinical type, with its peculiarly limited form of neural involvement, would offer especial advantages for experimental study.

3. Acute Methyl Alcohol Poisoning.—Raphael Isaacs tabulates a series of cases treated by alkalization and another series not receiving alkalization. He holds that there is a rapid disappearance of the symptoms, unless the anatomic injury is beyond repair, with intensive alkali therapy. Many of the toxic symptoms probably accompany the acidosis, which may be associated with the acid production (formic) and with methemoglobinemia.

6. Appendicitis Caused by Endameba Histolytica.—E. P. Hogan. See MEDICAL RECORD, May 22, page 894.

The Lancet.

August 21, 1920, cxcix, 8.

1. A Lecture on Body and Mind. Sir Frederick W. Mott.
2. Some Aspects of Functional Nervous Diseases. E. D. MacNamara.
3. A Contribution to the Diagnosis of Acute Pulmonary Tuberculosis. John B. McDougall.
4. Bilharzia Treated with Tartar Emetic. F. G. Cawston.
5. The Blood and Urine in Pancreatic Disease. P. J. Cammidge, J. A. Cairns Forsyth and H. A. H. Howard.
6. A Native Medical School in Uganda. E. N. Cook.

5. The Blood and Urine in Pancreatic Disease.—Cammidge and his associates summarize their clinical observations as follows: 1. The urine in disease of the pancreas contains an excess of dextrin, which can be measured by the iodine coefficient, and less accurately by the difference value of the urine. 2. The difference value of the blood in pancreatic disease varies directly with the iodine coefficient of the urine and is probably due to the same cause—namely, an abnormal dextrin content. 3. The difference value of the blood, and the iodine coefficient of the urine, are highest in the fasting state and gradually diminish after a meal for about three or four hours, returning to the fasting level after another three or four hours. 4. The difference value of the blood and the iodine coefficient of the urine vary inversely as the percentage of sugar in the blood after a meal. 5. The difference value of normal blood ranges from 0.002 per cent. to 0.008 per cent., and is not appreciably influenced by the ingestion of food. 6. The amylolytic ferment of the blood, and of the urine, is increased in disease of the pancreas proportional to the fasting difference of the blood and the iodine coefficient of the urine. 7. The amylolytic ferment of the blood and urine in pancreatic disease varies directly with the percentage of sugar in the blood after a meal, and inversely as the difference value of the blood and the iodine coefficient of the urine. Animal experiments confirm the conclusions arrived at on clinical grounds, and in addition show the following: (1) The rise in the difference value of the blood resulting from interference with the functions of the pancreas insufficient to produce frank hyperglycemia and glycosuria, diminishes as the volume of the gland is further reduced and the percentage of sugar in the blood and the excretion of sugar in the urine rise. (2) The hydrolyzable substance in the blood on which the difference value depends appears to be derived chiefly from the glycogen stores of the liver, and is an intermediate soluble product (dextrin) formed in the conversion of glycogen to sugar. (3) The liver contains an amylolytic ferment which passes into the blood and urine, and it is as a result of its activity that the glycogen of the liver is broken down. (4) The pancreas exerts a restraining influence on the glycolytic ferment of the liver, probably through its internal secretion. (5) Normally, the balance between the glycolytic ferment of the liver and the internal secretion of the pancreas is maintained in such a way as to keep the percentage of sugar, and the difference value of the blood, within well-defined limits; when this balance is interfered with abnormal relations result. (6) A relative increase in the pancreatic secretion causes a fall in the percentage of sugar and in the difference value of the blood. (7) A relative diminution in the secretion of the pancreas, with consequent greater liberty of action on the part of the glycolytic ferment of the liver, gives rise in the early stages to

an increased formation of the intermediate products of glycogen degradation without any change in the sugar, and in the later stages to an increasing sugar production with a proportional diminution in the intermediate products. (8) The appearance in the blood and urine of intermediate products of carbohydrate metabolism, as shown by the difference value of the blood and the iodine coefficient of the urine, indicates a prediabetic condition which, if allowed to progress unchecked, will be followed by hyperglycemia and glycosuria. (9) Incidentally it has been shown that a considerable proportion of a well-boiled starch is absorbed into the portal circulation in the form of dextrins and maltose, whereas an uncooked starch enters the portal blood chiefly as dextrose.

British Medical Journal.

August 21, 1920, ii, 3112.

1. Puerperal Sepsis: Prevention and Treatment. Victor Bonney.
2. The Surgical Treatment of Puerperal Sepsis. Beckwith Whitehouse.
3. Intravenous Protein Therapy in Puerperal Septicæmia. A. E. Gow.
4. Serums and Vaccines in the Treatment of Puerperal Infection. H. Leith Murray.
5. Demonstration on the Diastase Content of the Urine in Toxæmias of Pregnancy. R. L. Mackenzie Wallis.
6. The Diagnosis of Spinal Meningeal Tumor and Its Practical Importance. R. T. Williamson.
7. The Occurrence of Urticaria After Specific Fevers. E. Ward.
8. Skin Apposition Without Superficial Sutures. Frank Hathaway.

1. Puerperal Sepsis.—Victor Bonney, in this introductory paper of the discussion on puerperal sepsis, read before the Section of Obstetrics and Gynecology of the British Medical Association, said the solution of the problems of prevention and cure of septic infection of the puerperal uterus necessitates the correct answering of the following questions: 1. What is the original source of the organisms? 2. How do they get into the uterus? 3. What is their exact situation by the time they have produced symptoms of sepsis? Answering the first, he states that in nearly all severe cases of puerperal sepsis the streptococcus, either alone or in conjunction with *B. coli communis* is the predominant organism. The infection may be autogenous or heterogenous. The most obvious manner in which the organisms could obtain entrance into the uterus is that they should be carried directly there on hands and instruments. That this sometimes happens there can be no doubt, and it is especially dangerous when the introduction takes place after the expulsion of the placenta and membranes has left the uterine wall bare to direct infection. But in far the larger number of cases of puerperal sepsis no introduction of anything into the uterus has taken place, the most that could have happened being the implantation of organisms into the cervix or vagina. It is certain that organisms transplanted into or originally present in the vagina must in some way be transported into the uterus subsequent to the labor. Bonney refers here to the experiments of Bond, who showed that minute particles of indigo, carmine, or litmus placed in the cervix and upper vagina could be detected in the Fallopian tubes in about twenty hours, having been carried up, apparently, by an ascending current in the secretion from the wall of the uterus. Bond's work, he holds, offers a complete explanation of the facts that the symptoms in a large proportion of the cases of puerperal sepsis appear much later than they should do if the disease were due to direct implantation of organisms on the uterine wall during labor. Another possible route of infection is the transmission of organisms direct from the bowel to the uterus across the peritoneal cavity or to the vagina through the rectovaginal septum. The situation of the organisms by the time the symptoms of sepsis are produced is of the utmost importance in regard to curative treatment. He reiterates that as a rule puerperal sepsis is *not* associated with the retention of gross fragments of placental tissue in the uterus. He emphasizes the point that uterine sepsis, taking all cases into consideration, both those after labor and those after miscarriage, occurs quite as commonly with a completely as with an incompletely emptied organ. Were the organisms causing the symptoms commonly located in tissues easily removable from the uterus the problem of the curative treatment of the condition would be a simple one, but unfortunately this is not so. The organisms are situated *in* the uterine wall, almost from the beginning of the infection, and very shortly afterward attain, *via* the veins or lymphatics, to positions deep in, or beyond it. Of the various routes of infection, that along the veins draining the placental site is the commonest and most important, and since, as a rule, the placenta is situated in the upper segment, it is along the ovarian veins that the infection most commonly spreads. Puerperal sepsis is a variety of wound infection in the treatment of which both operative measures and the direct application of antiseptics have a very limited scope, and efforts to find some other way of efficiently attacking the organisms have been only partially if at all successful. Prevention is more to be relied on than cure. The finding of the substance, whatever its nature, that is the real antidote for puerperal sepsis is probably reserved for some laboratory worker of the future, but in the prevention of the disease every practitioner of obstetrics can take a hand.

American Journal of the Medical Sciences.

September, 1920, clx, 3.

1. The Blood-Sugar Tolerance Test as an Aid in the Diagnosis of Gastrointestinal Cancer. Julius Friedenwald and George H. Grove.
2. Certain Points in the Diagnosis and Treatment of Pulmonary Tuberculosis. Lawrason Brown.
3. Endothelial Leukocytes in the Urine Suggesting Typhoid Infection. O. H. Perry Pepper.
4. A Consideration of Certain Aspects for Protein Hypersensitiveness in Children. Kenneth D. Blackfan.
5. The Colon in Connection with Chronic Arthritis (Arthritis Deformans). Anthony Bassler.
6. Improvement in Graves' Disease Subsequent to Severe Focal Infection. Theodore L. Squier.
7. Glucose Tolerance Test in Chronic Vascular Hypertension. James P. O'Hare.
8. Some Observations on Chronic Arthritis. George Draper.
9. Interperitoneal Adhesions, Their Origin and Prevention. R. J. Behan.
10. The Present Status of Empyema. Abraham O. Wilensky.
11. Substernal Goiter, with Pressure Symptoms. B. K. Rachford.
12. Report of a Case Showing the Relation Between Occupation and a Certain Case of Broncial Asthma. Jacob Rosenbloom.
13. Experimental Chronic Suppurative Arthritis. J. W. McMeans.
14. Blood Cholesterol in Gastro-Enterological Cases. Truman G. Schnabel.
15. A Study of Hyperacidity. Martin E. Rehfuss and Philip Hawk.

6. Improvement in Graves' Disease Subsequent to Severe Focal Infection.—Theodore L. Squier presents the histories of two cases of hyperthyroidism in which complicating infections first caused marked increase in the severity of the thyroid symptoms later followed, after the acute infection had subsided, by striking improvement if not cure. He considers it not improbable that the improvement seen was due to actual loss of secretory tissue through postinfectious sclerosis of the gland.

8. Some Observations on Chronic Arthritis.—George Draper suggests that chronic arthritis represents a very profound constitutional disturbance in which forces analogous to those concerned in acromegaly and thyroid insufficiency are concerned. The family and personal history which arthritic patients give of hives, angioneurotic edema (bee sting effects) and asthma, and, in addition, the well-known feature of joint involvement seen in serum disease, all seem to indicate that there is a relationship between this whole group of phenomena and chronic arthritis.

Hygiea.

June 30, 1920, lxxxii, 12.

Blood Transfusion.—Odelberg in sketching the history of transfusion mentions one episode in which Harvey's discovery was long antedated, but nevertheless the latter is the step which must logically have preceded such a practice. Transfusion began properly with Blundell, an English obstetrician, who used human blood and obtained some successes. Defibrinated blood was next introduced and held the stage for many years. In 1859 Martin collected a list of obstetrical cases num-

bering 57, in 43 of which a good result had been obtained. In 1879 Eck first successfully sutured blood-vessels. The introduction of saline infusion retarded advances in blood transfusion until about 1900, when Crile and others revived the latter in its modern form. The author reproduces the technique of Jeanbrau and of Lewisohn and from the writings of Hunt, Jeanbrau, Sanford and others compiles six groups of indications as follows: primary anemia, secondary anemia, hemorrhage, acute toxic and septic conditions, leukemia and shock. Of the twenty-one references in the bibliography fourteen are from America and no less than four of the papers quoted appeared in the *Texas State Journal* during 1917-8, the contributors being Goar, Graves, Hunt and Starley. Other Americans quoted as Archibald, Pemberton, Sanford, Snyder, C. G. Watson, Robertson, Wilson, J. J. Watson, Rous and Primrose. These names are, of course, only a fraction of the total number of Americans prominent in transfusion since 1900, but they at least serve to show to what an extent the subject of transfusion belongs to the Western Hemisphere.

Journal de Médecine de Bordeaux.

June 25, 1920, xci, 12.

Small Doses of Ipecac in the Digestive Disorders of Bottle-Fed Babies. — Rousseau-Saint-Philippe brought this subject before the attention of the profession in 1913, but so far as he knows this drug has never been tested save in comparatively massive dosage. In testing the minute dose he was not influenced by the claims or theories of homeopathy, but by the small dosage visualized in serotherapy and in the use of metallic ferments. He sought both to obtain the action of the minute dose *per se* and of the minimum total dose by administration of small and repeated amounts of ipecac, choosing the latter in preference to emetine. The conclusions appended by the author to his elaborate article are as follows: artificial alimentation of infants is on the increase despite all efforts to increase breast feeding; bottle-fed babies are less vigorous and less resistant to disease than breast-fed, and from the very beginning they develop a form af dyspepsia which may be regarded as normal to the bottle-fed which may at any moment develop into a severe gastroenteritis; the conditions of physiological inferiority and bottle feeder's dyspepsia are the result of digestive insufficiency toward cow's milk, however closely this may be made to approximate breast milk, and lead to defective assimilation and nutrition, the exact cause of the shortcoming lying in the foreign protein nature of cow's milk; the quality of the digestion is shown by the differences in the stools as well as by the physical habit and the predisposition to disease. The drug ipecac is admirably calculated to antagonize this state of affairs by increasing the digestive secretions and by preventing putrefaction, one of its activities being to stimulate the biliary secretion. The author uses only the tincture, which he gives drop wise and increases with age. For the first three months one drop is given three times daily, and is then gradually increased, sometimes indeed to such a degree that a dose of seven or eight drops three times a day may occasionally be reached, although Saint-Philippe says that the child will usually thrive on a much smaller one.

Schweizerische medizinische Wochenschrift.

June 24, 1920, i, 26.

Therapy of Gonorrhea.—Bloch reminds the reader that forty years have elapsed since the discovery of the gonococcus, yet we have made far from satisfactory progress in the treatment of this affection. The literature of the subject of treatment is immense, but it is evident that the real reasons for failure of therapeutics in this field are not yet fully grasped. The author suggests that failure of the patient to cooperate with the physician is one main factor and that if the former played his part properly the number of cured cases would notably increase. The medical man is often to be blamed for injection-technique, which is put up to the patient, who in consequence may, instead of obtaining a good result, carry the infection more deeply into the organism. The expense of treatment is one of the worst drawbacks and the state should see to it that gonorrhea patients, if necessary, receive free treatment, while office hours should be such that the patients do not have to leave their occupation. The state should have the power to coerce those who do not seek to be cured. But the physician is often more to blame than the patient, because he does not keep abreast of progress or is not strict enough in handling his material. A distinction should be made between acute, uncomplicated cases and other types; there appears to be no reason why the former are not curable with a reasonable amount of pains and patience by the ordinary practitioner. These cases may be reached from without by injecting bactericidal remedies. The chronic or complicated case, on the contrary, may benefit by persistent systemic treatment of numerous sorts in addition to local treatment. The distinction between these "external" and "internal" types is not always marked, for the "external" cases often fail to yield to the injection treatment, and this may be due either to shortcomings of the injection technique used or to masked complications.

Le Progrès Médical.

June 26, 1920, xlviii, 26.

Etiology of Psoriasis.—Bory writes at great length on the various theories of the nature of psoriasis. He considers in succession the neurogenic factor, the nutritional or metabolic factor, the parasitic hypothesis, the deducibility of cause from successful therapeutics and finally the biologic and experimental aspects. Naturally all these viewpoints have backing. According to the test of local treatment the lesions might well be determined by parasites because they are mostly parasiticide ointments which are efficacious. Staphylococcus vaccines seem efficacious in certain cases, but it is easy to understand that no specific reaction is involved and other foreign proteins could doubtless exert the same power. The view that psoriasis is a tuberculide or, rather, paratuberculide opens up the possibility that from the very nature of psoriasis many factors might predispose to or determine the disease according to circumstances. From this viewpoint the tubercle bacillus or its toxins might be held responsible for certain cases of the disease. A symbiosis of Koch's bacillus and the staphylococcus has been accused. The author suppresses the curious fact emphasized by Sabouraud that in very many cases psoriasis is a disease of the "superhealthy," which may be said of very few affections, cancer being another. Cases are quoted of inoculated psoriasis, of conjugal cases, of familial and bunched cases, but all of these behaviors have been seen in cancer. The subject of psoriasis appears to be peculiarly sensitized to the action of some unknown principle and older authors used to cite the association of psoriasis with asthma in the same subject and same family. The author arrives at no conclusions and closes with a suggestion that the tuberculous theory should be tested further.

Disappearance of Ascites as a Consequence of Intraperitoneal Injections of Quabaine.—Cases of this sort have been reported in which it was taken for granted by the reader that the alkaloid had been injected intravenously—in the absence of any mention of the route used. This was known to have been true of a case reported by Dufour and Semelaigne in 1919, and this case led Damade of Bordeaux to test the intravenous route in a patient with cirrhotic ascites. Half a milligramme of the drug having proved inert, the patient was tapped and the injection repeated without positive result, the fluid at once collecting anew. Four intraperitoneal injections were now made in succession and without further tapping. The positive result was shown in increased diuresis with corresponding absorption of the fluid. The interval between injections was three or four days. Since the last injection the condition has remained at a standstill, diuresis being normal from day to day. Damade explains the result by a specific local action of the alkaloid on the peritoneum. —*Gazette hebdômadaire des sciences médicales de Bordeaux.*

Book Reviews.

DIÄTETIK DER MAGEN UND DARMKRANKHEITEN. Von Prof. Dr. T. BOAS, Nebst einen Abhunz; Diätetik vor und nach Operationen am Magen-Darmkanal, von Prof. Dr. G. KELLING. George Thieme. Leipzig: 1920.

THIS new book of Professor Boas is very timely. The dietary régime forming the most important part of the treatment of digestive ailments is its subject. Similar to some American clinicians Boas lays stress on sufficient nutrition and generally makes use of the common ordinary foods, which, however, in some instances require special preparation. The artificial foods and predigested nutritive materials play a very subordinate rôle. In the treatment of chronic obstinate constipation a lacto-vegetarian diet with exclusion of animal foods (meat or fish) is recommended. As soon as there is improvement noticeable a small amount of white meat (fish or chicken) is added once or twice weekly at first, later on oftener.

The book is written in the form of lectures and will be of great aid to the medical profession in assisting the dietary management of the dyspeptics.

The supplement by Kelling, dealing with the dietary requirements after operation on the gastroenteric tract contains a number of useful suggestions whereby the patient may be made more comfortable and his recovery may be accelerated.

L'ANESTHESIE LOCALE ET RÉGIONALE EN OTO-RHINO-LARYNGOLOGIE. Par les docteurs GEORGES CANUYT et J. ROZIER. Préface du Professeur E. J. MOURE. Paris: Gaston Doin, 1920.

THIS volume of nearly 200 pages and 117 illustrations comprises nine chapters devoted to generalities of anesthesia, the nose and nasal fossæ, larynx, ear, and appendages, palate—hard and soft-tonsils, tongue, thyroid gland, lips, and lower jaw. Hence it should be of equal value to the operating laryngo-rhinologist, the general surgeon, and the modern oral surgeon or operating stomatologist. But for the operating otologist with his mastoid and cranial cases it does not make the same appeal, this branch of activity coming under cranial surgery. One is reminded that there should be comparison volumes to cover other aspects of craniofacial surgery, with especial reference to surgical affections originating in the eye and ear. The book is an admirable effort, however, and is doubtless in part inspired by Professor Moure, the dean of laryngologists and almost the sole survivor among the original pioneers.

HUMAN PARASITOLOGY, with notes on Bacteriology, Mycology, Laboratory Diagnosis, Hematology and Serology, by DAMASO RIVAS, B.S.Biol., M.S., M.D., Ph.D., Assistant Professor of Parasitology and Assistant Director of the Course in Tropical Medicine, and of the Laboratory of Comparative Pathology and Tropical Medicine in the University of Pennsylvania; Pathologist to the Department of Health of Pennsylvania; Serologist to Friends Hospital, Frankford; Assistant Pathologist to the Philadelphia General Hospital, Ex-Research Fellow in Biology and Ex-Scott Fellow in Hygiene, University of Pennsylvania; Formerly Assistant to the Koch Institute, Berlin, and Coworker in the Pasteur Institute, Lille; Member of the Malaria and Tropical Diseases Commission for the Sanitation of Brioni, Istrie, and East Shores of the Adriatic, 1900-1902. Illustrated. Philadelphia and London: W. B. Saunders Company, 1920.

IT is always a pleasure to welcome a new book when it is worth while, and this new book by Rivas is decidedly worth while. It is the first work on this subject which has appeared in English for a considerable time during which much progress has been made in the study of many of the protozoan parasites especially. Except for a brief mention of some of the cultural methods and characteristics, a study of bacteria is not included, the work dealing entirely with animal parasites—protozoa and metazoa. The author deals mainly with the anatomy and mode of reproduction, the symptomatology and treatment receiving comparatively scant attention, although being by no means ignored. His descriptions are very clear and are rendered more so by the excellent illustrations. The subject has grown to such size in the last decade or two that the author has had to be very concise, in some cases more so than the reader finds satisfactory; this is because, as Dr. Rivas intimates in his preface, he has been constrained to keep the work within the limits of a textbook rather than let it grow to encylopedic size.

We can recommend the book to all who are interested in this fascinating and eminently practical branch of medicine and biology.

KLINISKE LINSESTUDIER. By HAROLD G. A. GJESSING. Drammen, 1920.

THIS brochure comprises 355 pages of Norwegian text and is a supplement to the May 20 number of the *Norsk Magazin for Laegevidenskaben.* The work consists very largely of tabulations of cases. The Gullstrand lamp with which the studies were made is described. There is a brief section on the normal crystalline lens. Cataractous affections are considered from numerous viewpoints and the author inserts his personal records which occupy over half the book. Other aspects of the study of the lens such as the earliest appearance of cataract, localization of cataract, graphics, tonometry, etc., complete the volume. There is a brief summary of the contents of the book with a bibliography of over 400 references.

CARE AND FEEDING OF INFANTS AND CHILDREN. A Text-book for Trained Nurses. By WALTER REEVE RAMSEY, M.D., Associate Professor of Diseases of Children, University of Minnesota; Associate Visiting Physician to the University Hospital; Visiting Physician to St. Paul City and County Hospital; Medical Director St. Paul Baby Welfare Association, etc. Including Suggestions on Nursing by MARGARET B. LETTICE, Supervising Nurse of the Baby Welfare Association, St. Paul, Minn. 123 illustrations. Second edition revised. Philadelphia and London: J. B. Lippincott Company, 1920.

THE second edition of this book has just appeared in which child welfare forms an important part. The scope of the book remains the same as the first edition. It is profusely illustrated, having 123 illustrations. Several of these could be omitted, as for example No. 119 which is the steam tent, and now discarded by most pediatrists. Also the expression "phthisical" is not seen in modern literature.

There are many practical points, and the book throughout is very instructive. The chapter on the Brain and Central Nervous System is exceptionally good. The statement on page 249 that "clothing can convey poison for years and reproduce the disease 'scarlet fever" can be challenged.

The book is well printed, well bound, and has an exceptionally good index.

AN INDEX OF SYMPTOMS, with Diagnostic Methods. By RALPH WINNINGTON LIFTWICH, M.D., Late Assistant Physician to the East London Children's Hospital; Author of "Tabular Diagnosis," etc. Seventh Edition Revised by H. N. Warner Collins, B.Sc., M.R.C.S., L.R.C.P., Radiographer to the Putney and the Chiswick Hospitals; Deputy Radiographer to the Evelina Hospital; Late Resident Medical Officer, Chester Bequest Hospital, S. W.; Demonstrator in Physiology to the University of London. New York: Wm. Wood & Company, 1920.

THIS book, though not apt to strike one at first glance as very important, is really one that once tried will ever thereafter be found indispensable to the man called upon to diagnose a puzzling case. Its conception and execution stamp the author, whose untimely death is to be deeply regretted, as a true genius, and its survival through six editions affords evidence that its worth is appreciated. The book conducts the physician along the same path he must follow when in the presence of his patient, namely, from the symptoms to the disease, and in many a puzzling case it will give the clew that will lead the examiner to a solution of the diagnostic problem before him.

The final preparation of this seventh edition was entrusted to Dr. Collins, who has brought the work well up to date. It is a book that cannot fail to be of assistance to the practitioner—old as well as young.

Society Reports.

AMERICAN THERAPEUTIC SOCIETY.

Twenty-first Annual Meeting, Held in Philadelphia, May 7 and 8, 1920.

Second Session—Friday Afternoon, May 7.

DR. THOMAS F. REILLY, VICE-PRESIDENT, IN THE CHAIR.

Report of 1,000 Heart Patients Subjected to Complete Examination with Important Therapeutic Results.—Dr. LOUIS F. BISHOP of New York City read this paper, showing a number of electrocardiographic tracings. (See page 508.) In commenting on the electrocardiograms he said that the senile heart reacted well to continuous use of small doses of digitalis, though in this type the electrocardiograph sometimes showed interruption of the conductivity in one of the branches of the auriculoventricular bundle. In all cases examined, the Wassermann test was made, blood and urine analysis were done and polygraphic tracings made. The *x*-ray tube was used at a point 6 feet away from the center of the level of the third rib. In cases of heart block the tracing showed the auricle and ventricle beating independently. In premature contraction the auricle or the ventricle contracted out of place. In paroxysmal tachycardia there was a very rapid rate. In auricular flutter the auricle was beating 200 to the minute. In auricular fibrillation the ventricle beat was irregular and rapid. In sinus arrhythmia an irregular spacing of the beats was shown. When analyzing the true nature of the heart beat it was found to consist of three effects. First the auricle contracted, then the ventricle contracted, but the ventricle could not move the fluid suddenly; the actual ventricular work was the third phase and was represented by the T-wave in the electrocardiograph.

Endocrinology of the Heart.—Dr. THOMAS E. SATTERTHWAITE of New York City presented this communication. (See page 510).

The Treatment of Cardiac Arrhythmia.—Dr. JAMES M. ANDERS of Philadelphia read this paper. (See page 512).

Dr. ROSS V. PATTERSON of Philadelphia said that he could find nothing in these papers with which he was not in entire agreement. He could not speak from as large an experience as Dr. Bishop with his 1000 cases. They had maintained at the Jefferson Hospital a heart clinic for 10 years and had installed the electrocardiograph three years ago. This was used in the wards and private cases. The value of electrocardiographic methods needed careful estimation. There was a tendency to exaggerate the value of every new method and to give it undue importance, while discarding older methods, but there was no doubt that the electrocardiograph had great value in positive findings. In negative findings it often failed. Its use often gave a clue as to the prognosis and helped in the diagnosis between myocardial and nerve lesions. Its use made the work more exact in disentangling conditions which otherwise one would not have been able to identify. Arrhythmia was merely a symptom, and symptoms indicated lesions. The lesions were important as they affected the ability of the heart to perform its work. To treat arrhythmia as such was a great mistake. Dr. Anders had pointed out the underlying factors of this condition. The profession should deplore the excessive use and misuse of digitalis. Wrongly used it did more harm than good, wonderful as it was when properly used. Electrocardiography offered a wide field for investigation. The shortening of the period of conduction of the heart in hyperthyroidism was an example. Studies had been made of this but without satisfactory result. In hypothyroidism there was a tendency to sinus arrhythmia and extrasystoles. A definite relation was shown to exist between the thyroid, adrenal, and hypophyseal secretions.

Dr. H. C. GORDINIER of Troy, N. Y., asked in regard to the use of digitalis whether the massive doses as advised by Eggleston had been tried in the series of cases here presented; he also asked whether the case which presented ventricular fibrillation was one of angina pectoris or possibly thrombosis of a branch of a coronary artery. Ventricular fibrillation was sometimes suddenly induced by the intravenous injection of strophanthin in hearts already under the influence of digitalis. What percentage of the cases here presented had for their etiology syphilis? Extrasystolic arrhythmia, it seemed to him, might be divided from the viewpoint of prognosis into extrasystoles with or without continuous clinical alternation, preceding and following the ectopic beats. Extrasystoles without clinical alternation were of no serious import, whereas those always associated with alternation were of grave prognosis, indicating severe myocardial damage.

Dr. G. KIRK of Troy, N. Y., said he would emphasize the necessity of rest in the treatment of cardiac disease and of arrhythmias with failing heart muscles. Heart lesions were very responsive to rest treatment. Putting the patient at rest overcame heart failure, but this must be for a long period of time, not merely to overcome the acute tension, but for four or five months, if necessary, to give the heart muscle real benefit from the rest.

Dr. A. E. ROUSSEL said that when he was on the medical advisory board he had quite a few cases of tachycardia that had probably been induced by the use of thyroid extract. In two cases in the hospital the patients were found taking thyroid extract. Quite a number of cases of persistent tachycardia might be due to increase of secretion from this gland. In conjunction with Dr. Pfahler he found that the intensive use of the *x*-ray to the gland in Graves' disease had produced cures by causing partial atrophy, andthus modifying the secretion of the gland. Another point of importance was that of ocular pressure. Ashner noted that in most normal individuals pressure on the eyeballs caused a slowing of the pulse rate up to 10 beats to the minute by vagus inhibition. This cardiac inhibitory reflex might be considered as the bilateral group of cells in the medulla at the level of the nuclei of origin of the vagi and when the tonic action constantly excited through this center was increased, cardiac inhibition resulted. The speaker said he had been much interested in this subject and for the past several years he had applied this method in the examination of all his heart cases and found that even in those cases where no apparent reduction in frequency was effected, and in a few cases where it was increased, in a majority of instances this pressure exercised for about two minutes would not only accentuate existing organic murmurs, sometimes to a marked degree, but would also bring out a previously unsuspected murmur. On the other hand, functional murmurs would seem to diminish in intensity or entirely disappear. This test was, Dr. Roussel believed, original, was easily made, and merited recognition.

Dr. E. E. CORNWALL of Brooklyn cited a case of paroxysmal tachycardia which showed an interesting feature. The patient, a woman of about fifty-five, who had a mitral leak of long standing which was well compensated, came to his office in the midst of an attack of paroxysmal tachycardia. The attack was arrested by the patient holding her breath for a few seconds on a sharp order, and then suddenly releasing it. The finger on the pulse at the time of the cessation of the attack was able to appreciate the fact that the pulse rate did not resume the normal immediately, but only after an interval of a few seconds, during which the pulse, while rapidly diminishing in rate, was absolutely irregular.

Dr. THOMAS F. REILLY of New York said that a drug sometimes useful in the treatment of symptoms was the fluid extract of cratægus. It was a safe drug and acted efficiently. Another point was that in severe tachycardia, after two or three attacks, this would become worse. It might be a sign of approaching dissolution. Cyanosis was present. Large doses of codeine or morphine should be prescribed in these cases.

Dr. BISHOP, in closing, said that he enjoyed hearing Dr. Satterthwaite's paper. He meant to try his experience with pituitary, it was very suggestive, and the extract might activate other remedies. Dr. Anders' paper was very complete and covered many points so that it was almost impossible to discuss it entirely. One point of therapeutic value had been learned from a country physician who had a patient, a very old gentleman with complete heart block attacks and syncope.

He was put on continuous small doses of chloral and he got along all right, with 15 grains daily. A premature contraction was often diagnostic of irritable ventricle, which was contracting out of place. The optimal ventricular rate in fibrillation was 90 to the minute. Many physicians pushed digitalis too far. With a pulse of 90 these patients got along all right. Many patients were killed because the physician did not reduce the digitalis. It was hard to know what to compare tachycardia with, except asthma. There were never two asthma cases alike. Attacks could be stopped with all kinds of queer things. Each case was a law unto itself. Alternation of the pulse was due to failure of the peripheral control of the circulation. The electrocardiograph did not show it but the polygraph did. He had never heard a paper which treated the subject as well as did that of Dr. Anders.

Dr. SATTERTHWAITE, in closing, said that he would refer to the statement of Dr. Bishop as to continuous digitalis medication. He thought that digitalis might be continued for years. One might reach the point where one did not need to give it any more. It might take a long time, but digitalis contracted the heart, which got smaller and smaller under its use. Dr. Cornwall had spoken of strophanthus. One could use it for very quick action while one was waiting. In reference to the electrocardiograph and the polygraph, he thought Dr. Patterson rather overestimated the results. The electrocardiograph gave one the actual condition, but the polygraph did not. If one had to depend upon one only, one would use the polygraph, but it was better to have both. The *x*-ray orthogram was very important. Prognosis was a difficult question, it depended upon factors over which the physician had no control whatever. The patient might go away and take up smoking or get indigestion with dilatation of the stomach, and there were many other dangers to be considered. One point might be mentioned in regard to cardiac disease in children. The treatment was by rest, and they should be kept in bed for months, several months, with little medication, and very good results would be obtained. In anginal conditions radiant light applied to the chest stopped the pain and the patient felt better.

Dr. J. M. ANDERS, in closing, said that he had been interested in Dr. Satterthwaite's remarks in regard to exophthalmic goiter associated with hypothyroidism. One sometimes lost sight of this fact to which he had referred in the Osler Anniversary Volume. In such cases thyroid extract was of great service, but one must be certain by studying the basal metabolic rate that hypothyroidism was present. He had seen cases of hyperthyroidism in which the *x*-ray diminished the thyroid secretion and also diminished the heart rate, even in cases with massive enlargement of the thyroid gland. He said his method of giving digitalis was by massive doses. He got his best results this way and stopped when the pulse dropped to 90 or toxic symptoms developed. For cardiac weakness following influenza there was nothing so good as physical and mental rest, if one could induce the patient to take it. Prolonged rest was more effective than drugs. He prescribed cardiac tonics such as arsenic, nux vomica, and iron, rather than stimulants. He put decompensated patients to bed and restricted the diet to fluids for a time.

Dr. REILLY asked Dr. Anders if he had ever seen fatal results from the use of digitalis.

Dr. ANDERS said that in two instances at least digitalis had apparently been the cause of death, but in these cases the disease was far advanced.

(To be continued.)

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held April 15, 1920.

THE PRESIDENT, DR. GEORGE DAVID STEWART, IN THE CHAIR.

THE program of the evening was arranged in cooperation with the Section on Ophthalmology.

The Injurious Effects on the Eye of the Various Toxemias.—Dr. W. HOLLAND WILMER of Washington, D. C., delivered this address by invitation. He stated that in an exhaustive symposium before the Southern Medical Association, in 1917, the subject of oral sepsis was discussed in its relation to the digestive apparatus, the anemias, thyroid deficiency, arthritis, the cardiovascular system, and the nervous system, but the relation of the eye to oral sepsis was not set forth in this symposium, although from the standpoint of economics and human happiness the eye should be considered one of the most important organs in such discussions. In addition the ocular tissues presented great advantages for observing pathological changes during inflammatory processes. According to the present conception of focal infections, the bacteria from a distant focus, circulating in the blood or lymph canal, found a location that suited their taste and there they built a new home. Whether the new habitat was in the gallbladder, the kidneys, articulations, the endocrines, etc., or in the eye, depended upon different circumstances, the bacillary strain, slight injury, a sensitizing effect of some secondary focus, cold, oxygen tension, or other factors with which we were not familiar. It was also conceivable that the toxins—byproducts of bacterial life—might also set up inflammatory conditions in widely separate organs. In his "Ocular Diseases Resulting from Dental Lesions," Dr. Arthur D. Beck said in regard to eye inflammations, "The latter are practically always due to an infection involving the peridental membrane, either in the form of an alveolar abscess at the root apex, or a pus pocket alongside the root. As probably not less than 58 per cent. of all persons having teeth present one of these conditions the mouth is probably the most important offender in cases of secondary eye lesions." As the age of the patient advanced the amount of crown and bridge work and the number of devitalized teeth usually increased, so that the mouth as a source of sepsis had to be examined with the greater suspicion. The deeper root infections could only be revealed by the *x*-ray. Oral sepsis could be held directly responsible for iritis, disseminated chorioretinitis resembling retinitis pigmentosa, and especially large serous exudations in the choroid, simulating, or actually causing, detached retina. In the light of our new views it was not at all surprising that a relatively large proportion of eye lesions were now found to be of a tuberculous nature. Tuberculosis was as impartial as oral sepsis; there was no tissue of the eye not influenced by the tuberculous process. But, in the writer's experience, it showed a special predilection for the cornea, the retina, and the uveal tract. The retina afforded the best opportunity for studying with the opthalmoscope the various pathological changes. Here one could also detect slight focal reactions to the tests.

The essayist discussed a type of retinal inflammation, usually of tuberculous origin, that was of deep interest and great economic as well as human significance, namely, recurrent hemorrhages of the retina in young adults, chiefly males. He reported an illustrative case in detail. This case, he said, was interesting because of the unusual good health of the patient, the long continuance of the trouble, the negative reactions to several von Pirquet tests, the positive reaction to the subcutaneous injection of tuberculin, and the final improvement as the result of the therapeutic administration of tuberculin. Recurrent retinal hemorrhages, however, were not all of tuberculous origin. He had seen the condition in a patient suffering from constipation and a bad pyorrhea alveolaris. Upon the removal of the source of infection, within seven months, the vitreous entirely cleared up, leaving normal vision and there had been no return of the hemorrhages. Another type of toxemia discussed was that which could follow antityphoid inoculations. A careful study of this type of toxemia was of great importance owing to the far-reaching economic and medical values of the inoculations themselves, and also because it was not recognized generally that there was a possibility that affections of the eye might occur after the inoculations. Several such cases were reported in the literature, to which the essayist added one coming under his personal observation. It was difficult to explain why this immunizing treatment was followed by eye lesions in some cases and not in others. However, one might conceive that the occurrence was explained by the varying age of the solution, the general lowered resistance of the

subject at the time, and the sensitization of the eye tissues by some preexisting toxemia. In the case reported a long standing sinusitis furnished the sensitizing medium. In reviewing the literature of the toxemias in the light of his own experience, Dr. Wilmer said there were some facts that stood out with special prominence. Dr. Barker's advice to the internist was equally valuable for the opthalmologist in his search for the cause of some of the obscure eye infections. Dr. Barker said: "In looking for focal infections I think the practitioner will be helped if he remember that most often in children the primary focus is in the tonsils or adenoids, and that in older people it is more often in the teeth, paranasal sinuses, or gallbladder." However, the source of infection was often a mixed one, such as a combination of teeth and tonsils, tuberculosis with cholecystitis, etc. Certain portions of the intestinal tract, with its abundance of lymphoid tissue, served as an important source of toxins. Whether this was primary or secondary to sepsis in the mouth or throat, it must be investigated in every case. No part of the eye was immune from the possibility of damage from some toxic process in a different part of the body. It was the writer's conviction that improved laboratory methods would show that the relationship between lenticular opacities (even in older people) and some focal infections was a closer one than was now believed to exist. Pathological conditions of organs of internal secretion, though secondary to some distant source of toxemia, had an important bearing upon some types of inflammation of the uveal tract. In some cases of retinal hemorrhage in people over fifty years of age, some focus of infection, as the teeth or tonsils, gave an ophthalmoscopic picture resembling an arteriosclerotic process. But the hemorrhage and white degenerative plaques cleared up remarkably after the complete removal of the general arterial hypertension. It was very necessary for the ophthalmologist to be able to interpret in a general way the *x*-ray findings in regard to the teeth so that he might cooperate with the dental surgeon by advising the best method of procedure in dealing with certain types of oral sepsis. For example, when there was an apical abscess at the root of a surviving molar that was being used as a pivot for bridge work, the ophthalmologist must be able to decide, not only that the eye lesion was sufficiently serious, but that the picture was sufficiently clear cut to warrant the sacrificing of that important tooth. It was well to remember that root resection could be employed in apical abscesses in the eight upper central and six lower central teeth. In adults the only reliable test for ocular tuberculosis was the subcutaneous injection of tuberculin, preferably old tuberculin. The temperature should be taken every two hours for two days previous and also an *x*-ray of the lungs in all cases. It was the part of wisdom to make the first injection small. This was particularly true of acute lesions involving the retina or choroid. The necessity of giving very small curative doses at the start was emphasized by all ophthalmologists of experience. In most cases therapeutic injections of tuberculin were very efficacious when accompanied by the proper régime and hygiene. In typhoid inoculations in civil practice it was not wise to give the inoculations as long as there was any evidence of the existence of any focal infection. A clinical fact of interest was that often nonsyphilitic lesions of the uveal tract were favorably influenced by antisyphilitic treatment. Also long protracted lesions were helped by the administration of the extract of certain glandular organs. In some of the writer's cases with oral sepsis there was increase in the protein content of the spinal fluid without other detectable cause for it. This suggested the possibility that toxins might enter the nervous system either by way of the lymphatics or through the blood stream. There were certain principles of therapeutics that assisted in the rehabilitation of injured tissues; eradication of all toxic sources and stimulation of nature's method by bringing an increased number of leucocytes to the zone of activity. This might be accomplished by hot applications, and at certain stages of the inflammation dionin and subconjunctival injections of normal salt solution. It was obvious that nearly all involvement of the anterior portion of the uveal tract would require the local use of atropine. In case of retinal hemorrhage accompanied by long coagulation time the use of lime salts was indicated. In all toxemias the gastrointestinal tract should receive attention both in regard to diet and therapeutics; it was important that these measures should be applied while the source of the toxin was under investigation.

Dr. NELLIS B. FOSTER said that Dr. Wilmer had touched upon a number of questions that were not only interesting to the ophthalmologist, but equally interesting to the internist. Some of the questions which Dr. Wilmer had been forced to pass over rather cursorily were of very profound significance, and in fact went to the roots of questions of pathology. This question of focal infection was one that was very much to the front at the present time, and was one in which they were all primarily concerned. Dr. Foster then called attention to certain points by way of caution in deductions based on evidence that at first sight seemed quite conclusive. All knew how frequent focal infections were. Beyond a certain period of life it was doubtful if any of us escaped and so we must postulate a second factor, namely, individual predisposition, since some individuals maintained robust health in spite of these known foci. Dr. Foster said he did not wish to convey the impression that the expression predisposition was used in a scientific way at all. His meaning, he said, was best brought out by Dr. Wilmer's remark about antityphoid inoculation in respect to the eye. It did not require any stretch of imagination to think that in certain individuals antityphoid vaccination might give rise to certain demonstrable lesions in the eye. As was known, the great majority of persons inoculated with antityphoid vaccine showed only slight and transitory symptoms, a little fever, malaise and slight muscular stiffness. But there was a small minority in which quite a definite train of graver symptoms developed. To one of these types he wished to call attention because so far as he knew only a few cases had been seen, and he himself had seen a number. These were cases that showed a type of reaction that might be called purpuric. The manifestations in these individuals were first a purpuric rash such as one saw typically in cerebrospinal meningitis. The rash appeared twelve hours after inoculation, and was associated with fever and might be associated with hemorrhages. In some cases there were only a few hemorrhagic spots on the skin, along with hemorrhage from the kidneys or intestines and epistaxis. If hemorrhage occurred in the skin, kidneys, or intestines, it stood to reason that it might occur in the central nervous system, and he had seen one case in which it did occur, causing a transverse myelitis and a number with meningismus. We had here again the same factor to which he had called attention, and which must be constantly remembered, namely, that there were exceptional individuals with unusual predispositions. These cases of atypical reaction, Dr. Foster said, he had seen in the army, and they were all apparently healthy individuals; he had examined them and found no evidence of disease. This brought him to the second point he wished to mention, which was that these hemorrhages in the retina or elsewhere in the body were due either to changes in the blood vessels or changes in the blood. We knew at the present time no other cause for hemorrhages, except changes in the endothelium of the arteries and changes in the blood itself, for example, in infectious diseases there was a proneness to embolism or thrombosis, as well as to hemorrhages. These hemorrhages that Dr. Wilmer mentioned as occurring in the ages of young men could be explained in no other way than that just offered. Cerebral hemorrhages were not at all a rare thing, even in children, where there could not be demonstrated any such disease as syphilis, which was thought of as the etiological factor in degeneration of the vascular system. It was thought such hemorrhages were explained by the effect on the blood vessels of past infectious disease, perhaps a trivial disease of childhood. If, as sometimes happened, these cerebral hemorrhages were so severe as to cause death it seemed not at all an incorrct deduction that they might occur in the small vessels of the eye because the eye is in fact a projection of the central nervous system. One other point which Dr. Foster discussed was in regard to the treatment of uveitis with thyroid. He said he

had had occasion to look into that subject. A good many ophthalmologists seemed to believe that many disturbances of the eye were of endocrine origin and thyroid extract was recognized as the one mode of approach in the treatment of uveitis. He had been somewhat puzzled over that fact and thought that the supposed benefit of that treatment was due to other causes than that suggested. Uveitis was a disease that progressed in waves, and the period of improvement might conceivably be coincident with the administration of thyroid extract. Another reason might be that small doses of thyroid were stimulating and brought about the same improvement that might be brought about by a change in climate, stimulating the appetite, increasing body weight, and rejuvenating in the larger sense some dormant functions, so that the improvement of uveitis which occurred in individuals who were subnormal in health could be explained on those grounds. While improvement in uveitis might occur under the administration of small doses of thyroid it was inconceivable that large continued doses of thyroid extract should cure the disease. The assumption of a relationship of some other obscure diseases of the eye to other endocrine disturbances so-called seemed to him simply a mask for our ignorance. He would like to know what Dr. Wilmer thought about it.

Dr. WARFIELD T. LONGCOPE said he thought they had all been greatly interested in Dr. Wilmer's presentation. Some of the things that Dr. Wilmer had said were to a certain extent new to him. He had been particularly struck with the reactions that occurred in individuals who received antityphoid inoculations. The whole problem of disease in organs distant from the focus of infection was receiving such great attention that almost everybody knew something of it, but there was still much that we did not know about it. It was quite true that most individuals in the course of their lives had focal infections which they carried for many years, and perhaps a large proportion of these individuals suffered no discoverable effect from the focal infection, but a number did, and there was evidence from day to day that these infections were responsible for lesions in distant organs, as the joints, the kidney, the eye, etc., and hence we must assume that it was true that focal infections were a latent source of danger to a certain proportion of individuals who carried them. It was therefore good prophylaxis to remove as far as possible the foci of infection when they occurred, for where they were discovered they did no good and they might do harm. Besides the cases of definite infection there were some people with an indefinite condition; they merely did not have good health. They might be slightly anemic, might suffer a slight loss of weight and might not be as active as ordinarily, but nothing definite could be found. If, however, one analyzed these symptoms they might be found to be due to chronic infection or even to a mild tuberculosis. The removal of the teeth and any apical abscesses might clear up the symptoms due to the infection, and, again it might not. Even if several foci of infection were removed one could not say confidently in every instance, or even in the majority of instances, that the correct one had been removed. Perhaps in the future we might gain the knowledge which would enable us to locate and remove the exact focus but today it was impossible.

Dr. ROBERT G. REESE said they had all seen miraculous recoveries, especially in tuberculous cases, and he had hoped that Dr. Wilmer would have mentioned some of his failures, as his own had been so numerous. The relation between toxemias and diseases of the eye was a complex one, and unfortunately the clinical picture was by no means characteristic. We were apt on account of our wonderful successes to forget that there were other etiological factors in the diseases of the eyes and adnexa, as was shown by the case of a young woman who had had her tonsils enucleated, a few teeth extracted, and the intestinal tract vigorously treated. She presented the typical picture described by the older writers as "lippitudo", that was chronic blepharo conjunctivitis, madarosis, and hypertrophy of the tarsal conjunctivæ. By digital expression of the meibomian concretions, the application of a two per cent. nitrate of silver solution, and the instillation of one-half per cent. nizin, with massage with an antiseptic salve, she was making a fair recovery. He believed that all diseases of the uveal tract were either of septic or toxic origin, but the successful elimination of these agents was very perplexing. He then cited in detail the case of a woman who had had uveitis for eight years, in whom removal of the teeth and tonsils, tuberculin injections, antiluetic treatment and an iridectomy had failed to effect a cure. He reviewed the various laboratory reports and the report of the roentgenologist to show how complicated the problem of locating the source of infection might be, and how ineffective all methods of treatment sometimes were.

Dr. GEORGE H. BELL said he had enjoyed very much indeed Dr. Wilmer's paper and the message he brought in regard to the effects of toxemia on the eye. The paper was most valuable, for Dr. Wilmer's experience had been very extensive, as he had been alive to the situation. Toxemia from food intoxication, bad teeth and tonsils was the most important subject before the medical profession today. Dr. Bell recalled that before the meeting of the American Medical Association last June he had made the statement that a dirty mouth was one of the greatest menaces of the human race. The late Dr. Osler said recently that bad teeth were causing more ill health and misery than strong drink. This subject was by no means new to all of them. From time to time during the past ten years, he had called the attention of the profession to the fact that modern dentistry was producing more disease than any other cause. His first paper on this subject was read here before the Academy in 1910. As to the causes of toxemia and its effects on the eye, if we excluded syphilis and gonorrhea, he believed that all the eye conditions that we saw, were caused directly or indirectly by focal infections, and the three most potent ones were bad teeth and tonsils and food intoxication, all of which could produce a general toxemia, which might have a local manifestation in the eye, in the form of uveitis, choroiditis, iritis, episcleritis, optic neuritis and keratitis. Dr. J. Herbert Parsons, in 1908, said in his pathology on the eye, that oral sepsis was an undoubted cause of irido-cyclitis, owing to the absorption of toxins into the circulation. Dr. Bell said he recognized that there were a lot of things that we could not prove in regard to the doctrine of focal infections and toxemia. But when he had case after case of iritis, choroiditis, episcleritis, etc., get well after removing the foci of infection; then in the absence of positive proof the process of elimination was good enough for him. There was one case which Dr. Bell spoke of, a case of bilateral papilloedema with nine diopters of swelling of the nerve head, in a man 34 years of age, with a blood pressure of 200. The neurologist who saw him in consultation thought that in all probability the patient had a tumor of the brain. On clearing up his focus of infection and his profound toxemia this man recovered a vision of 20-50 O. U. His blood pressure fell to 140, and he had returned to work. He had shown his patient here at the Academy two years ago. He believed that an endogenous septic endophthalmitis might occur in any eye at any time, whenever there was present in the body a focus of infection from which toxins or bacteria could escape into the circulation. Why the optic nerve should be affected in some cases of toxemia, the uvea in other cases, the cornea in some, and the vitreous in others, Dr. Bell said he could not state, nor was he able to say how it was brought about. We must all admit, however, that toxemia might result from chemical changes in the intestinal contents and that the absorption of bacteria and their toxins did take place, and that the blood stream was the carrier of the infection.

Dr. JAMES O'DWYER said he wished Dr. Wilmer had given them some practical points to guide the ophthalmologist. He thought the diagnosis of tuberculosis could be safely left to the clinician. He did not use the von Pirquet test but preferred the intradermal test with old tuberculin. He felt that the von Pirquet test was not reliable. What was true of the diagnosis of tuberculosis was also true of syphilis. A point of importance was that in all focal infections of the eye,

whether from the teeth or the tonsils, there was always pus under pressure. When the pus was under pressure the bacterial toxins were forced out into the system. A focus of infection in the teeth alone never caused a focal infection unless there was an apical abscess with pus under pressure. The bacterial toxins when the pus was under pressure were rapidly absorbed into the system and produced sensitization. He believed the eye or some locality where the blood changed to lymph was a point of special selectivity for the lesion. He thought the filtrate passed on at such a point and the proteins were retained and that led to proteolysis. Again, one found that it was not the soft mushy tonsils that became infected but the small sclerotic ones in which the pus was held under pressure. He had tried to make studies of the spinal fluid but had found no basis on which to work because in the presence of a foreign protein even a normal spinal fluid changed somewhat. A point brought out by Dr. Knapp was that the toxemia of acute infection, such as tonsilitis, might be followed by albuminuria, due to disturbance in the secretion and retention of toxic products, and he had known instances in which a focal infection in both eyes was associated with the typical picture of nephritis. He had also seen this in measles, chickenpox, and typhoid fever.

Dr. WALTER B. JAMES said that Dr. Wilmer's delightful paper presenting this timely subject in so clear a way had done a service to the whole profession of New York, not only to those practising in the field of ophthalmology but to everybody charged with the responsibility for the care of the sick no matter what part of the body might be at fault. Whatever specialty we might be practising we had come to realize that focal infections, and indeed the other intoxications, had a far reaching significance. While the expectation of human life had increased very greatly during recent years, and entirely through the efforts of the medical profession, it was generally admitted that this increase had been brought about by improvement in the mortality rate of infancy and childhood rather than because of any well marked impression made upon the death rate from the diseases of later life. Dr. Wilmer's paper suggested quite a different point of view towards these later diseases than that which had obtained during the past thirty-five or forty years and before. It had been customary to assume that when a man of middle life had a disease, for instance, of the kidneys or of the heart or of the joints, and when by the use of instruments of precision and careful diagnostic methods we had located the lesion and told him that his symptoms were due to Bright's disease, hardening of the arteries, or sclerosis of the heart muscle perhaps, and had made a prognosis telling him how long he had to live, we had been wont to feel that we had done our duty. Today, fortunately, we were taking less interest in the minutiæ of physical diagnosis and were giving more attention to the study of the ultimate origin of the disease in the individual case. Physicians used to ask a man of fifty or sixty who was suffering from Bright's disease or other organic trouble what his father died of. When he replied, "dropsy at the age of sixty," the physician would say, "this is about what you have to expect." We used to ask a man if he was a hearty eater and if he replied that he was, we ascribed his trouble to eating too much; if he said that he was a very light eater, we perhaps attributed it to too little nourishment. We asked him if he was a hard worker and generally his wife answered that her husband had always worked himself to death, and then we said "no wonder you have a chronic disease." As a matter of fact, it was a matter of much doubt whether people did get Bright's disease or heart disease because they worked too much or too little, or ate too much or too little, and we were not at all sure now even that alcohol had played as important a part in the causation of diseases of middle life as we had once thought. Therefore this modern conception of medicine and diagnosis and its purpose as presented by Dr. Wilmer this evening, was intensely interesting and applied to every branch of medicine and to the diseases both of the body and the mind, for even in mental diseases it was becoming more and more clear that the body, and the entire body, should be searched for causes of the malady. There was probably a definite cause for every kind of disease and we should demand to know this cause if it was discoverable by any means at our command, and if we could not discover it, we should honestly admit that the fault was our own.

Dr. James said that one of the great difficulties in treating diseases of middle life was that we were apt to find that they were not simple but very complicated. The late Dr. Jacobi, in his delightful way, once told the speaker that he preferred to treat children rather than adults because almost invariably a child had but one disease at a time, whereas adults rarely had only one. The profession should accept the principle that when an individual manifested any departure from the normal in any function, the making of a diagnosis in the old fashioned sense was only the beginning; that there was a definite cause for this disturbance and that this cause should be sought by every means that medical science offered. Dr. Reese in his discussion, regretted that Dr. Wilmer said nothing of his failures. Dr. Wilmer, like the rest of us, was human and of course he had had failures. Like the rest of us he had had at his command only such knowledge of physiology, pathology, and causation as medical science of today offered, and while he had pointed out to us that many cases of serious organic diseases of the eye had a remote physical cause in some part of the body, perhaps far distant from the eyes, yet there were doubtless other causes of these same eye lesions which were not accessible to us today but which would certainly be accessible to the physician of the future, if the profession continued to take the broad view of medical science that it always had taken. There were perhaps causes other than focal infection and other intoxications, causes that we had not yet dreamed of, but some day they would be known and understood. Future studies and the lapse of years would probably open up new and wonderful vistas for medicine, and with these the ability to either ward off or cure or ameliorate a good many of the diseases of middle and later life which had hitherto proved so obstinate. Of course chronic rheumatism, as well as eye lesions, and probably a good deal of vague ill health without definite local complaint, were caused by foci of infection in the teeth and tonsils, but we had all seen plenty of cases of this type where the disease went on just the same after the teeth and tonsils were removed. Dr. James said he had seen a number of cases of very obstinate rheumatism of the rheumatoid arthritis type, in persons who had completely recovered from a pulmonary tuberculosis, usually with some cavity formation and in whom no local cause could be found in the teeth or in the tonsils, and in whom it seemed at least possible that the intoxication came from a healed cavity at the apex of the lung which gave few or no symptoms of the ordinary type. Then there was the alimentary canal, especially the colon and the ileocecal valve, offering possibilities of ill health from intoxication, but this was a chapter which was always vague and upon which a great deal of work still remained to be done. Dr. Wilmer's paper was interesting then to those practising in every field of medicine, pointing out as it did, defects in the teaching of diagnostic medicine and emphasizing the need of searching more diligently for the cause of disease in each individual case. The medical profession of New York was deeply indebted to Dr. Wilmer for his willingness to come to New York, especially at a time when travelling was no simple matter, in order to lay before it the results of his vast experiences and his own philosophical reflections upon these experiences.

Glycorrhachia and Lethargic Encephalitis.—Dopter has made a discovery which may prove of value in the diagnosis of lethargic encephalitis. When somnolence appears, the percentage of glucose in the spinal fluid is found to be increased. Professor Netter has confirmed the discovery and its value, for thus far the sign has been constant and has been absent in other affections tested. In meningitis we find lymphocytosis and increased albumin, which are absent in encephalitis. But unless we can discover the reason for the increase of sugar the test will lose some of its force.—*Gazette des Hôpitaux.*

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

Texas State Board of Medical Examiners.

November, 1919.

ANATOMY.

1. Name the ligaments of the ankle joint.
2. Bound Scarpa's triangle, and name the vessels and nerves in it.
3. Names the muscles attached to the great trochanter of the femur.
4. What are the anterior and posterior boundaries of the axilla, and what arteries and nerves pass through it?
5. Name the ganglia connected with the fifth pair of cranial nerves.
6. Trace the cerebrospinal fluid from the lateral ventricles to the spinal canal.
7. Name the ductless glands.
8. Describe the portal system.
9. Name the branches of the subclavian artery.
10. What arteries supply the heart with blood, and where do they originate?

HISTOLOGY.

1. Name and define the stages of mitosis.
2. Classify connective tissue.
3. Describe a lymph node.
4. Of what organ are Hassall's corpuscles characteristic? Describe one.
5. Name the cells found in the bone marrow.
6. Describe a lobule of the liver, giving in detail the mode of blood supply.
7. Describe the cortex of the adrenals.
8. Draw diagram of a vertical section of the duodenum.
9. Draw diagram of a small bronchus.
10. Describe a spermatozoon.

PHYSIOLOGY.

1. Nerve mechanism of mastication.
2. Physiological properties of protoplasm.
3. What are the three fundamental functions of cell life?
4. What are the effects which would follow severing the third nerve?
5. What would be the result of the removal of the whole or a large part of the cerebellum?
6. What two things cause the establishment of respiration at birth, and how are they accomplished?
7. What are the functions of the medulla and pons?
8. Describe and give functions of vas deferens.
9. What are the functions of the red and white blood corpuscles, and how many are found in one cubic millimeter of blood?
10. State the branches and their functions which the facial nerve gives off in the acqueduct of Fallopius.

CHEMISTRY.

1. Differentiate between a simple salt and an oxysalt. Give example of each.
2. Write a formula equation showing the action of sulphuric acid on sodium chloride.
3. Give two methods of obtaining nitrogen, and state how it may be distinguished from hydrogen.
4. Mention the objection to lead water pipes. State the kind of water which, when used with these pipes, is especially dangerous.
5. What is the chemical antidote for mercuric chloride, and what is the general treatment in a case of poisoning?
6. What are proteins? From what are they derived? Name the chief proteins.
7. Name and describe the bile pigments.
8. Give the reaction, specific gravity and percentage of cream, of a specimen of normal cow and human milk.
9. Describe the fermentation test and Trommer's test for glucose in the urine.
10. Give a reliable method of the quantitative determination of albumen in nephritic urine.

PATHOLOGY.

1. Give etiology and pathological anatomy of chronic endocarditis.
2. Describe the usual lesion of external anthrax. Give mode of infection and differential diagnosis. How does it produce death?
3. Give the etiology of thrombosis.
4. Give the structure and evolution of the tubercle.
5. What are the differences between typhoid and paratyphoid?
6. Give the blood picture of chlorosis.
7. Describe a hobnail liver.
8. What is meant by cloudy swelling?
9. What is the pathology of angina pectoris?
10. What is the difference between dry and moist gangrene?

ANSWERS.

ANATOMY.

1. The *ligaments of the ankle joint* are: The anterior tibio-tarsal, posterior tibio-tarsal, internal lateral, and external lateral.

2. Scarpa's triangle is bounded *above* by Poupart's ligament, *externally* by the Sartorius, and *internally* by the inner margin of the Adductor longus; its *apex* is formed by the junction of the Adductor longus and Sartorius. The *floor* is formed, from without inward, by the Iliacus, Psoas, Pectineus, Adductor brevis, and Adductor longus. *Contents:* The femoral vessels pass from about the center of the base to the apex, the artery being on the outer side of the vein; the artery gives off the superficial and profunda branches, and the vein receives the deep femoral and internal saphenous; the anterior crural nerve lies to the outer side of the femoral artery; the external cutaneous nerve is still further external, lying in the outer corner of the space; just to the outer side of the femoral artery, and in the sheath with it is the crural branch of the genitocrural nerve.

3. The *muscles attached to the great trochanter of the femur*, are: Gluteus medius, gluteus minimus, pyriformis, obturator internus, obturator externus, gemellus superior, and gemellus inferior.

4. The axillary space is *bounded: Anteriorly*, by the clavicle, subclavius, pectoralis major, costocoracoid membrane, pectoralis minor; *posteriorly*, by the subscapularis, teres major, and latissimus dorsi.

Contents: The axillary vessels and brachial plexus of nerves, with their branches, some branches of the intercostal nerves.

5. The *ganglia connected with the fifth pair of cranial nerves*, are: Gasserian, ophthalmic, Meckel's, submaxillary, and otic.

6. The cerebrospinal fluid passes from the lateral ventricles, through the foramen of Monro, into the third ventricle, through the third ventricle, through the aqueduct of Sylvius, into and through the fourth ventricle, and into the central canal of the spinal cord.

7. *The ductless glands*, are: Thyroid, parathyroids, thymus, spleen, adrenals, carotid, coccygeal, pituitary, and pineal.

8. *The portal system.*—The veins of the portal system collect the blood from the digestive tract. They form a trunk, the *vena portæ*, which enters the liver and breaks up into small branches in its substance. The following veins form the portal system:

Inferior mesenteric: drains rectum, sigmoid, flexure, and descending colon. It lies to the left of its artery, and passing behind transverse part of the duodenum and the pancreas, and over left kidney, opens into the splenic vein. (The hemorrhoidal branches inosculate with the hemorrhoidal branches of the internal iliac.)

Superior mesenteric: drains small intestines, cecum, ascending and transverse colon. It passes upwards in front and to right of superior mesenteric artery, in front of transverse part of duodenum, and behind neck of pancreas joins the splenic vein at the upper border of the pancreas to form the portal vein.

Splenic: commences in five or six branches in hilum of spleen; these unite to form a trunk which passes below splenic artery behind upper border of pancreas from left to right, and in front of aorta; joins superior mesenteric at a right angle.

The gastric or coronary: a large vein accompanying

coronary artery from right to left along lesser curvature of stomach to cardia, where it reaches esophageal tributaries, and, passing to right behind lesser sac, opens into the vena portæ.—(*Aids to Anatomy.*)

The *portal vein* is formed by the union of the splenic and superior mesenteric veins in front of the right crus of diaphragm and inferior vena cava, and behind the neck of the pancreas. Passes up behind first part of duodenum and then between the layers of the small omentum, behind and between the common bile-duct and hepatic artery, the duct being placed on the right and artery on the left, to transverse fissure of liver, where it divides into right and left branches to corresponding lobes, and also gives an offset to the Spigelian lobe.

Connected with the branch to the left lobe are in front the *obliterated umbilical vein* and behind the *ductus venosus*, the remains of a fetal connection with the inferior vena cava.—(*Aids to Anatomy.*)

9. *The branches of the subclavian artery* are: Vertebral, thyroid axis, internal mammary, and superior intercostal.

10. *The heart is supplied with blood* by the right and left coronary arteries, which arise from the ascending aorta, immediately above the attached margin of the semilunar valves.

HISTOLOGY.

1. *The stages of mitosis*, are: (1) The *prophase*, or stage in which the nucleus is prepared for division; (2) the *metaphase*, or stage in which the nuclear elements are separated; (3) the *anaphase*, or stage in which the daughter nuclei are formed; and (4) the *telophase*, or stage of division of the cell protoplasm.

2. *Classification of connective tissues:* Fibrous, areolar, reticular, lymphoid or adenoid, elastic, fat, cartilage, bone, and neuroglia.

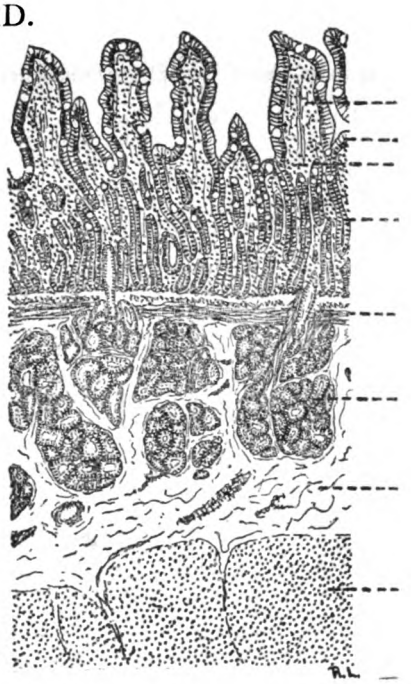
3. *Lymph nodes* are small, oval bodies, surrounded by a capsule which sends septa into the node; both capsule and septa are made of connective tissue. Internally, the node consists of reticular connective tissue and lymphatic tissue. At the hilum, arteries and nerves enter the node, and lymph vessels and veins leave the node. The center of the mass is called the germinal center. The capsule contains a small amount of smooth muscular tissue.

4. Hassall's corpuscles are found in the thymus gland. These corpuscles are oval or spherical bodies which contain epithelial cells concentrically arranged. In the center of these corpuscles the cells are generally nucleated and spherical; the cells in the periphery are non-nucleated and flat.

5. Bone marrow contains the following kinds of cells: Myelocytes, erythroblasts, normoblasts, non-nucleated red cells, myeloplaxes, mast cells, leucocytes, and fat cells.

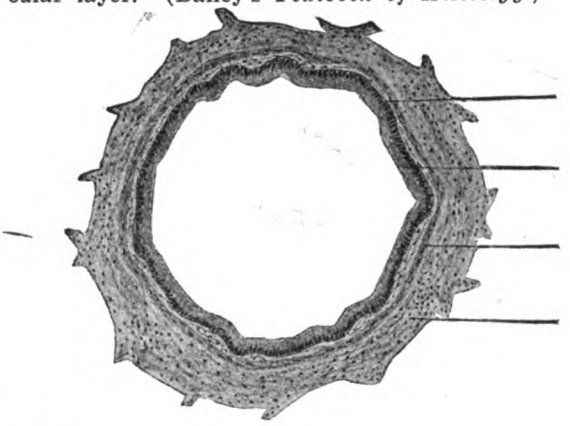
6. A *lobule of the liver* is about 1-20 to 1-12 inch in diameter. It has a darkish red center and a lighter circumference. The center is occupied by an intralobular vein which collects the blood from the capillaries of the lobule, and flows into the sublobular vein, which latter opens into the hepatic vein. Around the lobules are the interlobular veins; these are branches of the portal system; capillaries passing from the circumference to the center of the lobule connect the interlobular and intralobular veins. Between the network of capillaries in the lobule the hepatic cells are packed.

7. The *cortex of the adrenals* "is subdivided into three layers or zones: (*a*) A narrow, superficial layer, the *glomerular zone;* (*b*) a broad middle layer, the *fascicular zone;* and (*c*) a narrow deep layer, the *reticular zone.* The names of the layers are indicative of the shape of the connective-tissue-enclosed compartments and of the contained groups of gland cells. In the glomerular zone the high, irregularly columnar epithelium is arranged in spherical or oval groups. The protoplasm of the cells is granular, and their nuclei are rich in chromatin. In the fascicular zone polyhedral cells are arranged in long columns or fascicles. The cytoplasm is granular and usually contains some or many fat droplets. The nuclei contain less chromatin than those in the glomerular zone. In the reticular zone similar though somewhat more darkly staining cells form a coarse reticulum of irregular anastomosing cords."—(Bailey's *Text-Book of Histology.*)



8.

Vertical longitudinal section of cat's duodenum, showing Brunner's glands. (Larrabee.) *a*, Villus; *b*, epithelium; *c*, stroma; *d*, glands; *e*, muscularis mucosæ; *f*, Brunner's glands; *g*, submucosa; *h*, circular muscular layer.—(Bailey's *Textbook of Histology.*)



9.

Transverse section of small bronchus from the human lung. X 115. *a*. Stroma; *b*, epithelium; *c*, muscularis mucosæ; *d*, fibrous coat.—(Bailey's *Textbook of Histology.*)

10. A spermatozoon is a long, slender body, consisting of a head, neck, body, and tail piece. The head is flattened and oval, and is surrounded by a head-cap. The neck is very short. The body is about the same length as the head. The tail consists of a main segment and a terminal segment. The whole spermatozoon has the general appearance of a tadpole, and is about 60 or 70 microns in length. As a rule only the head and the tail can be observed under the microscope.

PHYSIOLOGY.

1. *The nerve mechanism of mastication.* This consists of a nerve center situated in the medulla, and efferent fibers, and afferent fibers. The *efferent* nerves are the inferior maxillary of the fifth cranial (which supplies the masseter, temporal, pterygoids, mylohyoid, and anterior belly of digastric), the hypoglossal (which supplies the muscles of the tongue), and the facial (which supplies the muscles of the face). The *afferent* nerves involved are the glossopharyngeal, and the lingual and buccal branches of the fifth cranial.

2. *Properties of protoplasm:* "Protoplasm is a semi-fluid substance which swells up but does not mix with water. It is transparent and generally colorless, with refractive index higher than that of water but lower than that of oil. It is neutral or weakly alkaline in

reaction, but may under special circumstances be acid, as, for example, after activity. It undergoes stiffening or coagulation at a temperature of about 54.5° C. (130° F.), and hence no organism can live when its own temperature is raised above that point; it is also coagulated and therefore killed by alcohol, by solutions of many of the metallic salts, by strong acids and alkalies, and by many other substances."

3. *Three fundamental functions of cell life*, are: Growth, movement, and reproduction.

4. *Effects of severing the third cranial nerve:* Ptosis, diplopia, external strabismus, loss of positive accommodation, dilatation of the pupil, the eyeball is slightly more prominent.

5. *Result of removal of whole or large part of cerebellum:* Inco-ordination, loss of equilibrium.

6. *The establishment of respiration at birth is caused by:* (1) The accumulation of carbon dioxide in the blood which stimulates the inspiratory center; and (2) the loss of body heat which (by the cutaneous nerves) stimulates the inspiratory center.

7. The *functions of the medulla oblongata* are: (1) It is a conductor of nervous impulses or impressions from the cord to the cerebrum, from the brain to the spinal cord, also of co-ordinating impulses from the cerebellum to the cord; (2) it contains collections of gray matter which serve as special nerve centers for the following functions or actions: respiration, salivary secretion, mastication, sucking, deglutition, speech production, facial expression; it also contains the cardiac and vasomotor centers.

The *function of the pons* is to provide a bridge along which impulses may travel to and from the cerebrum.

8. The *vas deferens* is the excretory duct of the testicle; it is a long, thick-walled tube, and extends from the epididymis up to the external ring, through the inguinal canal and the internal ring, into the abdominal cavity, and to the under surface of the base of the bladder where it joins the duct of the seminal vesicle, the two forming the ejaculatory duct. Its function is to convey the secretion of the testicle to the ejaculatory duct.

9. The *function of the red corpuscles* is to carry oxygen from the lungs to the tissues. *Function of the white corpuscles:* (1) To serve as a protection to the body from the incursions of pathogenic microorganisms; (2) they take some part in the process of the coagulation of the blood; (3) they aid in the absorption of fats and peptones from the intestine, and (4) they help to maintain the proper proteid content of the blood plasma.

There are about 4,500,000 to 5,000,000 red corpuscles in each cubic millimeter of blood, and about 7,000 to 10,000 or 12,000 white corpuscles in each cubic millimeter of blood.

10. *The branches of the facial nerve, given off in the aqueduct of Fallopius*, are: (1) *The great superficial petrosal*, which goes to Meckel's ganglion, and supplies vasodilator and secretory fibers to the roof of the mouth, palate, nose, gums, and part of the pharynx; it is also supposed to supply motor fibers to the azygos uvulæ and levator palati muscles. (2) *The small superficial petrosal*, which passes to the otic ganglion; it contains vasodilator and secretory fibers, and is distributed mainly to the parotid gland, and the mucous membrane of the lips and cheek. (3) *The nerve to the stapedius muscle*, which conducts motor impulses to this muscle. (4) *The chorda tympani*, which is vasodilator and secretory to the submaxillary and sublingual glands; it is also the nerve of taste of the anterior two-thirds of the tongue.

CHEMISTRY.

1. *A simple salt* (like sodium chloride) is the salt of a hydracid.

An oxysalt (like sodium sulphate) is the salt of an oxyacid.

2. $H_2SO_4 + 2NaCl = Na_2SO_4 + 2HCl$
and $H_2SO_4 + NaCl = NaHSO_4 + HCl$.

3. *Two methods of obtaining nitrogen:*
(1) By heating ammonium nitrite:
$NH_4NO_2 = 2H_2O + N_2$.
(2) By heating a mixture of ammonium chloride and potassium nitrite:
$KNO_2 + NH_4Cl = KCl + 2H_2O + N_2$.

To distinguish nitrogen from hydrogen: Plunge a lighted taper into a tube of the gas; if the gas is nitrogen, the taper will be immediately extinguished and the gas is not ignited. If the gas is hydrogen it will burn at the mouth of the tube with a pale blue flame.

4. *Lead pipes for water are objectionable* because, after oxidation, the lead is dissolved in the water, and may produce lead poisoning. If the water is very pure, or contains nitrates, or is highly aerated, or contains much carbon dioxide under pressure, it is particularly dangerous; so, too, if the surface of the metal is alternately wetted and dried.

5. *The chemical antidote for mercuric chloride* is a moderate quantity of white of egg. The patient should receive white of egg, or milk, and this should be followed by an emetic, or the stomach should be washed out with albuminous water.

6. *Proteins* are organic, nitrogenous compounds, of very complex constitution, and containing carbon, hydrogen, oxygen, nitrogen, and occasionally sulphur, phosphorus, or some other element. In the human body they are derived from the protein food ingested, and consist of combinations of amino-acids, called polypeptides. The chief proteins are: Albumins, globulins, albuminoids, nucleo-proteins, proteoses, and peptones.

7. *The bile pigments* are: (1) *Bilirubin*, which may occur as an amorphous powder or in crystals; it is insoluble in water, soluble in chloroform and benzine; toward bases it behaves like a phenol, forming soluble salts with the alkali metals. (2) *Biliverdin*, which is amorphous, insoluble in water and in chloroform, but soluble in alcohol.

8.

	COW'S MILK	HUMAN MILK
Reaction.....	Amphoteric	Amphoteric
Specific gravity..	1027 to 1035	1026 to 1036
P'ctage of cream.	3.5 to 4	4 to 4.5

9. *Fermentation test for glucose in urine:*
"Take three test tubes, A, B, and C, place in each some washed yeast; fill A completely with the urine to be tested, and place it in an inverted position, the mouth below the surface of some of the same urine in a flat vessel (the entrance of air being prevented, during the inversion, by closing the opening of the tube with the finger until it has been brought below the surface of the urine). Fill B completely with some urine to which glucose has been added, and C with distilled water, and invert them in the same way as A; B in saccharine urine, and C in distilled water. Leave all three tubes in a place where the temperature is about 25° (77° F.), for twelve hours, and then examine them. If gas have collected in B over the surface of the liquid, and none in A, the urine is free from sugar. If gas have collected in both A and B, and not in C, the urine contains sugar. If no gas have collected in B, the yeast is worthless, and if any gas be found in C the yeast itself contains CO_2. In the last two cases the process must be repeated with a new sample of yeast." —(Witthaus' *Essentials of Chemistry.*)

Trommer's test for sugar in urine: To the suspected urine, in a test-tube, add about one-eighth of a 1:10 solution of sodium hydroxide or potassium hydroxide; then add two or three drops of a 1:10 solution of copper sulphate; shake and boil. If sugar is present, a yellow or red precipitate of cuprous oxide is formed.

10. *Quantitative test for albumin in urine:* "Place 100 c.c. of the clear urine in a beaker of 200 c.c. capacity; if alkaline, acidulate faintly with acetic acid. Heat the beaker over the water-bath, add one or two drops of acetic acid, largely diluted with water, when nearly boiling; continue boiling gently until the diffuse precipitate has collected in lumps. Have ready a small filter whose weight, with that of watch-glasses and clamp has been determined. Collect the coagulated albumin upon the filter, wash with H_2O containing a little HNO_3, then with boiling H_2O until the filtrate no longer forms a precipitate with $AgNO_3$, then with alcohol, and finally with ether. Dry the filter and contents in the air-oven, and weigh between the watch-glasses. The difference between this last weight and the one first determined is the weight of dry albumin in 100 c.c. urine, which, multiplied by 1/100 the quantity in twenty-four hours, gives the elimination of

albumin in twenty-four hours."—(Witthaus' *Urinalysis.*)

PATHOLOGY.

1. CHRONIC ENDOCARDITIS. *Etiology:* "The great majority of cases are the result of an attack of acute endocarditis following rheumatism, chorea, or the infectious diseases. A chronic endocarditis from the onset may be caused by alcoholism, syphilis, gout, or excessive muscular labor. Chronic Bright's disease is also an exciting cause. In elderly people, chronic endocarditis may often be due to atheromatous or fibroid changes."—(Hughes' *Practice of Medicine.*)

Pathological anatomy: "There are two main anatomical varieties of chronic endocarditis, which may occur separately or together: (1) The endocardium is thick and dense, its surfaces are smooth or covered with small, hard vegetations or ridges; it is often infiltrated wtih the salts of lime. (2) There is a growth of connective-tissue cells in the endocardium, with a splitting-up of the basement substance. Some of the new cells continue to live, others degenerate. By the combination of such a cell growth and destruction the endocardium is in some places destroyed, in others changed into projecting vegetations. Fibrin is deposited on the roughened surfaces. After a time the condition may be further complicated by the shrinkage and deposition of the salts of lime in the new tissue and in the endocardium. All these changes may extend to the wall of the heart beneath the endocardium. As the result of the new formation of connective tissue the cusps of the valves may be shortened or grown together or adherent to the heart wall. The chordæ tendineæ may be shortened and the papillary muscle fibres shortened and distorted. The most important result of chronic endocarditis is its effect on the heart valves, producing insufficiency and stenosis. The changes in the valves are followed by changes in the walls and cavities of the heart, and the disturbances of the circulation throughout the body."—(Delafield and Prudden's *Textbook of Pathology.*)

2. The usual lesion of external anthrax is called malignant pustule. It begins as a papule, which is noticed at the point of inoculation; this soon becomes a vesicle and contains a fluid. Around the vesicle is an area of inflammation, which is indurated and edematous. The inflammatory process spreads along the lymphatics, and lymphangitis, lymphadenitis and edema result. The mode of infection is inoculation through a cut or abrasion of the skin. The diagnosis is not difficult; it may be distinguished from carbuncle by the absence of pus and of the core. A bacteriological examination of the fluid for the anthrax bacillus will settle the diagnosis. Death is due to bacteremia.

3. *Etiology of thrombosis:* Injury to the wall of the blood vessel, disease in the vessel wall, particularly the intima, slowing of the circulation, inflammation or degeneration, changes in the blood by which its coagulability is increased, presence of foreign substances in the circulation.

4. STRUCTURE AND EVOLUTION OF THE TUBERCLE.—Grey miliary tubercle is the smallest tubercle visible to the naked eye. It consists of a number of submiliary tubercles or giant-celled systems. Each giant-cell system consists of:

Centrally Placed Giant Cell: Measure 50-500 μ. Many (20-50) nuclei massed near periphery. Bacilli are in the cell opposite to nuclei. Often presents coagulation necrosis (caseation).

Epithelioid Cells: Placed in a zone round giant cells. Each is two to three times as large as a white cell. Elongated, with oval nucleus. Contain tubercle bacilli in or between them. Most characteristic feature of tubercle.

Leucocytes: Form a peripheral zone. Certain no tubercle bacilli. Result from inflammatory reaction round tubercle.

Reticulum: Fibrillar network lying between above cellular elements.

Later stages in the tuberculous process:

Caseation: A number of miliary tubercles join to form a mass formed of all three kinds of cells. Blood vessels being scanty or absent, necrosis takes place. This cell necrosis produces a cheesy structureless mass, known as caseous material. Caseation is best marked near the center of the tubercle.

Cicatrization: This is a proces of repair. The granulation tissue surrounding the caseous center is converted into fibrous tissue, and contracts. The liquid parts of the caseous material are absorbed, and the remainder forms a chalky mass—the so-called calcareous transformation.

Liquefaction or suppuration: This is similar to ordinary suppuration, but it takes place without the usual signs of inflammation. A chronic abscess is formed.

Pyogenic suppuration: In localities, *e.g.* the lung, when free access to the air occurs, or in any lesion where contamination from the skin or alimentary tract has taken place, a true pyogenic infection is set up which rapidly destroys the tissues and produces all the signs of pyogenic absorption.—(From Groves' *Synopsis of Surgery.*)

5. *Paratyphoid fever* "is clinically almost identical with enteric fever. Enlargement of the spleen, rose-spots, diarrhea, and sometimes hemorrhage are its symptoms, and its course is like that of enteric, though it may be briefer. Ulceration may be present, but perforation does not occur, and the mortality is small. It is due to the paratyphoid bacillus, which microscopically resembles the bacillus of Eberth, but differs from it in cultural characters and agglutinating reaction."—(Wheeler and Jack's *Handbook of Medicine.*)

6. In *chlorosis:* "The blood is paler than normal and watery. The specific gravity decreases progressively, and the solid matter is deficient. Increased coagulability is sometimes observed. The number of red corpuscles may be normal even in well developed cases, but the proportion of hemoglobin sinks progressively. In prolonged cases the corpuscles become reduced in number, but the deficiency of hemoglobin continues to be excessive. Severe cases of chlorosis frequently show 3,000,000 or 2,000,000 red corpuscles per cu. mm. and 30 per cent. to 20 per cent. of hemoglobin. The red corpuscles may be little altered in appearance in the early stages; later, irregularities in size and shape are frequent, and nucleated red corpuscles (especially small forms) make their appearance. The latter sometimes occur in great numbers in crops (blood crises). The leucocytes are usually normal in number and kind; but in some cases myelocytes have been met with."—(Stengel's *Pathology.*)

7. *Hobnail liver:* "Early in the disease the organ may be somewhat enlarged, but in the typical stage the liver is small, contracted, the surface irregular, the color varying greatly, is very hard, dense, and cuts with great difficulty. The nodules that project are composed of liver-cells, while the depressed areas are formed by bands of connective tissue that have contracted. These bands are grayish in color, the elevated portions yellowish or brownish, the color depending upon the fatty degeneration or the presence of bile. Microscopically the process begins as a localized infiltration of round cells about the interlobular branches of the portal vein. This is followed by a proliferation of the connective tissue with the formation of new fibers. These increase in number, and undergoing contraction interfere with the circulation. This gives rise to certain associated symptoms, as ascites, gastro-intestinal catarrh, hemorrhoids, and distention of the superficial abdominal veins (the caput medusæ). Jaundice is seldom present. The entire lobule eventually becomes surrounded, and as the contraction continues the hepatic cells undergo atrophy till at last there may be an island composed of a few epithelial elements. The connective tissue does not tend to become intralobular."—(McConnell's *Pathology.*)

8. *Cloudy swelling* is an old term for albuminous degeneration, "which is a type of cell degeneration which is so often associated with infectious diseases and certain phases of inflammation that it is sometimes regarded as a part of the inflammatory process. The cells in this condition are usually swollen and are more opaque than normal, the nucleus being usually somewhat concealed in the granules, when these are numerous."—(Delafield and Prudden's *Textbook of Pathology.*)

9. *Angina pectoris:* "Various theories have been advanced to explain the occurrence of angina. That of *intermittent claudication* is based upon the analogous attacks of pain which sometimes occur in the legs when

their arteries are partially obstructed. In such a case the circulation suffices for rest or restful movement, but prolonged exertion causes cramplike pain and temporary lameness (claudication). Similarly in a heart poorly supplied with blood (ischemic), or in which the driving power is defective, exertion may cause a temporary exhaustion of the muscle. This condition would be favored by increased peripheral tension, which is sometimes permanently present, and sometimes exists during an attack. It may also be produced by chill (contraction of the peripheral arterioles). But in some cases the tension is permanently low, and then we may suppose that a slight increase of work, which would be no obstacle to a healthy heart, is sufficient to cause exhaustion to a damaged one. It is in cases of hindrance to the work of the *left ventricle* that angina occurs.

Other theories are that the pain is a neuralgia of the cardiac nerves, or that it is due to tension of the ventricular walls, induced by acute dilatation. Allbutt considers that it is not truly cardiac, but originates in the first part of the aorta. Mackenzie, adopting generally the claudication theory, compares the pain to that produced by the obstructed evacuation of other hollow viscera (*e.g.* biliary colic), and regards it as a protective reflex."—(Wheeler and Jack's *Handbook of Medicine.*)

10. *Dry gangrene* occurs when death happens in a part which has been previously drained of its fluids. The usual cause is arterial thrombosis supervening on atheroma or calcification of vessels. If the part is quite dry sepsis does not occur, so it shrivels into a black or dark-brown mass. If putrefaction occurs it becomes very offensive.

Moist gangrene occurs when the dead part is full of fluids, and may be either aseptic or septic, generally the latter. If septic, the tissues putrefy and foul-smelling gas is formed.—(*Aids to Surgery.*)

(*To be continued.*)

Miscellany.

Stamping Out Typhus in Esthonia.—From 15,000 to 20,000 soldiers were ill with typhus when the American Red Cross first entered Esthonia, less than a year ago. The delegation comprised 40 American men, but although there were doctors and sanitary workers among the number, there were no trained nurses. This is Lieutenant Lee D. Butler's explanation of the manner in which the Red Cross took charge of the critical situation. They organized their small band as executives and procured Esthonian volunteers as aids.

The soldiers had made up part of the army which General Yudenich had led against Petrograd. There was lack of hospital space for them when they returned to Reval, the capital of Esthonia, and there was lack of disinfectants. The disease was spreading rapidly when the American Red Cross entered. The Red Cross prepared a large disinfected building for the soldiers. This relieved the congestion. They gave every sick man a bath and shave, a treat that few Americans can realize, for some of the soldiers had had no bath for several months. Many of the men had not seen soap for weeks until the American Red Cross received a shipment of it in Esthonia, and distributed it to those in need.

Esthonian women served as nurses and the convalescents did duty as orderlies. Clothing was provided both for the soldiers and their families. Lieutenant Butler said that during the seven months he had spent in Esthonia he distributed cloth from which more than 40,000 garments were made. After months of hard work the spread of typhus was checked.

The food situation was not so critical. Esthonia, situated on the Gulf of Riga, is a farming country. So there was some grain. Fishing, also, is an important industry and helps the country's food supply. Lieutenant Butler returned to America in September, after more than two years abroad. First he was with the army, but after the signing of the Armistice he enlisted with the American Relief Commission, and later transferred his activities to the American Red Cross. He was sent, under Colonel Ryan, into the Baltic states, and spent the last of his time in Esthonia. His explanation of conditions in Esthonia shows that war-suffering Europe still needs American help. The Fourth Annual Membership Roll Call of the American Red Cross will be held November 11-25, this year.

The Medicolegal Institute at Bucharest.—This institution was established as a morgue by the government in 1894, but it has undergone constant and careful development, and now contains spacious class rooms, lecture halls, amphitheater, museum, radiograph department, dissecting rooms, criminology bureau, and a department of photography. Students from the medical college attend classes at the Institute on Thursday and Saturday afternoons of each week. The amphitheater, finished in white tile, has a wide balcony extending around all four sides for the accommodation of students. The museum contains many thousand specimens. The radiograph room has two machines of the latest type. Two dissecting rooms in the basement contain a complete equipment for performing autopsies. The institution handles on an average of 7,500 bodies a year, as compared with 600 before the war. In the majority of instances the bodies brought in are claimed by relatives or friends before the expiration of twelve days, when interment is made at public expense. Facilities are provided for preserving a body by means of refrigeration pending its recognition by relatives or friends. When a body is unidentified and unclaimed after a period of twelve days, a photograph is taken and filed away for the possible enlightenment of those searching for missing friends or relatives.

Friends' Unit Finances Hospital in France.—Ground has recently been broken for the erection of a model maternity hospital at Chalons, France, to cost one million francs. The undertaking is financed by the Friends' Unit of the American Red Cross, partly from funds which are the proceeds of cost sales of supplies to inhabitants of this region and partly from direct gifts. English Quakers are also participating in the work, which is described as a "venture in international friendship." The hospital, designed to take the place of the temporary dispensaries, hospitals, and babies clinics that have sprung up throughout the devastated regions in wooden barracks provided for the purpose by the American Red Cross, will be the most complete and modern institution of its sort in France. Two American and two English nurses will ensure a permanent coordination of the clinical methods of their countries with those of France. About sixty endowed beds will be set aside for the use of the people of Chalons and neighboring villages.

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THE PSYCHOLOGY OF THE OUIJA BOARD.*

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PORTLAND, ORE.

THE Ouija Board is based upon a thoroughly scientific and defensible principle. The same principle is manifest in many of the phenomena of life that are accepted without question, though explanation of the same is shrouded in the same mystery attributed to the Ouija. Ouija has the advantage of novelty and advertisement. The commercial aspects of the board will be ignored in this paper.

As introductory to the point at issue, let us select two rather fundamental principles: (1) Every act that we perform is preceded by an imaginary picture of the completed action; and (2) every psychic state tends to its duplication in its physical complement. In fact, both are one and inseparable in experience. It is impossible to separate the physical from the psychical. For present discussion the above principles might be appropriately combined into the one statement that any psychic state proceeds automatically or reflexly to its natural physical equivalent, and vice versa.

Take, for example, so simple an act as picking up a pencil from the desk. If the act is analyzed into its fundamental elements it will be found that the first element in the process is an imaginary picture of the hand grasping the pencil, plus the sensations involved in the act. This imaginary picture is then automatically reproduced by the physical organism and the imaginary experience is replaced by the real experience unless there is something to prevent or inhibit the act as such. Those functions which are not under control of the inhibitive centers are purely automatic and can be counted upon with a certainty in proportion to their freedom from disturbing and inhibiting influences. We can find illustrations of this fact in great number. While the normal metabolic processes are largely automatic they are dependent to a marked degree upon the mental attitude of the individual. The stomach, for example, is fooled into secretion even more thoroughly by the concept of food than by the concrete reality of a foreign substance in the stomach, even though that substance be the best of food. The ingested meal handicapped by the inhibitive influences of strong emotion "lies on the stomach like a lump of lead," while the appropriate psychic state will call out the secretions of both mouth and stomach, even in complete absence of food as such.

*Read before the Alumni Association, Medical School, University of Oregon, June 1, 1920.

The inhibitory influences of the emotions upon the gastrointestinal tract are too common to need emphasis. They have found their way into medical nomenclature under the term "nervous dyspepsia." Ancient literature—pre-eminently, the Bible—speaks of "bowels of mercy and compassion." The effect of the emotions upon the intestines was so manifest that the abdomen was looked upon as the seat of the emotions. Every emotion finds its reflection in every metabolic phase of the physical organism. Syncope, diuresis, enuresis, diarrhea, the various forms of shock, et cetera, present themselves as flagrant examples of the principle in question.

The individual who is scared "stiff," or "white as a sheet" is the victim of an inhibitory obliteration of an automatic process. Fright as a stimulus to peristalsis to the point of overcoming the retaining sphincters has won for itself an expression familiar to all and quite common in street-waif parlance but incompatible with polite society, though extremely eloquent so far as expression of the psychophysical principle involved is concerned.

Automatic action, uninfluenced by the higher centers, is always natural and directed strictly to the purpose for which it was intended. We walk naturally so long as we pay no attention to the process, but as soon as a superimposed conscious state is admitted as an element in the process it becomes unnatural and awkward, even to the point of absolute collapse. The very essence of true stage acting consists in living the part so thoroughly psychologically that there is nothing for the physical organism to do but follow automatically. In proportion as self-consciousness is allowed to intrude itself on the program, to that extent do the shaking trouser, the stiffened muscles, the dry mouth and the quivering lip betray the underlying stage fright. The young man who could enjoy the evening party if he could only leave his feet and hands at home has merely reached that stage in development in which the upper and lower neurons have not as yet learned the necessary team work. He has allowed his consciousness to creep into his hands and feet and it is out of place there. Naturally, it is like a fish out of water.

The stiff-legged walk of the youngest member of our family in the presence of strangers became proverbial in the home. All we older brothers had to do was to glance furtively at his feet as he started across the floor and the picture was complete. The whole musculature was thrown out of gear. Physical and psychical confusion was complete with an effervescence of emotion that was amusing in the extreme.

Back of such situations is to be found a principle which has been appropriately called the motor power of an idea. Take, for example, one of the simplest experiments that can be performed in psychology. Let the attempt be made to hold a suspended plumb-bob steadily and accurately over a dot on the floor. Now, while holding the hand steady in a continuous effort to keep the bob directly over the spot, let your imagination depict the plumb-bob first to the left and then to the right of the spot. If you will continue this imaginary picturing of the bob alternately to the left and right, eventually the bob will start swinging in spite of your effort to keep it directly over the spot on the floor. In this simple experiment is to be found the whole principle of the Ouija in its simplest form. Any flash of consciousness, momentary or of minimal intensity though it be, tends to objectify itself in its physical equivalent. A perfect poker face is an impossibility.

Even our dreams manifest the same principle unmistakably. It is in sleep that the subconscious has fullest play. My memory pictures are very vivid of a dream in which I was actively engaged in a foot-ball game. I can see the ball yet as it came at me in my dream. With one lunge I threw myself upon it with the stern reality of the floor as my only reward for my vigorous tackle. The subconscious dream picture had objectified itself in muscle activity until I was bodily out of bed on the floor. Subconscious life, as well as conscious life, has its physical counterpart in proportion to the vividness of the psychic states which act as the correlate of the physical concomitant.

One of our confreres refuses to have an office higher from the ground than the fourth story because of a strong tendency for him to jump when looking out of the window. While standing on the top of Baker Theater with a companion during the passing of a recent parade, I detected him standing with one foot propped against the bottom of the parapet and his head and body leaning somewhat backward. He explained the fact by saying that the advanced protecting foot gave him some feeling of assurance against a tendency to jump which he admitted was very strong in him. Everybody has this tendency in proportion to the intensity of the imaginary picture relative to jumping and for some the situation is not without danger. In such the tendency becomes uncontrollable and occasionally reports of suicide by jumping from a window or precipice creep into our papers, whereas, if the facts were known, in many of these cases we would recognize, not a real suicide, but an automatic transplantation of a subconscious state into its complementary overt act.

This principle invades the realm of conscious life also. We all tend to do the thing that our imagination depicts or that is suggested to us, whether that suggestion be an autosuggestion or one initiated from without. It is often difficult to separate the conscious from the unconscious response to stimuli. Fresh from college and the examination in psychology, a friend suggested that we try out this principle on a farmer who was strolling leisurely down the platform of the depot. In a sharp strident voice, my friend cried out, "Sit down." As though shot, the farmer dropped but caught himself before falling completely. The subconscious reaction was practically instantaneous. In the meantime, consciousness gained time to analyze the situation and he became the very picture of anger that he should have been taken so unawares. His lower neurons had simply stolen a march on him while the upper neurons with their voluntary control were at a minimum, or, at least, belated.

Bed-wetting comes under the same category. The bladder becomes full. The message goes to the cord asking for relief and if the inhibitory centers are off duty, as they are in early life or in sound sleep, the whole process is confined to the lower neuron as a mere reflex and the message goes back releasing the sphincter and evacuating the bladder, shunting, as it were, the collateral activity of the upper neuron. When the upper inhibitive centers are on duty, the inhibition is in proportion to the intensity of the psychic state represented by the upper neuron. When the upper neurons are only sufficiently active to accomplish partial inhibition of the lower neurons, the stimulus from the lower neurons is not entirely lost and the day may yet be saved by the subconscious. The stimulus frequently serves as the framework of a dream which depicts the boy in an appropriate place for evacuation of the bladder. This dream picture naturally tends to objectification, thus reducing the inhibitive powers and the lower neurons are able to break through the weaker inhibition and a wet bed is the result. In the great majority of cases, if not in all, the wetting of the bed is but the objectification of subconscious states as represented in dream life. As the upper and higher inhibitive powers are more and more developed the habit is gradually broken by a more and more complete control of the upper over the lower neurons. However, even in adult life the stimulus from the bladder combined with an extremely vivid dream picture will break down the controlling inhibition and even we adults are embarrassed at times by a partial evacuation of the bladder under the deceptive trickery of a vivid dream. Full consciousness usually intervenes to head off the process before the bladder has emptied itself sufficiently to carry the incriminating evidence over to the next morning. Unless we show the good sense to rise and empty the bladder voluntarily the same program will be repeated.

It requires a process of education to be able to read to onesself without moving the lips in the process because of the universal tendency for psychic states to repeat themselves in their physical equivalents. The man who goes muttering along the sidewalk betrays by every expression the mental attitude he is in. Even the character and speed of his gait reflect the general mental picture that betrays itself in his muttering speech. Such an individual merely follows the line of least resistance which allows every emotion to be translated completely into its physical correlate without obstruction or inhibition. If he will pull himself together, as it were, and analyze the situation he will find that his mental pictures are carrying him through the experience which his lips are depicting to an imaginary audience. Strictly speaking, he is not talking to himself but to the object of his imagination and his imagination is running riot

both in the stimuli that it gives out and the rat-a-tat-tat which he is playing on the physical organism without interference from without.

The crystal gazer entertains himself with the same sort of phantasmagoria. The pictures he sees are but objectifications of his subconscious states in response to the meager stimuli offered by the crystal. He sits gazing listlessly into the crystal with conscious effort reduced to a minimum and immediately in the crystal appears a genuine panoramic objectification of his own subconscious thoughts and imaginary pictures, which he reads off as though they had all the objective reality of the world of things. A bed of red-hot coals in the fireplace will often give better results than the crystal, and many are the individuals who reap extreme pleasure from this form of entertainment as they loll listlessly in front of the open fire.

The description of faces by mediums is probably a duplicate of the same principle.

Not everybody is able to throw himself into that spirit of reverie which is necessary to results in the tapping of the subconscious by various methods such as cited above. Everyone, however, does have a storehouse of subconscious knowledge from which he draws when the proper association appears or when the conscious subsides sufficiently to allow the subconscious to strut upon the stage. No conscious experience is ever forgotten; it is in the subconscious; all it needs is the proper association or the subordination of consciousness to a sufficient degree to allow the subconscious to appear. This is exactly what happens in dreams and trances.

As we advance into the higher types of such phenomena we encounter the automatic writer, the somnambulist, presentiments, so-called "hunches," prophetic dreams, clairvoyance, et cetera, all of which are to be explained on the same basis, viz., displacements of the conscious by the subconscious which has gained temporary control of the physical mechanism common to both.

Those human alarm clocks who are able to set their mental machinery to wake at any set hour of the night, those animated compasses who retain an infallible sense of direction, those vivified barometers who are always able to sense an oncoming storm, and similar enigmata from the standpoint of scientific explanation are but exemplification of an underlying subconscious store of knowledge varying with the individual.

There is a more or less general belief in the instinctive intuition of woman as compared with the more logical conclusions of man. On a snap judgment she is more likely to be right than man. Her only reason for her opinion is the proverbial "because." She has no other but she does have "hunches" and these "hunches" are but the outcroppings of the subconscious which is undoubtedly less under the domination of the conscious in woman than is the case with men. So-called "hunches" are of value. If in doubt on two opinions not subject to logical proof, always take the first—it is more liable to be right. For example, if in writing a letter you write a word and then doubt as to whether you spelled it correctly, the chances are that it is spelled correctly. If you stop to discuss it or consider it at length, you might as well go to the dictionary and look it up. Final decision gets harder and harder unless some logical reasoning offers the solution. Socalled "hunches" or presentiments are not accidents or coincidences by any means. They are outcroppings of the subconscious, and are often of value.

Practically all of us have had experiences such as are detailed in this paper. Comparatively few—possibly none—have had experiences as automatic writers or somnambulists, merely because we are unable to dissociate various groups of experiences and deal with them on a separate basis. Degrees of success with these various phenomena must of necessity vary with the individual.

The somnambulist rises in his sleep, walks about as though awake, performs remarkable feats that are impossible in his waking self and returns to bed with total amnesia for the period of time in question. Mental tasks that were impossible before retiring are now performed with ease and, to his surprise, he finds an hitherto incomplete task finished on his desk, his own handwriting and the testimony of his friends being guarantee for the fact that he himself performed the task. There is but one explanation to be offered. The subconscious has taken the field and, through the agency of the physical organism, has carried out the process, which, so far as self-conscious personality is concerned, represents a true and more or less complete dissociation of personality.

The automatic writer presents a condition of even greater complexity and yet even more to the point in the explanation of Ouija. With his mind absorbed in some book or mental process which engrosses his attention, it will be seen that the hand of the genuine automatic writer is completely anesthetic, grows restless, and makes aimless indefinite motions—a sort of abortive attempt at writing. The hand, in addition to being anesthetic, seems entirely out from under the control of the consciousness. If the hand is now screened from his view, the aimless movements become somewhat more definite. If a pencil is put in the hand, it will begin to move and write with an aimless scrawl or semblance of writing. Ask the hand a question and it will write off hastily an answer to your question. Extended conversations can thus be called out from the anesthetic hand. After the sitting is over, the subject is completely unaware of having written anything and denies authorship of the things written.

It is exactly as though some highly musical member of the family has temporarily deserted the piano, giving an opportunity for one of the younger and less skilled members of the household to mount the stool and inflict upon us his special improviso strains which are a peculiar mixture of discords with just sufficient chords to remind you that it is music.

In such facts as these we are face to face with the principle underlying Ouija. Automatic writing, planchette, and ouija are all based upon the same principle. They are all forms of automatic writing in which the subconscious uses the mechanism at its disposal to strut upon the stage and delineate facts which are otherwise crowded out of full conscious life. No one is more surprised at the results than the individual who is operating the board. Not understanding himself, he naturally

attributes it all to external agencies. To be sure, there are all grades of fakes but there are also true automatic writers who can successfully use this means of tapping the subconscious. If not understood, there is little wonder that the phenomena are attributed to spirit control, messages from the dead, or communications of the supernatural. The true writer swears he is not manipulating the ouija board. His statement is only partially true. He is not moving it consciously but is certainly moving it subconsciously. He is as unconscious of the process as is the man who goes to bed and is unconscious of the dissociated personality that rises in the somnambulistic perambulation and does all sorts of feats without conscious recognition of the experiences when in his normal waking self. After a sitting with the automatic writer he does not identify himself with the writing performed by the anesthetic hand. The only way that ouija differs from this process is in the fact that ouija *spells* out while the automatic writer *writes* out the dictations of the subconscious.

Not every man can manipulate ouija. For some it does nothing. For others, merely to touch it and ask it a question will insure prompt answer to the same. It varies with the individual. The highest success in the manipulation of ouija requires two main elements in the individual: (1) The power to dissociate various groups of experiences; and (2) a marked tendency for psychic states to go over automatically into their physical correlate. Variations in these elements furnish the multitudinous degrees of success to be found in various individuals. Where both of these elements are present to their maximum intensity in the same individual. the ouija furnishes a valuable method of tapping the subconscious. Ouija does not move of its own accord nor is it moved by powers outside the individual manipulating the same. The answers you get from ouija are but the embodiment of subconscious states, significant or insignificant in proportion to the intimacy of the relation that can be established between conscious and subconscious states.

SELLING BUILDING.

THE PATHOGENESIS OF DEMENTIA PRÆCOX.

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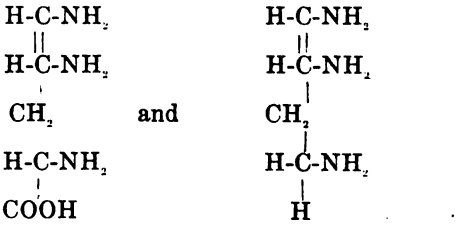
THAT dementia præcox is always associated with profound anatomical and histopathological lesions has been clearly demonstrated by a large number of authors. The paper by Renaudíe[1] is an admirable summary of these findings. C. V. Monokow and S. Kitabayashi[2] have more recently shown that the choroid plexus is uniformly involved, inflamed and atrophied in dementia præcox. These authors conclude in both instances that dementia præcox belongs to the class of autotoxemias. This is a view that the author has defended repeatedly in the past, and supported with clinical and laboratory evidence.

The clue to the possible source of the toxins was first obtained from the observation that dementia præcox patients always suffer from obstinate chronic obstipation. The patients are constipated in a peculiar way, because the ring of Cannon, which is normally inoperative in man, is so markedly constricted in these patients that a barium meal, although it traverses the entire length of the small intestine in the normal time interval of less than six hours, frequently remains in the cecum for five days, and parts of it have occasionally been found there at the end of three weeks and more.[3] Such part of the food as has escaped absorption in the small intestine, because of its long retention in the cecum, will be far more liable to a destructive putrefaction than is normally the case. The products of such a putrefaction are many and variable, depending apparently upon the variety of (1) organism present, (2) the nutritive conditions, (3) the temperature, (4) the hydrogen ion concentration of the medium. Of these products, the amines produced by the decarboxylation of the amino acids seem to be the most toxic. These amines can be grossly divided into two varieties, the monamines, such as amylamine and tyramine, and the diamines, such as putrescine, cadaverine, and distamine. The monamines raise the blood pressure and are, so far as we know, less toxic than the diamines. The diamines lower the blood pressure, and histamine, the diamine derived from histidine by decarboxylation, is by far the most toxic of the known diamines.[4]

A third group of amines, that one might possibly call triamines, has recently been suggested by Koessler and Hanke[5] as possible products of bacterial metabolism. These compounds, also derivatives of histidine, are represented by the following formulæ:



Judging from the formulæ, one would predict that these triamines should resemble histamine physiologically. Unfortunately there is not only no literature concerning the physiological properties of these compounds, but the compounds themselves seem not to have been prepared. They are particularly interesting because although they contain the active part of the imidazole ring, the ring itself is absent; so the compounds would give no characteristic color reactions. They might, therefore, be easily overlooked.

The organism that is most abundant in the alimentary tract is *B. coli communis*. That certain strains of this organism are potent under proper conditions, in producing histamine from histidine, has been proven by the work of Mellanby and Twort[6] and by that of Koesler and Hanke.[4] In order to substantiate the claim that dementia præcox is a toxemia caused by the absorption of toxins from the alimentary tract, it is, therefore, no longer necessary to search in the stools for the *B. aminophilus intestinalis*, of Bertholet and Bertrand.[7] It would be far more instructive to inoculate a synthetic medium, such as was employed by Koessler and Hanke, with a sample of feces from a dementia præcox patient and analyze the resulting liquid according to the demonstrated and advised

scheme by those authors.[8] If this mixture of organisms were invariably capable of producing histamine, this would certainly be a strong substantiation of the theory of a toxemic condition. If histamine were absent, however, other toxic substances, possibly the triamines above mentioned, might be present as the result of putrefaction, and their presence could be established biologically.

Some time ago Julius Retinger[9] was able to show that the stools of dementia præcox patients contained depressor substances that behaved like histamine, and that normal stools were generally free from such substances. Now that a much more delicate and reliable chemical method for estimating histamine has been worked out,[8] these experiments should be repeated to see if the depressor substance in the stools is histamine or not.

For some years I have held and expressed[9] the view that dementia præcox is caused by toxins that are produced by the action of bacteria in the intestinal tract. Although similar toxins may be produced in the normal individual, their amount must be much smaller because the rapidity with which the intestinal contents are dehydrated in the cecum and discharged into the colon in a solid condition. The dementia præcox patient has a spasmodically occluded colon which permits the process of decay to be very far-reaching. Under these conditions large quantities of toxic substances are absorbed by the active cecal wall, and carried into the blood and to the liver. This master detoxicator destroys the toxins as long as their concentration is not too great. The time comes, however, when the poisons pass beyond the liver into the general circulation, where they produce a selective gradual but deadly degeneration which includes the cerebral tissue and possibly the choroid plexus.

The above view is substantiated by the following facts: (1) The blood pressure in dementia præcox patients is always low, and an injection of adrenalin, instead of producing a marked rise as is the case in normal individuals, usually causes the blood pressure to drop still lower. The peculiar behavior of persons to whom ergot has been administered is certainly suggestive in this connection. Ergot contains histamine.[10] Its administration produces a marked fall in blood pressure, which cannot be elevated by a subsequent injection of adrenalin. (2) The extremities of dementia præcox patients are often cyanosed, edematous, and cold, and occasionally ecchymotic and necrotic. The veins of the lids and abdominal wall are also greatly enlarged. Here too there is a marked resemblance to ergotism.[11] (3) Excessive salivation is frequently one of the distressing symptoms of dementia præcox. Histamine is a powerful salivary stimulant. (4) An acute onset of dementia præcox is associated with an acetone breath, an aromatic perspiration and a urine smelling of orange blossoms. These are the characteristics of an acidosis. Under these conditions one would expect the intestinal contents to have a high hydrogen ion concentration which is favorable to the production of histamine from the histidine by the colon bacillus.

It might not be out of place to remark here that some of the distressing symptoms of any acidosis may possibly be caused by amines. It is a well established fact that the excretion of ammonia is very markedly increased in cases of acidosis. The ammonia is formed from the amino acids by a process of deamination. In order that this ammonia may be of service as a neutralizer of acidity, the remainder of the amino acid molecule, with its attached carboxyl group, must be oxidized to carbon dioxide. Although this is undoubtedly the normal process, an occasion might arise where the amount of acid produced would be so excessive that this normal process of neutralization would be inadequate. Under these conditions *the normal body cells might decarboxylate the amino acids which would give rise, in one step, to a stronger base than ammonia.* The amines generated in this way would then produce a toxemia.

Although the above four parallel cases show that dementia præcox is associated with a set of symptoms that closely resemble a histamine intoxication, there are still several things to consider before one could definitely conclude that histamine, or a pharmacologically similar substance was the determining factor in the symptom complex known as dementia præcox: (1) Has histamine, or a substance containing this amine, ever been known to produce insanity? (2) Will the continued ingestion of histamine produce an athropy of the nervous tissue and of the other organs resembling those pathologic conditions found in dementia præcox? (3) Do dementia præcox patients improve when steps are taken to prevent the far reaching intestinal putrefaction with which this disease is so constantly associated?

Has Histamine or a Substance Containing This Amine Every Been Known to Produce Insanity?—Histamine in pure form has never been ingested by man in sufficient quantities nor for a sufficient period of time to make any definite statement as to its effect; but ergot, whose most potent constituent is histamine, has been the cause of considerable intoxication throughout Europe and especially in Russia. It is known and described as epidemic ergotism. G. A. Kolassow, in his review of the Russian literature on ergotism, has shown that 27 per cent of all cases of ergot poisoning *have shown some deteriorativ phycoses that are very similar to dementia præcox,* and that these conditions occur almost exclusively in the adolescent, leaving them if they outlive the other symptoms of the disease in a permanently subnormal mental condition, if not permanently insane or demented.

Will the Continued Ingestion of Histamine Produce an Inflammation and an Atropy of the Cerebral and Nervous Tissue and the Tissues of Other Organs Resembling Those Characteristic of Dementia Præcox?—Unfortunately no researches have been made in Europe or America which answer this question. Until the late publication of Koessler and Hanke, no method of producing histomine in such quantities and of such purity as the problem requires was available. Histamine is now on the market. The problem is fairly well set out. The cerebral, the choroidal, the retinal and the gonoidal lesions are specifically recognized and described, and can be collated through the writings of Southard, Alzheimer, Ranaudíe, Blin, Todd, and Carlo Cini. The problem is a *major opus* of the most intense practical, social, theraneutic and economic interest, and deserving the effort of the

reddest-blooded scientists and the support of the most hard headed directors and trustees of research funds.

The meager knowledge that is now at hand relative to the action of pure histamine, leads the writer to predict that no permanent cellular lesions will be produced by uncombined and pure hastamine. The fatal issues of histamine intoxication are so abrupt that celular destruction and degeneration have not had time to appear. However, the absence of all histopathology in these animals has always been confusing and has aroused doubtful speculation.

The case with combined histamine is yet undetermined. The composition of these substances is still problematical and conjectural, though they are readily recognized and quantitatively estimated by the Koessler-Hanke method. Some instances of intoxication with imidazol-containing material (ergot for example) shows cellular and other histologic pathology which resembles the cerebral lesions of dementia præcox. This has been observed also in rare instances where uncertain biologically produced histamine has been injected into an animal without producing the expected sudden death.

So though this *opus* is so well laid out, the pure histamine provided, the delicate quantitative color test established and a large amount of chemical biological and serologic detail furnished, the evidence at hand requires the extension of the research to the imidazol-containing products of the growths of intestinal bacteria of every strain found in the human cecum.

Very much study and research has already been put upon the *B. coli communis,* but not enough to furnish the equipment and requirements for this investigation. It is just enough to show the most astounding differences in the conditions of life and rapidity of multiplication of various stirps of the *coli* and an equally astounding difference in the products of growth of different strains, even under identical conditions and on an identical medium.

We must wait the answer to this question, and to the auxiliary questions which this question in its simplest form naturally involves, with hopeful expectancy. But in the meantime there are great possibilities of therapeutic use of the presumptions our meagre and fragmentary knowledge suggests.

While no evidence exists that histamine produces the cellular lesions in experimental animals comparable to those found in dementia præcox, there is evidence that combined histamine (ergot) does produce cellular lesions and symptoms resembling those of this disease.

Do Dementia Præcox Patients Recover or Improve When Steps are Taken to Prevent the Cecal and Colonic Putrefication With Which This Disease is so Constantly Associated —This is asking for a clinical experiment. It is not now a fashionable form of research, but it is one which appeals very strongly to the friends of the patient, and is not to be despised. In other articles especially in the reports published in Dementia Præcox Studies during 1918 and 1919 of the patients examined in my laboratory, it will be noticed that I tried three distinct methods of detoxicating dementia præcox patients.

In one group of cases the procedure used on alcoholic, morphine and cocaine habitués, known as the Towne-Lambert Treatment, was tried out. The remedies were very kindly and generously furnished by Mr. Towne himself. While my staff of assistants did their best they were inexperienced in the use of the remedies and hardly dared to carry out the daring experiment. Anyway, the results were negative.

Somewhat more successful was the detoxication by the intravenous injection of large quantities of normal salt solution. (v. Dementia Præcox Studies, 1, 1919, pp. 49-60m, 61-66, 105-110, and 2, 1919, pp, 147-149). However, most of my patients were unmoved by repeated and frequent intraveneous injection of large quantities of sterile isotonic solutions. Incidentally I wish to remark that large intraveneous injections of a highly saturated solution of glucose was also tried out without one case of betterment.

On the same group of patients the fear of a neutritional toxemia lead to the use of "vitamine." Dr. Julius Retinger prepared from rice polishings a considerable quantity of the alcoholic extract, but it was wholly ineffective with dementia præcox, though it cured two Chinamen of beriberi in a most miraculous manner, thus showing its proper preparation and its potency.

It was after these experiments were made that the cecal stasis was attacked by appendicostomy. The barium meal had demonstrated a cecal retardation in front of the ring of Cannon, extending beyond the fifty-four hour séance sometimes extending even into weeks. Therefore appendecostomy was undertaken. This was done only after the inefficiency of enemas to reach beyond the ring of Cannon had been demonstrated in each case.

There was much to learn in making an efficient and permanent appendicostomy, which could not be acquired from the literature of the subject. Greater or less pathology was found in the cecal region of nearly every patient. In some there was a greatly enlarged appendix and in others the lumen of the appendix was almost obliterated. In some patients the appendix was retrocecal, or otherwise held back from the abdominal wall, and in one case the appendix had been surgically removed and extensive peritonitis had completely buried the cecum, so that the operator mistook a loop or transverse colon for the *caput caeci.* The organization of service at the Cook County Hospital, where many of these operations were performed, put the patients into the hands of different surgeons just as the assignments were made by rotation in the booking office. The number of patients treated is still too small to furnish a quantitative report. There is no doubt, however, that appendicostomy and prolonged daily irrigation of the cecum, with ten quarts or more of warm (100° F.) sweetened water, five hours after the last meal of the day results in physical and mental betterment (v. Dementia Præcox Studies, 1, 1919, pp. 28-29, pp. 129-148, pp. 202-212, pp. 260-267, and 11. pp. (89-95, pp. 173-177, pp. 180-184, pp. 252-256).

There is but one thing to be expected of cecal irrigation through appendecostomy, and that is the arrest of the putrefication in the cecal contents. If toxines produced in the cecum have already destroyed cellular elements and glandular elements

of the choroid and other endocrines, the arrest of the production of these toxins will not restore lost tissues. All that can be reasonably expected is the arrest of the destructive process and opportunity for repair and restoration of function, *i. e.*, re-education and rehabilitation.

Nothing is more convincing than this clinical demonstration of the efficiency of this method in arresting the progress of the disease, yet no other means of restoring the patient should be neglected. Even if the source of the intoxication should be found in the tissues of the body and not in the direct action of the bacteria in the cecum, the value of irrigation can not be gainsaid. If, however, the source of the toxin is ultimately found to be in the cecum, some simpler method which can be earlier and more generally applied is likely to be discovered. Such a remedy was found for amebiosis after appendicostomy had proved valuable in that disease.

The great and the most absolute indication in dementia præcox is massive scientific research on a scale commensurate with the annual loss of young manhood (20,000 a year in the United States) and the expense of the pessimistic custody of our 160,000 patients in the State Hospitals.

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AN EPIDEMIC OF KAFFIRPOX IN JAMAICA.

RANDOM NOTES OF A TOURIST.

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In a recent tour of the tropics, the writer happened to be at Jamaica during an outbreak of a disease similar to smallpox, but differing from it in many ways. Various names have been given to this strange affection, such as epidemic varioloid-varicella, alastrim, West Indian modified smallpox, and Kaffir milkpox.

The question has been raised as to whether the disease is chickenpox or smallpox or some modification of either of these diseases. The following history of a patient that I saw several times through the courtesy of Dr. McLean of the United Fruit Co. shows most of the features of an average case.

Joseph D. Twenty years. White. Has always lived at Kingston. Had an attack of typhoid fever when three years old. Since then he suffered from recurrent attacks of malaria until he was fifteen years old. He was then sent to the mountains for a prolonged stay and has since had no manifestation of this trouble. In 1918 he had a mild attack of influenza. On August 7, he woke up feeling chilly, with a mild headache and aching in his bones. He thinks he had fever but the temperature was not taken. On August 8, he stayed in bed and took quinine. He could not eat but drank much ice water. On August 9 he sent for the doctor. He was vomiting, felt weak, and was found to have a temperature of 103°. On August 10, spots began to appear. The vomiting stopped and the temperature fell to normal. On August 11, there were spots on his face, arms, and whole body, including the palms of the hands and soles of the feet. He describes them as red spots that gradually "came to a head." On August 17 and 18 the pocks had completely formed. He states that on rubbing the skin pus could be seen. He complained of pain in the palms of the hands and soles of the feet, evidently due to tension of skin. Otherwise he felt perfectly well with a good appetite and slept peacefully for the first time since his illness. On September 4, an examination of the skin showed a staining of the spots over his whole body. They exhibited a deep bluish-purple discoloration. No pitting.

Two weeks ago his father was attacked with the disease which has run about the same course but in a slightly milder form.

Dr. Langeley Hunt, Senior Medical Officer of the Island, kindly gave me the following data of the epidemic:—Last November chickenpox appeared on the Island and soon many were attacked. As this disease was not then reportable the extent of the epidemic was not definitely known. On May 7, a supposed case of smallpox was reported, but investigation showed that the disease was not smallpox. It was evidently a case of Kaffirpox as since that date this disease has been spreading over the Island and is now epidemic. Both chickenpox and Kaffirpox are now reportable diseases on the Island.

On Aug. 30, with the kind permission of Dr. Hunt, I made a visit to Bumper Hall. This is a pest house in the suburbs of Kingston, which consists of a number of separate buildings in an area of several acres surrounded by a stockade to insure the quarantine. Over three hundred patients were isolated here at this time. The cases that I saw differed clinically from both chickenpox and smallpox although showing some features common to both diseases. The pocks were especially abundant on the face and also scattered over the wrists, arms, body, and legs. In all the cases examined, the palms of the hands and soles of the feet were covered with pocks. I have never seen this condition in chickenpox though it is common in smallpox. One man who was covered with pocks had been vaccinated after the eruption had begun and this vaccination was successful; this would not have occurred if the original disease had really been smallpox. Many complained of sore throat and pocks were seen in a number of throats that were examined. Most all of the cases were followed by more or less superficial pitting in the face. This was evidently due to the natural course of the disease and not to accidental or secondary infection such as is occasionally seen in chickenpox. The pustules were unilocular in the cases examined and apparently did not extend very deeply into the true skin. There did not appear to be a true umbilication, though some pocks showed a slight retraction in the center apparently due to a drying of the pustules. The pocks were fairly uniform in age thus differing from the papules and vesicles of chickenpox. A deep

purple staining of the skin persists for several weeks after the drying of the pocks. The nurse in charge stated that the patients were only really sick at the beginning of the disease, when malaise, headache, and backache were more or less marked. The fever as a rule was not high, running from 101° to 102°, although a few cases did have a much higher temperature at this time. When the pocks began to appear, the temperature usually dropped to normal and the patients felt well. As a rule there was no secondary rise in temperature when the pustules began to form. Indeed most of the patients developed a very hearty appetite at this time and were continually asking for food. It was amusing to see many patients, with face and body covered with pustules, walking about the grounds, half clad and smoking cigarettes as if nothing were the matter, although they had every appearance of ordinary smallpox. Many complained of pains in the feet, apparently due to the stretching of the skin by the pustules. There were no sequellæ. Up to this time there were only three deaths, one in a marasmic baby, one occurring from an abortion in a delicate woman, and one from hemorrhage. It was thought that in these cases the fatal issue was not directly due to Kaffirpox. Infants and young children are attacked but usually have the disease in a very mild form.

Dr. Moody, the bacteriologist of the Island, is making a careful study of the epidemic and will later render a complete report of his observations. He kindly gave me some of the data he had already noted. The period of incubation appears to average from ten to twelve days. The constitutional symptoms, consisting of malaise, headache, slight backache, and fever, continue about three days before the rash appears. The eruption follows the distribution usually seen in smallpox, beginning in the face and then appearing on the wrist, arms, body, and legs. When the rash appears, the temperature drops to normal. The pocks mature by the sixth or seventh day and there is no true umbilication. Dr. Moody has found the deeper layer of the skin involved in several sections microscopically examined, and in one he showed me, the corium was distinctly infiltrated. There is some pain from tension when the pustules mature. In some cases, the mucous membrane of the palate and buccal surfaces is involved. There is very seldom any secondary fever when pus begins to form. In a few charts examined, however, there was a slight upward curve.

Kaffirpox, as now seen at Jamaica, is a very rare disease as may be noted from the few descriptions of it found in medical literature. The only work on tropical medicine to which I have had access is Castellani and Chalmers' volume.* These authors state that one of the earliest descriptions of an epidemic is given by Anderson in 1865 in Jamaica. Dr. Hunt stated that in the Spring of 1903 some cases occurred near Falmouth on the Island.

Castellani and Chalmers give the following points in differential diagnosis:—Kaffirpox differs from chickenpox because of (1) confluence of vesicles in certain cases; (2) Its frequency among adults; (3) The partial protection by Jenner's vaccine. It differs from smallpox by (1) Its low mortality (1 or 2 per cent.); (2) Less severe in children than in adults and often found among babies in whom the vesicles are very small; (3) No secondary fever in children; (4) Though vaccination is in some degree protective, the disease can occur after recent successful vaccination; (5) Vaccination can be successfully carried out shortly after an attack of alastrim; (6) Some believe that an attack of smallpox gives a lasting immunity to alastrim. These authors consider that the cause of Kaffirpox is the same as in ordinary smallpox since vaccination seems to offer protection. An extensive campaign for vaccination is now being carried out by the health officers of Jamaica.

*Manual of Tropical Medicine, Castellani and Chalmers. 3rd Edition, Wm. Wood & Co., New York, 1920.

The disease is quite infectious as shown by the rapidity of its spread. It affects negroes principally; very few whites have been attacked. It is supposed that a passenger suffering with Kaffirpox landed at Kingston from Cuba and thus started the present epidemic. Whether this is true or not, there are many evidences that Kingston and its environs are not in good sanitary condition. A brilliant example of what sanitation can accomplish in the tropics, as shown by little sickness and a very low death rate, is seen in the Canal Zone. Other tropical countries would do well to follow the lead and example of this locality. The present epidemic, though practically without fatalities, cannot but have an unfortunate, although temporary effect on this beautiful Island. One immediate result has been the cancellation of the proposed visit of the Prince of Wales. As the colony is loyal to the Crown and was making great preparations to celebrate this occasion, much disappointment has resulted.

I am indebted to Dr. William E. Deeks, Chief of Staff, and the medical officers of the United Fruit Company for many interesting views of sanitary and health conditions in the tropics. They are doing much to improve sanitary and social conditions in the regions they can control.

51 West Fifty-first Street.

COMMON MOTOR DISORDERS, DISUSE CRIPPLINGS, NEUROSES, POST-INFECTIVE AND OTHERS.

TREATMENT BY MUSCLE REEDUCATION (KINESITHERAPY), MANIPULATION, ADAPTATION, MOBILIZATION, AND PASSIVE-ACTIVE MOVEMENTS (ORTHOKINETICS).

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Motor neuroses of many different kinds and degrees follow minor injuries, traumata, and also a wide variety of diseases, infectious and metabolic. The elements of slight traumata and disease process are often combined. Among the phenomena needing relief are rigidities, contractures, tremors, tonic protective spasms, also enervations, pareses, deformations, down to ataxia or mere impairments of motor precision. Of equal significances are lapses from, or retardations of conscious control. Treatment to be effective should be directed not

alone to the primary, the underlying causes, but also to their effects direct and collateral, and in such a way as only to not repair, but to contribute to the cure of disordered energy distributors, subcenters, and local transformers. As an obdurate background, a source of endless obstruction, is the varying shades and degrees of psychopathy and disorders of volition.

The primary disorders or causes are, in most instances, not amenable to radical cure or even to satisfactory repair. The peripheral impairments or disabilities are, however, always capable of amendment, sometimes of clinical cure. Loss of motor control may rarely be complete and yet not be permanent; also these vary as to capabilities of betterment or again exhibit unexpected restorabilities. The key to success is prompt and consistent attention from the earliest, especially during the acute stages. Unless joints, synchondroses, arthroses, or amphiarthroses have become absolutely fixed something worth-while can be done.

The neuromuscular mechanisms will usually be found so sadly disarranged, shocked, jolted, or injured, as to induce varying degrees of permanent disability. Where there has been only such damage to the central or controlling mechanisms as leaves normality in some essential neurons, cells, or structures, these may as a rule be awakened, set in order, adjusted, restituted, and useful control reestablished.

The measures most promising are those directed to the crippled parts, manipulative and mechanical stimulations (orthokinetic) capable of eliciting desired reactions. The means invariably needed are some of the diverse modalities of motion, kinetogenesis, hence we may use the term orthokinetic remediation.

The problem is twofold: (1) to repair the peripheral mechanisms, putting them in condition to function. Then, and not till then, can it be determined: (2) how far the centers are capable of restoration. This can often be obtained even when galvanic responses are negative. Later under improved general conditions they may show unexpected vitality. Wherever there is the slightest capability of voluntary movement, that must be conserved, skillfully directed, and encouraged at all hazards. This is true in acute as well as subacute or chronic conditions.

Physicians, so it seems to me, too often fail to take into full consideration the absolute interdependency between body and mind, constituting as they do one individual unity, whereas psychologists reckon upon this basis uniformly. "Physical training is mental training," is the attention-seizing title of a recent paper by Dr. James McBride (*Scientific Monthly*, October 15, 1915). The immediate applicability of this sound dictum is that in spite of such disablements as even a reaction of degeneration following trauma, one is often surprised by almost unbelievable restorability.

The central object of reconstructive (orthokinetic) motor training is volitional training, a series of exact, purposive movements or procedures from initial impulse to complete coordinated and applied acts.

Heretofore the individual in all probability was never conscious of directing his movements, except by the vague matter-of-factness of acquired automatisms. Now, however, whether full success or failure follows, whatever restoration of coordinative capabilities or semi-helplessness ensues, depends on how completely he can be made to realize the paramount importance of achieving conscious control. A personal confession may help. Although myself vividly interested in this subject, and giving constant attention to clinical problems where motor integrities are aimed at, it is only of late that I have learned to appreciate the infinite complexities, or rather the limitless possibilities and resources of, functional reeducation.

Lameness in arm or leg, in back or neck, frequently persists for the sole reason the sufferer was not intelligently trained in childhood; or, it may be, lacked willingness to cooperate, or most often was lacking in motor intelligence.

Let me pause to emphasize this last point: some men are so clumsy they can only perform those simple acts which absolute necessity forces upon them. In earlier years, while the plasticity of brain and muscle adjustments was at its best, these persons acquired a working set of automatics. This motor capacity in some ceased to be up to par or they suffered from deficiencies in educability, adaptability, variability, and they became motorially (kinesthetically) retarded in mind.

Individuals differ notably in departments and degrees of intelligence, if we admit that motivation is an essential part of intelligence.

Disuse Cripplings Following Injuries, Wounds, and Enforced Inactivities.—In civilian and industrial practice diverse disuse cripplings are met and often persist long after they should have been remedied. The circumstances and findings are not markedly unlike those produced by war. War injuries are kept under control of military surgeons. A certain proportion however, soon or late may require the collaboration of civilian experts. It is well for all physicians to familiarize themselves with the facts, especially diagnostic findings, through tactile apperception and the resources of orthokinetics.

A considerable number of disuse cripplings arise in the exigencies of industrial hurry, pressure, neglect, and the crowding demands of dangerous occupations. The element of secondary or delayed shock must be reckoned with. "Shell shock" is a subject for a civilian to understand as well as the military surgeon. The analogies of phenomena due to bewilderment, "commotio cerebri," are frequently met. They extend to every nook and corner of the body.

In every day experience the primary condition of a patient when injured varies widely and from causes due to mere feebleness or to serious degenerative conditions all the way from youth to late age, from the timid to the courageous, the fidgety, or the apathetic. Hence vagaries, structural and mental vitiations, and vulnerabilities must differ widely. Military men, on the contrary, constitute a selected group of young, sound, vigorous, trained individuals in whom original defects are rare. Hence the element of primary defects is less in evidence.

Motor integrities occupy our immediate attention. One problem is, first and last, to restore

kinesogenic (muscle sense) functions in order to expedite recovery of motor facilities. The outstanding feature of severe injuries, especially of those which are extensive as well as intensive, is a wide-spread perturbation of reflexes, the unit of structure and of defense mechanisms, bearing hurtfully upon centers and subcenters. These gross reflex mechanisms come to be thrown out of gear. Until solved and equilibrated they may cause a bewildering array of morbid phenomena. Localized reflex disturbances deserve patient scrutiny and adjustment.* Both sensory and motor, also static effects are produced, often so obscure as to remain undetected by many competent clinicians.

In wounds, serious or disabling, the question of the gross reflexes becomes commingled with that of automatisms. The partly voluntary, the unconscious, and the controllable reflexes are involved—"gradations of reactions to stimuli which are alike in being native to the individual, but which vary in their relations to states of consciousness, those which are innate and those which are acquired," and all which are subject to jolts, to shocks, and bewilderments. Functional paralyses, rather pareses, due to protracted motor inactivity are common in both civilian and military experience.

Among the possible causes of motor impairments occurring in the absence of any apparent organic nervous lesions, such factors can be reckoned as disorders of reflex action, sympathetic disturbances, suggestibility, emotionality (hysteria), and perhaps unclear changes in the central nervous system and especially the variants in hypo- and hyper-function of the ductless glands.

Prolonged inactivity of a limb or limb segment or group of muscles, acts as an efficient cause of functional paresis. Usually this occurs when a limb has been immobilized unduly long because of a wound, inflammatory process, fracture, or even of mere pain. The joints are then found stiff, the muscles torpid, and all the tissues hypersensitive. In timid, lazy, aboulic, or obsessed individuals, the required personal efforts at mobilization are not made, and to the initial disturbance a paresis is thus superadded through inactivity. Peripherally such conditions occur as muscular atrophy with subnormal irritability to electric stimulation; also decalcification of the bones, joint stiffness, hypothermia, cyanosis, hyperidrosis, and hyperesthesia become established. Where the limb is habitually held in a faulty position, permanent loss of dynamic equilibrium between opposing sets of muscles follows, joint vitality and movements become correspondingly restricted.

Later the nerves supplying the inactive muscles lose conductivity; the spinal motor centers become weakened and depleted of energy, thus increasing the tendency to muscular atrophy. The cortical kinesthetic centers themselves become torpid; kinesthesia and voluntary motion become impaired and the affected limb practically passes from the consciousness of the patient, who carries the helpless part around like a foreign body. A critical period arises in such cases at which the kind of management (discipline) the patient receives governs the ultimate result. At this stage prompt and energetic treatment, if reinforced by wise disciplinary measures, will usually be needed if morbid trends and disabling after consequences are to be avoided.

Atrophies take place in cells leading all the way back to centers, cortical cornual, and spinal, and the subcenters in the ganglia. Likewise compression of nerve terminals and larger trunks is met. Sensory areas, it should be remembered, exist in muscles, fibrous junctures, and joints.

Fibrous structures and junctions of fibrous structures and muscles produce a large proportion of minor distresses and lameness. Disabilities and interferences with voluntary motion have to do also with impaired volition. Volitional training is the outstanding demand from the outset, as has been demonstrated by Willems in acute joint lesions, the surgeons at La Panne in stumps, and others during the late war.

An actual paresis may exist, some part of which is due to disuse and some part to loss of motor response, which may not be permanent. Nerves may have been cut, or parts of nerves or subsidiary nerves or fibers severed or crushed. These may recover or may remain incompetent, in proportion to the promptness and completeness of Volitional training.

Nerves supplying muscles, when rendered inactive, may have lost their conductivity, hence the spinal motor centers become weakened, anemic or atrophied. One word as to treatment, later offered more at length. The physician would be wise to familiarize himself with the special craftsmanship of manutherapy, mobilizations, manipulative orthopedia (orthokinetic). This he should apply himself. If, however, he is disinclined to do so, he owes it to himself as well as the patient to achieve a competent knowledge of the subject in order to direct the masseur who must be taught judicious, scientific muscle reeducation.

Contractures and Paralyses of Reflex Origin and Their Treatment by Simple Orthokinetic or Orthopedic Measures, "Manipulative Surgery," Readjustment, and Nerve Pressure.—A certain proportion of contractures and paralyses are psychogenetic (a psychoneurosis or a psychopathy); a smaller number are due to disease in the central nervous system, the biochemical-metabolic realm; others arise from reflex irritation. Mental perturbations may accompany any or all causes, may aggravate them, may mask them, but when removed by restoring conscious control through suggestion, explanation, reassurance, and volitional (movement) training, they may be reduced in their disabling effects and a practical cure result.

Exact diagnosis is oftentimes difficult enough, even for the most astute and experienced. Differentiation is materially aided by eliminating the mental element and separately appraising the physical residua. Also treatment by the simple means to be described may, and often does, reduce the problem yet further. When after a series of such efforts they continue, then and only then, need we

*We are coming to recognize more clearly the rôle of reflex perturbations as the key to obscure clinical phenomena. Enthusiasts like Albert Abrams first invite scorn of those who omit to examine into the subject, they are called "men of one idea;" later their testimony is welcomed. Attention to the reflex phenomena in explaining states of tuberculosis is directed by F. M. Pottenger. The reflex arc in its motor and sensory spheres is coming to be appreciated, especially in a patient over-stimulated, irritated, or shocked.

accept the conclusion that the condition is one of degeneration. No muscle or group should be condemned as useless till every effort, every position of advantage be tried out and exhausted (W. Colin McKenzie, "The Action of Muscles.")

Aside from disordered states of the nerves, altered states of the muscle are to be dealt with. In contracture there is hypertonia. In paresis there is hypotonia, sometimes flaccid paresis; in others hypertonia is confusingly blended with contracture or spasm or both.

In the case of purely psychopathic contractures suggestion or deep anesthesia may cause them to disappear. These may recur on regaining consciousness, sometimes half an hour before awaking. The so-called hysterical (psychogenetic or emotogenetic) element may not be eliminated by ordinary rational forms of treatment and only by protracted educative measures.

In serious wounds, civilian or military, any of these contractures or paralyses or admixtures of both, are likely to occur suddenly in men presumably sound and vigorous, hence probably no primary degeneration exists, or rarely.

The bulk of contractures are said to be found of reflex origin in war injuries. Hence we may proceed to attack an individual case with confidence of securing benefit. Often wounds involving the bones or the soft parts, and also cases without injury either to nerve trunks or big vessels extending to areas subjacent to the damaged point, demand particularized care. These, so Babinski says, produce reflex contractures under various aspects, intensities, and localities, both the paralytic and hypertonic forms. Occasionally, so he says, we meet complete flaccid paralysis, as of the hand and fingers consequent upon a wound of the second intercostal space, but such cases are so rare we have to deal for the most part with hypotonic states. Sensory disturbances, pain, and hyperesthesia often accompany.

Reflex disturbances may, of course, be the consequence of wounds of the nerves. Also Babinski mentions that the contractures may be complicated by fibrotendinous retraction and are to be differentiated only under anesthesia. It is interesting to note in this connection that some cases are aggravated by electricity and by massage (Sicard), yet are not emotional or hysterical (psychogenetic).

The measure upon which, in my opinion and experience up to date, we can best rely is the intelligent application of manipulation by the physician himself. After he has explored, experimented, learned the nature of the phenomena, even though the primary or dominant cause may still elude, only then can he safely entrust the case to an ordinary masseur with exact instructions which must not be exceeded.

Let me emphasize a fact gleaned from much experience, that the word "massage" is interpreted variously and often most confusingly. I have learned to disregard wholly the often dogmatic statements of most learned neurologists as to the indications pro and con. The only reliable decision as to "indications or contra-indications" can be reached by cautious personal handling of the part, beginning by explorations of the spinal subcenters through learning the status of the paravertebral structures, and by tracing down toward the periphery. Often there will be found evidence of hypertonus, sensory disturbances, hyperesthesia in associated muscle masses, in origin, *i.e.* points of exit or "nerve points," or in nerves in continuity, any or all of which may have been affected. These may have arisen reflexly, *i.e.* from the seat of peripheral irritation, or transferred to the cell bodies in the cord and thence afferently.

Experience and cautious exploration all the way from outlying points to the cord and back again, is alone capable of giving the information essential to apply treatment successfully.

That treatment should invariably or chiefly include persistent, consistent, and hopeful volitional training.

CASH PREMIUM ON HEALTH.

By FRANK WEHLE, M.D.,

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THE law most constant is the law of change. Some things change obviously, others hardly perceptibly; however, there is nothing which always remains the same, whether it is a solar system or an atom. To evolve, whether it is progression or retrogression purposeful or without purpose, is a law which is universal. In one of the buildings of the New York Society of Natural History is a classic representation of the evolution of the horse from a diminutive five-toed animal to that of its present status. Homo sapiens genus will soon be displayed in a similar manner. Compare the first steamboat, locomotive, automobile and aeroplane with the present day products; their metamorphoses were quite obvious. In the study of the history of medicine we learn that the barber was the precursor of the admirable and skilled surgeon of to-day. The barber sign symbolic of blood and bandage is still displayed. Recall the changes in physiology from the days of humours and dishumours to Harvey's discovery of the circulation of the blood; the changes in therapeusis from remedies like this—"take 12 young swallows out of the nest of rosemary; lavender and strawberry leaves of each a handful, bruise the swallows with their guts and feathers, then boil all in a sufficient quantity of fresh butter after you have strained it, then rub the part with it very well by the fire, etc," to the present day administration of specifics as diphtheria antitoxin and salvarsan. Consider the vast changes which have taken place in medical education as the elimination of some of the poorer medical schools, the increased premedical requirements, the innovation of the D.P.H. degree, and the rapid growth of the importance of preventive health methods.

In all evolution there are factors which divert, deter, and retard. At times these factors can be controlled and often a thing which is in itself vicious may be the cause of great good contrary to itself. Can the introduction of the compulsory insurance bills in our legislatures be of this nature? Will it give a stimulus to worthier and more constructive measures? Will it tend to break the profession's characteristic complaisance and cause it to take a more active and directing part in matters pertaining to the public health and to the profession's better economic condition; and, if there is to

be any reorganization, let those most directly concerned guide and control it, let it be from within the profession. So, like everything else, the relation of the physician to the public is rapidly changing, and if but an instant is given to realize this fact great advances ahead will be made. It would have been easier to appreciate this more fully had the Davenport bill been passed last March. Now is the psychological time for the medical fraternity to strike back for better health laws, better economic conditions and more protection against quacks and nostrums.

That there is need for the consideration of the subject of social insurance goes without saying, it already exists; trade unions, fraternal orders and industrial sick benefits are well known examples. This principle of protection has been used many years. The new propaganda has endeavored to extend it to greater numbers with the element of compulsion and other features which would make it a gigantic charitable institution with political and lay domination of the medical profession. One of the chief reasons for its adoption is the plea that there is a large amount of poverty due to sickness. The advocates of compulsory health insurance have lost sight entirely of the fact that sickness is largely caused by poverty and ignorance. Osler says the reasons for the lower death rate (which is the best criterion of public health) are firstly, the improved social condition of the people, better wages with better housing and better food; secondly, the education of the people, which has made great strides forward, a larger proportion are endeavoring to lead hygienic lives.

That there is no medical utopia at present and never will be most of us believe, or until we become supermen,—and to attain that standard will take so long that it is impractical to consider. That there is a serious sickness problem which is very truthfully and elaborately presented by the advocates of compulsory health insurance is admitted and cannot be ignored, but we also know that the doctors have been carrying more than their share of the expense of it. Realizing that there is this problem, it is also necessary to comprehend that compulsory health insurance will not solve it, but its solution is perhaps not entirely hopeless. That there will always be sickness and attendant pecuniary inconvenience is inevitable and it is very doubtful if compulsory health insurance would ameliorate these conditions so much as the present favorable conditions in which the wage earners find themselves to-day.

Any law which places a premium on an evil is a vicious one and an effective, expansive health law should be primarily and entirely a preventable measure. In order though that the State may intelligently try to draft such a law, it should first make a comprehensive survey which would include the total amount of sickness, attended and unattended, sufficient and inadequate medical care, days' loss and financial loss. And the first step to take to accomplish this would be to obtain from the State legislature sufficient funds for the State health department which, with the medical profession, should conduct the work.

A good feature of such a measure would place a premium on health, a real tangible premium, a cash premium. The principle involved would be that a citizen in good physical health is an asset to the community and in consequence should be compensated for this worth or his endeavor to secure a good physical condition. Thus, if the state taxed her citizens on the assumption that each one was physically unfit and remitted this tax upon his having received a physical examination, there would be in this way an entirely new attitude created towards the medical profession and a very attractive inducement for every citizen to be examined which is quite necessary in a radical innovation of this nature. As a preventive measure this would offer an effective means of doing what compulsory health insurance could not do, and it would not tend to lower the standard of the medical profession but would make it more important and elevate it to a higher level. It would place into the hands of every doctor the means of preventing disease, ameliorating existing conditions and warning of the approach of constitutional disorders. In this way the medical profession would actually be paid to maintain the health and prevent sickness, that this movement can be made quite popular is evidenced by the admiration that so many laymen speak of the Chinese doctor whom they believe practice on this basis.

That there is a crying need for universal physical examination has been shown conclusively during the draft period, and any medical officer who has had school inspection work can give a startling array of figures of defects as to what routine examination in children of school age present, and every doctor who has examined large numbers of apparently normal people is more often surprised than not as to the frequency of the occurrence of the abnormal. Consider the enormous amount of eye defects, impaired hearing, nasal obstructions, enlarged tonsils and adenoids, bad teeth, heart and lung conditions, blood conditions, mental diseases, scoliosis, hernia. varicose veins, hemorrhoids, phimosis, flat feet and club feet, which go unrecognized and untreated each year. There is no field of endeavor which is more undeveloped than that of medicine. There are more questions of laymen to be answered, more preventive advice to be given, more tonsils and adenoids to be removed, more scoliosis and flat feet to be corrected, and more other diseases and surgical conditions to be treated than all the doctors in New York State working twenty-four hours a day and seven days a week could ever hope to accomplish.

As in all innovations of this nature the first and most serious obstacle to its adoption would be the cry of an already overtaxed people of a burdensome cost. This could be met in some such way as this: Granting there are 10,000,000 people in New York State and each one was taxed $6.00 this would total $60,000,000. Assuming one-half to take advantage of the privilege there would thus be a refund of $30,000,000 for administration and for medical fees. Thus, he who would take advantage of it would gain in two ways: he would receive a valuable medical examination and recover his tax, and the one who had not taken advantage of it would deservingly pay for it. Universal physical examination should be in no way objectionable to the profession; it would enhance the profession by advancing pre-

ventive measures, and as every citizen would have unrestricted choice of physician it would obviate the disagreeable feature of the compulsory health insurance bill in which there was this restriction.

To recapitulate, I have endeavored to call attention to the following:

(1) The relative position of the physician to the public and his patient is rapidly changing.

(2) There is a tendency for outsiders to try to reorganize the medical profession by means of legislation which would be detrimental to the public and the profession.

(3) There is a serious health problem in a preventive and curative sense.

(4) The situation could be to a certain extent relieved by universal physical examination.

(5) A cash rebate would make this innovation popular and its cost would be paid for by the careless and objectors.

(6) And lastly, it would tend to make the medical profession more a profession of prevention than of cure.

To conclude, it has been endeavored to emphasize the fact that although the Davenport bill has not been passed laymen will again propose this, or one equally as vicious, which would be contrary to the best interests of both public and profession, that it would have to be opposed again, with cost in time and money, with conditions *quo ante*. Why not take antecedent methods in the quiescent period and propose something really beneficial to all concerned, which would bury the Davenport bill and its ilk in the grave of oblivion and clear the way for constructive measures. If compulsory health insurance could very nearly be made a reality why cannot universal physical examination actually be made so?

Before closing the writer wishes to say that he has a full and keen appreciation of the intensity and scope of this subject and that he is aware that it has taxed the minds and ability of some of the best sociological and medical men of the country, but if he has been able to open up any new avenue of thought on this subject his temerity will perhaps be forgiven.

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NOTES ON VENEREAL DISEASE CONTROL.

By HERMAN GOODMAN, B.S., M.D.,
NEW YORK.

INTEREST in the prevention of syphilis, gonorrhea, and chancroid, the so-called venereal diseases, made evident since the late war by the increase in the agencies for the abatement of the prostitute menace, and for the protection of men and women against these diseases, is deemed sufficient reason for the presentation of these observations.

The problem of venereal disease infection concerns the young men and women of the community, although no age is exempt from the possibility of infection. Among 383 Porto Rican men with gonorrhea or syphilis in whom I could definitely determine the age at which they were infected, 204, or over 52 per cent., had been infected between the ages of 20 and 24 inclusive. I give the table in full:

This study was made on men of the draft age, that is, between the ages of 21 and 31.[2]

AGE AT WHICH PATIENTS ACQUIRED VENEREAL DISEASE.

Age	Gonorrhea	Syphilis
11	0	1
12	0	1
14	0	1
15	2	4
16	1	4
17	7	8
18	7	10
19	14	8
20	19	19
21	28	24
22	26	25
23	21	18
24	24	10
25	17	14
26	4	8
27	8	5
28	8	5
29	7	6
30	12	6
31	0	1

For comparison, I give the following chart of age of infection with syphilis for 202 men, residents of New York City:

Age	Number	Age	Number
1	1	32	5
15	1	34	2
16	1	35	5
17	4	36	2
18	9	37	3
19	9	38	2
20	14	39	3
21	15	40	2
22	11	42	3
23	13	44	2
24	19	46	1
25	18	48	4
26	22	51	1
27	9	64	1
28	15	..	.
29	5	..	.
30	6	..	.
31	4	..	.

I have divided this group to demonstrate that of the 202 men, 166 had acquired their syphilitic infection before their thirty-second birthday; 45 per cent. of the 166 had been infected between the ages of 20 to 24 inclusive.

The infection at one year had been acquired by the patient from an infected wet-nurse. All except two of the other patients admitted infection by sexual contact. Less than one per cent. of men patients denied infection, or were ignorant of having been infected. As will be noted later, only one out of 1,320 women, of whom nearly 9 per cent. gave a strongly positive Wassermann reaction, knew that she had been infected.

At another of the islands of the Antilles group, I had the opportunuity of studying the reports of venereal disease for one year. The findings in full were:

Of the 37 early syphilitic cases 12 were reported between the ages of 20 and 24 in the men; 9 of the 18 early syphilitic cases were reported between the ages of 15 and 19 among the women; 35 chancroids of the 60 reported were in men between the ages of 20 and 24 inclusive; 28 cases of gonorrhea were reported in men between 20 and 24, all cases in men numbering 66; 7 of the 10 reported cases in females were less than 19 years old. One child of two was infected by a diseased sister; another girl of 11 was infected by her brother 13. One boy of 13 years was infected by his sister of 17.

It should be especially noted that although on this island the women slightly outnumber the men, the ratio of venereal disease *reported* is as 2 : 11.

This is of great significance, because these figures are based on the reports of physicians to the Health Office, and indicate that the woman is less frequently aware of the disease, and seldom, comparatively speaking, consults a doctor for venereal disease. The problem of the woman carrier of these diseases rests to a great extent on proper laboratory tests.

REPORT OF VENEREAL DISEASE AND AGE AT WHICH REPORTED.

Age	Syphilis						Chancroid		Gonorrhea	
	Primary		Secondary		Tertiary					
	M	F.	M.	F.	M.	F.	M.	F.	M.	F.
2										1
7									1	1
11										1
12				1						
13									1	1
14										
15						1			2	
16				2			1		1	
17			2	1					2	1
18				2			2		3	1
19	1		3	4		1			5	1
20	2		1	1		1	6		5	
21			1			1	4		4	
22			2	1			10		8	1
23			4	1			7		7	
24	2			1			8	1	4	
25			2	1	1		4		3	
26			1		1		2		2	1
27			1	1	1					1
28						1	2			
29				1						
30			2		2	1	3		1	
31	1		1							
32			1		1		2		1	
33					1		1		1	
34		1	1		1				1	
35			2		1	1	1		1	
36	1		1	1	1		1			
37					1				3	
38					1		1			
40						1	1		2	
41					1				1	
43			1		1					
44					1		2		1	
46						1	1			
47					1					
48							1			
50			2						1	
55									1	
58					1					
61			1							
63						1				
66									1	
77									1	
			1						1	

I have summarized the findings thus:

REPORT OF VENEREAL DISEASE FOR ONE YEAR

Disease	Male	Female	Total
Syphilis—Primary	7	1	8
Secondary	30	18	48
Tertiary	17	10	27
Chancroid	60	1	61
Gonorrhea	66	10	76
	180	40	220

The following figures taken from my study, "The Wassermann Reaction and Miscarriages"[3], may prove of interest as indicating syphilitic infection among women seeking maternity care in a large institution in New York City.

Only *one* woman among the 1320 gave a history of having been known to be infected with syphilis, although approximately one woman out of each 11 gave a strongly positive Wassermann reaction, indicating in all probability a syphilitic infection. Infection with venereal diseases is almost universal among women practising sexual promiscuity. This holds true whether the prostitutes are of the so-called registered or clandestine group, as shown by this report of syphilis and gonorrhea:[4]

BLOOD WASSERMANN TEST ON 1,320 PREGNANT WOMEN[3]

Result	Number of Cases	Percentage
Negative	1,159	87.
Doubtful	12	0.9
1+	14	1.
2+	17	1.2
3+	29	2.
4+	89	6.7

Number examined	Type	Incidence rate
231	Registered, in district	91%
175	Registered, outside district	95%
302	Clandestine, unregistered	92%

In another city, of 456 prostitutes examined, 433 had either one or both diseases:

Number examined	Type	Incidence rate
299	Registered in district	95%
157	Registered outside district	96%

In an examination[5] of almost one thousand public prostitutes I found that 12 per cent. of the women had dangerously infectious syphilitic lesions, such as chancres, mucous patches, condylomata lata, and open skin syphilides. On routine blood examination 42 per cent. more were found to have four plus reactions, indicating in all probability a syphilitic infection. The incidence of gonorrhea among these women, as evidenced by clinical examination and by smears from the urethra, vagina, and cervix, was not less than 93 per cent. I give a chart summarizing by five-year periods the percentage with infectious syphilitic lesions, and the percentage with four plus positive Wassermann reactions, of 791 of these women:

Age Period	Percent with Infectious Lesions	Percent with Positive Wassermann
13–17	15	42
18–22	11	49
23–27	11	45
28–32	4	43
33–37	0	38
38–42	0	33
43–56	0	25

It is my purpose in this paper to outline the methods used in combating this scourge of the human race, and I do not think it amiss to enumerate a few headings:

Prevention.—1. Syphilis and gonorrhea are avoidable diseases. 2. Illicit intercourse is the chief cause of these diseases. 3. No prostitute can practise her profession without becoming infected. 4. There are no "private prostitutes." A man may think he is the only one receiving favors, but the other fellow is thinking the same. 5. Making it difficult for the prostitute to carry on her trade is one of the best ways to reduce the incidence of

venereal disease. 6. Continence, abstaining from sexual intercourse out of wedlock, is not dangerous to health. 7. If a man has the strength to keep away from prostitutes he will avoid syphilis and gonorrhea, and will not transmit these diseases to his innocent wife and children.

For Those Already Infected.—1. *Syphilis and gonorrhea are curable diseases.* It may take a long time. Start now. Visit a doctor or go to a hospital. Don't try self treatment. The druggist is not a doctor. Patent medicines do more harm than good. 2. Do not give your disease to others. Do not transmit it to innocent persons. Do not marry until you have the consent of your doctor. 3. If every case were properly treated, venereal diseases would soon cease to be.

Based on these headings, I prepared in one community, where I was advancing a sexual hygiene program, a statement somewhat like this:

An outline of activities planned to reduce the prevalence of the venereal diseases divides itself into three parts:

1. Social measures to diminish sexual temptations. These include the repression of prostitution, and the business of prostitution; also provision for proper social surroundings and legitimate recreation.

2. Education by means of lectures by medical and non-medical authorities. These lectures besides inculcating continence should explain the risk and waste of the venereal diseases. Pamphlets should be distributed which should be brief and which warn the reader of the venereal dangers. Exhibits and demonstrations, including moving pictures which have the approval of recognized authorities, should be given. An attempt should be made to reach the women and the influential women's organizations can do much by indorsing and supporting the program of social hygiene.

3. The medical program should include proper and easily accessible clinics for the treatment of all infected with venereal diseases. These clinics and hospitals should be under the jurisdiction of specialists in the care of skin and venereal diseases. Men and women should be treated, in some communities on separate days or at different hours. Facilities for free treatment for those unable to pay should be available. Hours at night for workers should be featured. Every effort should be made to keep the patients under treatment until non-infectious and cured. Emphasis should be placed upon the necessity of high standards of technique, and case records should be confidential. Provision should be made for laboratory demonstration of the germs which cause the venereal diseases for it is in the early stages when the clinical picture is not conclusive that the diseases are most amenable to treatment. Facilities for the serological tests are of great help, also.

Such a program has been successfully tried in other communities, and there is no reason why it cannot be introduced here, because its application is practical in all its essentials, and because the public is ready to support the complete program as rapidly as the details of its application to the community involved can be explained.

In the United States great strides have been made in the last five years. Congress has already appropriated millions of dollars to be divided among states which accept certain standards and provide certain facilities. In addition grants are given for research work to colleges and universities, and for scientific investigation. Institutions for the care and treatment of venereal disease carriers are being assisted. Any community seeking to provide for a sexual hygiene program should investigate the provisions of the congressional law appropriating these funds, as no doubt financial aid would be forthcoming. Unfortunately, only States and the District of Columbia may share in the $1,000,000 fund of payments to States for their health departments to use in protective medical measures relating to venereal diseases, and those isolated communities to which we owe some debt in this regard are not provided for. I speak for Alaska, Panama Zone, Guam, Virgin Islands, Porto Rico, Philippines, Haiti, and our military posts in China. My experience in four of these makes me feel that Congress has been a little forgetful of our young men in these localities where sexual temptation is at a great height.

That such a program of attack on the venereal diseases is a practical and not a visionary plan is proved by the remarkably low number of new infections among 12,000 men at one of our military camps, where I was in charge of the venereal disease control work. The annual rate for all new venereal disease was three per 1000 for the six months that the men were in camp. There were four new cases of syphilis, and 16 new cases of gonorrhea.

At another station, venereal disease infections dropped from 78 per 1000 to 6.09 per 1000 for periods of six months each, during the first when toleration of prostitutes was in vogue, and during the second when the men were limited to a community where prostitution is prohibited, and the stringent penalty of deportation awaits the guilty.

The doctor in practice has an important place in venereal disease control, for by his early recognition of the symptoms of these diseases and immediate appropriate treatment, the infectivity of the patient is reduced, and fresh infections prevented, Such prophylaxis by treatment should not be ignored.

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15 CENTRAL PARK WEST.

RABELAIS' REMARKS ON THE THROAT.

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THE throat is not a well defined term; it may designate the front of the neck between the chin and the collar-bone, through which the windpipe and the gullet descend. It is also applied either to the fauces, or to the gullet, or to the larynx or to the windpipe. It may also include the whole neck. It is frequently used as a synonym for the voice, and was so employed in Rabelais' day. For instance, Anarchus, King of the Amaurots, was made prisoner by Panurge, and among other indignities, that worthy made his prisoner a street crier of green sauce. As an encouragement to cry louder, he exclaimed from time to time, "Tu as bonne gorge,"—You have a fine voice.[1]

In another situation, in describing the education of Gargantua by Ponocrates, it is said that they sang to the full extent of their throat, "a plaisir de gorge."[2]

As signifying the front of the neck, the word throat and what it stands for has always been of the highest interest to medical men. There is the beautiful chubby neck of the infant Gargantua with its eighteen double chins rippling down over the chest and abdomen;[3] there is the slender, stemlike neck of the adolescent female, with its beautiful fullness at the base, caused by the slightly enlarged thyroid gland. With advancing years the undue fat so easily acquired by the woman of lactating age, is followed by a reduction or a flabbiness of the subcutaneous adipose tissue. This is first noticed in the neck where the atonic skin falls into folds, dewlaps and wrinkles, and at the same time, the base of the neck flattens out, or becomes hollow, because of the diminishing thyroid gland. This, with the attendant seborrheic changes on the cutaneous surface, is undoubtedly what induced Browning to write:

"From the chin to the udder,
She was a thing to make you shudder."

As a contrast to this, there is the strong neck of the well built adult male, supported on each side by the outstanding pillars of the sternocleidomastoid muscles, the whole forming a fitting base and an easily flexible column on which to poise the fighting jaw and head.

Because of the neck being soft and slender and containing in an easily attainable, comparatively unprotected situation the great blood-vessels running to the head, the chief seat of consciousness, and also because there runs down the forward part of it the windpipe or trachea, also in this situation easily compressible, and leading when so compressed, to the interruption of the oxygen supply so necessary to the maintenance of consciousness and of life, the neck from the earliest times has been considered a favorite situation for causing death by compression. Rabelais, in his famous discussion of the uses to which the pantagruelion, or hemp plant, may be put, mentions in the first place the use of hemp as a rope for hanging.

Rabelais says that the pantagruelion or hemp plant compresses the passages through which pass out the merry sayings, and by which enter in the delicious morsels, and it does it more villainously than either angina or squinancy.[4] Squinancy is an old form of the word quinsy, and angina seems, indeed, to have included all strangling or obstructive diseases of the throat.

It appears that in Rabelais' day hanging was what a newspaper man would call "a live issue" or a "timely question."

Francis I of France, the original of the hero Pantagruel, had introduced an innovation in executions, which up to that time had been accomplished by withes and by strangulation. He changed to a hempen rope and suspension. In Scotland also they used to employ the willow withe, or woodie, as a means of ending an objectionable life, and this was the subject of many an old song as, for instance:

"And waefu' fa' the weary woodie," which in English would read, "And woefully falls the weary willow withe."

The employment of "the woodie" would appeal to the Scotch authorities as being cheap, and not appreciably increasing the civic tax burden.

It is true that Sir Walter Scott, who was no mean antiquarian, describes, in Quentin Durward, the deputies of Tristan l'Hermite, Trois Echelles and Petit André as going about plentifully supplied with rope. Tristan l'Hermite was the chief hangman of Louis XI, who reigned considerably before Francis I, and before Rabelais wrote his genial books. One must remember, however, that Sir Walter was that most improvident person among the Sons of Men, an improvident Scotchman, and that if there was an expensive way of doing a thing, he would choose it, and if there was an inexpensive, perfectly practicable way of doing a thing, Louis XI would choose it. It might probably be more historically correct to represent the two famous hangmen as supplied with bundles of switches, like old fashioned schoolmasters.

After Francis I, no notable improvement seems to have been made in the art of hanging, but there were attempts. Pepys, for instance, mentions that one of a great family was hanged with a silken halter of his own preparing, "not for honor only, but because it strangled more quickly."[5] They probably had not then introduced the scaffold and "drop," thereby entirely eliminating strangling. As a further refinement in capital punishment, it rested with America to introduce electrocution with its expensive apparatus. It is hoped that the economies incident to the war may cause a recurrence to simpler methods, especially in the case of traitors.

The throat is also regarded as a handy and effective place to grab an adversary when you wish to persuade him by violence, a la Tudesca, to your way of thinking, as for example, when in the battle of the sausages, the savage stout brain sausage, made a pass as if to seize Gymnast by the throat.[6]

The interest Rabelais had in the throat also may be seen in the names he gave to some of his principal characters. Grandgousier, or Big Throat, Gargantua and Gargamelle are all synonyms alluding to the appetite or swallowing capacity of the giants. These names originated in the region south of the Loire, as also did the popular traditions relating to them. In Languedoc, at the present time, Grandgousier is the name of the pelican, and it also signifies a gormandiser.[7]

Rabelais himself derives the name Gargantua from Grandgousier's joyous exclamation, "Que grand tu as le gosier!" ("What a big throat thou hast!") on hearing the first cry of his infant son.[8] This, of course, is facetious, but it indicates plainly the meaning Rabelais intended to give to the word.

Under the veil of a fight between the magpies and the jays, Rabelais wrote a whimsical account of the war between France and Brittany.[9] The jays, by their colors, azure and argent, represented France, and the magpies bore the Brittany ermine in their feathers.[10]. A jay belonging to Rabelais' uncle, who lived at Angers, broke his cage in order to foregather with his fellows. He attended the battle enthusiastically, and returned home wounded but satisfied. He was able to say two words, "Croquer pie," which besides its reference to magpies, was an invitation to drink. Because of this reiterated invitation to drink, he was called "Goitru," which

meant to fill the goitre, or throat, with drink." In modern life, the word goitre has acquired a different signification, although still clinging to the locality.

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323 GEARY STREET.

Medicolegal Notes.

Treatment of Gunshot Wounds—Expert Testimony.—In an action for damages for alleged improper surgical and medical treatment against a practising physician of San Francisco, it appeared that on April 24, 1916, the plaintiff received a gunshot wound in the right elbow, the bullet passing through the joint and shattering the bones. He was treated at the emergency hospital, where the wound was bandaged, and he returned to his home. During the evening of the same day the pain became very severe and he called the defendant, who administered a hypodermic. Next morning the defendant directed the plaintiff to go to a hospital for treatment, and while plaintiff was there he examined the wound, had *x*-ray pictures taken, and bandaged the arm again. The arm was badly swollen and inflamed, and it was decided that an operation was not advisable until this condition was relieved. On May 11 the swelling and inflammation having subsided, an operation was performed by the defendant, assisted by another surgeon, and the arm was placed in a plaster cast, through which an opening was made to allow access to the wound for cleansing and treatment. Later this cast was removed and the arm placed in splints. After the operation the plaintiff called regularly at the defendant's office and was treated by him. The arm showed signs of infection and discharged pus from the date of the operation till August 21. At this date, the wound having failed to heal, *x*-ray pictures were again taken, and the defendant advised the plaintiff that it would be necessary for him to undergo another operation. At this time the defendant stated to the plaintiff that he would take him to another physician, who had just returned from the war zone and who had had considerable experience with injuries of this character. Another physician, who was consulted, also advised another operation. The plaintiff thereupon discontinued his visits to the defendant's office and consulted physicians selected by him, who performed a second operation. After the second operation the wound healed rapidly, but the elbow remained stiffened.

It was held that what is or is not proper practice in examination and treatment by a physician and surgeon, or the usual practice and treatment, is a question for experts and can be established only by their testimony. The plaintiff contended that the defendant was negligent in not taking *x*-ray pictures after the operation and before August 21, as such pictures would have shown a condition calling for a second operation, which, it was argued, would have prevented the arm from becoming stiff. The only expert testimony offered by the plaintiff to establish the defendant's negligence was that of Dr. Coffey, who maintained that whether or not he, as a physician, would take *x*-ray pictures shortly after performing an operation such as was performed in the present case, would depend upon whether or not he was certain or uncertain of the integrity of his mechanical fixation in the operation.

Dr. Coffey also stated that the length of time that would be required to form a union of the bones, where the person was in good health, might be six months or a year or longer. It clearly appeared from his entire testimony that whether or not it would be desirable to take *x*-ray pictures at frequent intervals after an operation such as this would depend upon the individual case and the personal knowledge of the internal situation possessed by the man who had performed the operation; that, regardless of whether or not *x*-ray pictures had been taken at frequent intervals, it would have been unwise, according to the opinion of Dr. Coffey, to have operated during the time that the wound showed signs of infection; that in cases of this character it might be necessary to operate half a dozen times on a bone before getting a union. It was admitted that the wound was suppurating during the entire time it was being treated by the defendant, and that the treatment given it during this period was the treatment which Dr. Coffey testified he would himself have given in a similar case. Dr. Coffey testified that he had had twenty-seven years' experience as a physician and surgeon, and had handled over 18,000 fracture cases; that the injury to the plaintiff was a very serious injury; that it was such an injury as was likely to result in a stiff elbow; that it was an unusual injury; that not many doctors in that locality have had cases of precisely this kind; and that he himself had never had a case like it. It was held that the evidence was insufficient to establish negligence in treatment.

It was also held that the defendant's statement to the plaintiff that he would take him to Dr. Stoddard for the second operation because Dr. Stoddard had had more experience with such cases and had just returned from the war zone, and that he, the defendant, had not had a case like this one before, did not amount to an admission of incompetency and unskillfulness on the defendant's part. The fact that Dr. Stoddard was admitted to be more experienced and skillful along this particular line did not imply that the defendant did not possess that reasonable degree of learning and skill possessed by others of his profession in his locality. Though the determination of these questions necessitated the reversal of a judgment for the plaintiff, the court also remarked that there was no evidence that it would have been possible or likely by any course of treatment, no matter how skillful, to have restored to the plaintiff the full use of his arm after such an injury. The fact that a patient does not make a complete recovery raises no presumption of the absence of proper skill and attention upon the part of the attending physician.—Scherer v. Eidenmuller (Cal. App.), 187 Pac. 445.

Defective Information for Practising Without a License.—An information under the Illinois Medical Practice Act charged the defendant with practising medicine and surgery by treatment of a named person without a license to practice medicine and surgery in all their branches. The evidence showed that the defendant treated such person by a method of treatment without the use of drugs or medicine and without operative surgery; but as the information failed to charge a violation of that part of the statute forbidding such system or method of treatment without first obtaining a license so to do, it was held the conviction could not stand.—People v. Walker, Illinois Supreme Court, 126 N. E. 120.

Expert Evidence May Be Based on Testimony Heard and Documents Examined.—In a malpractice action it was held proper to ask a medical expert what was the proper medical treatment in a case such as that disclosed by the testimony he had heard, and the hospital records and *x*-ray photographs he had examined, instead of propounding to him a hypothetical question involving all the elements and matters to be taken into his consideration. It was also held that this examination of the witness did not invade the province of the jury, as calling for the expression of an expert opinion on the very matter to be submitted to them.—Wojciechowski v. Coryell (Mo.), 217 S. W. 638.

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RADICULAR RADIOTHERAPY.

UNDER the above denomination, Zimmern and Cottenot refer to röntgenotherapy directed to the region of the emergence of the spinal nerves. It has for end the reduction or suppression of causes of irritation or compression of the nerve trunks, which appear to be the factors of painful syndromes usually designated under the term essential or primary neuralgia. In fact, the present-day tendency —founded upon the analysis of symptoms and associated phenomena—is to place the site of the morbid changes arising in rheumatismal or diathetic primary neuralgias also in those from cold, in the segment of origin of the nerve. Between the emergence from the cord and the formed nerve trunk, the root of a spinal nerve, after its passage through the meninges and vertebral foramen, is exposed to participation in the pathological processes which affect the organs with which it is related. A goodly number of cases of primary sciatica are unquestionably due to strangulation of the funiculus in the vertebral foramen, as has been pointed out by Sicard. In other instances the factor of irritation is probably seated more without, but is always juxtavertebral. The original seat of other neuralgias is certainly similar.

The clinical aspect offered by brachial neuralgia upholds this conception. This type is usually diffuse in its topographical distribution; the strict limitation to a single nerve territory is exceptional. Although the pain may occasionally seem to follow the course and distribution of one of the large trunks of the plexus, this localization is, in reality, never a pure one, because the other territories always participate in the neuralgia to a certain extent. Quite often the pain, which has no apparent systematization, shows by its distribution over several territories that the course of the irritation reaches the nerves of the plexus above the point where they have formed definitive trunks. Quite frequently, also, it will be found that percussion of the spinous apophysis of the last cervical vertebra will give rise to vertebral pain or to radiations down the limb which is the seat of the neuralgia.

Finally, this hypothesis relative to the topography of the causal lesion is confirmed by the results obtained by radicular radiotherapy. These results —very favorable in true sciatica—are still more striking in brachial neuralgia, perhaps for the very simple reason that the radicular region, which is much more superficial than in other segments of the spine, is more accessible to deep-seated irritation. In the large majority of cases it is probable that these neuralgias have an arthritis of the articulations of the cervical spine as a causal factor. Thus the irritation of the nerve is due to a periarthritis extending to the vertebral foramina. This is why rheumatism, gout, and "arthritism" are so often included among the etiological factors of neuralgia. The action of radicular radiography can, for this reason, be understood, either because it primarily acts upon the inflammatory lesions of the arthritis or periarthritis, or because it disengages the nerve from the infiltration compressing it. The first of these hypotheses is quite in accord with the results observed in the treatment of certain arthritides of the wrist, knee, etc. Independently of its action on the neuralgic syndrome, radicular radiotherapy has given some rather unexpected results in cases of neurodermatitis. Thus in a patient with pruritus of the upper limb, where local peripheral radiations remained ineffective, a single exposure over the point of emergence of the plexus resulted in a radical cure. Some cases of psoriasis seem to have benefited by this therapeutic measure. The latter facts would tend to prove that certain cases of neurodermatitis have a radicular origin, as do some dermatoses.

THE ETIOLOGY AND PATHOGENESIS OF ZONIFUGAL LICHEN PLANUS.

LICHEN PLANUS is an affection of adult life, being rare in infancy and advanced age, though some instances of linear lichen planus have been encountered in young children. The disease is more prone to occur in the nervous arthritic subject, usually following some extreme emotion or mental preoccupation, but this emotional origin may be absent. Briefly, the etiology of lichen planus is imperfectly understood, but one thing seems to be certain—it is not hereditary. Several pathogenic explanations have been put forward regarding the arrangement in lines of the zonifugal variety, the first being the vascular theory, which, however, cannot be sustained because the course of the lines follows that of neither the veins or arteries, nor of the lymphatics of the region in which the process arises.

There are three nervous theories which attempt to explain the lesion. Observers have quite naturally assumed that in its evolution a zonifugal lichen planus might follow the tract of a nerve, and in reality, in a very large number of cases, the linear bands correspond to a certain extent to this pathogenic supposition, but some instances have not seemed to fulfill the requirements. In one case recorded by Grelault the linear band appeared to follow exactly the course of the ulnar nerve in the forearm, but over the arm the eruptive elements were seen arranged in clusters that did not lie over the course of the nerve and could not correspond with its

branches, since the ulnar nerve does not give off any to the arm. In Djeladeddin-Moaktar's case the course followed by the cutaneous lesion was successively that of the great sciatic, the external popliteal, the anterior tibial, and its internal branch. Therefore, given these contradictory results, some other pathogenesis for the zonifugal type of the process had to be sought for, and then Philipson announced his theory based on the notion of Voigt's lines. Voigt's lines are those forming the boundaries of two adjacent nerve territories, while according to some observers they are likewise the seat of some types of eruption such as linear dermatoneuroses or linear nævi. Hallopeau has several times attempted to show that this theory is invalid in the large majority of cases, although he admits that some few cases are perfectly adaptable to it; but they are exceptional, as has been recently maintained by Laclyde in his thesis (Paris, 1913). Finally, there is the metameric theory, above all supported by Brissaud. According to this observer zonifugal lichen planus is dependent upon disturbances of the spinal metameres. By this theory should be explained those cases in which a lichen planus covers the area of several nerves each belonging to a different radicular level, and other unquestionable instances have been published by different writers which plead in favor of Brissaud's theory. For example, a case was seen at Professor Gaucher's clinic at the St. Louis Hospital, Paris, of metameric lichen planus of the lower limb, the eruption reproducing lesions of the first and second sacral pairs, according to Kocher's diagrams.

It would consequently seem that one should be eclectic in the pathogenesis of zonifugal lichen planus and conclude that although numerous cases of this cutaneous process are due to trophic disturbances, subjected to the sphere of influence of a peripheral nerve conductor, there are other undoubted instances, although rare, in which the localization seems to be under the control of a nerve root.

Histologically, there is an embryonal proliferation of the superficial stratum of the dermis, but this proliferation is more marked around the vessels, sudoriparous glands and hair follicles, to such a degree that the two latter structures undergo pressure atrophy. According to Balzer the lesion originates around the vessels. The umbilication is due to the sudoriparous ducts wrich prevent the skin from being raised up by connective tissue proliferation (Gaucher), while other writers look upon it as merely the trace of a hair follicle. As to the epidermis, it is thickened, this being the result of an internal proliferation of its cells.

MODERN THERAPEUTICS.

THE methods of practising medicine are undergoing a profound change, if not revolution. Lister, following the bacteriological principles discovered by Pasteur, recast surgery, and medicine seems as if it were to be regenerated by means of physics and biochemistry. A phase of preventive medicine which is frequently overlooked is that of the early diagnosis of disease and of the treatment thereof in such a way that it is prevented from going further. In the *Practitioner* for September, 1920, Sir Clifford Allbutt discusses the question of modern therapeutics and points out that in order to be successful in dealing with disease by the earliest diagnosis possible and by effectual treatment, besides the observation and recording of facts, we have to penetrate to inner affinities, even to molecular chemistry and physics; and moreover to bring to bear upon the events and their records the interpretation of reason and those methods of experiment which are the special contribution of our times.

Herein comes the insight of a kind of artist or diviner; an intuition of the combination and phases that natural processes may follow. As Sir Clifford says, the divination is, in part, a natural gift, which means that the ready and accurate diagnostician is like the poet—born and not made; but unless built up by incessant touch with things, and an acquired familiarity with their ways, the natural gift will be barren. Nor is that all; in human medicine, at any rate, we have also to construct a third method, that of verbal examination, a kind of experiment as fallacious as it is indispensable. Record of present feelings is almost as slippery as record of the past, and it needs education of the patient as well as of the doctor. The writer goes on to point out a fact, most obvious to every practising physician, that it is difficult to sift and also to verify the complaints of a patient and the records of his parentage and, of course, this is more and more difficult the earlier the stage of the malady; for the earlier the stage of a certain series the less its differentiation from the incipient stages of other series. Early symptoms are often vague and indefinable; not only so, but morbid conditions have all something, and many of them much, in common. However, it is patent that the detection of the beginnings of disease involves the existence of much insight and intensive training on the part of the practitioner, and education on the part of the patient. But the writer does not call attention to perhaps the greatest obstacle to the successful prosecution of the form of preventive medicine. This is that patients must be educated to consult a doctor when seemingly trivial symptoms appear. It will take a great deal of educational propaganda to persuade a working man to seek the advice of the physician when the earliest symptoms of disease show themselves. And yet the obstacles are not insuperable, and in spite of all difficulties preventive internal medicine has a good chance of succeeding.

Allbutt says further that, if we are to be successful in our search for the beginnings of disease, we must gain some insight into molecular physics. He also notices that immunity is the key to large provinces of clinical medicine. After referring at some length to the enzymes, to the rich results of the study of the blood, chemical, mor-

phological, and serological, to the marvelous system of the hormones, to renal chemistry, and to intestinal toxins, he ends by stating that as physicians we call for three classes of men of science: first, the pure scientist, who lives his own inner disinterested life, unoccupied with any relations to things outside his study; secondly, a middleman, who as engineer can adapt theory to practice; thirdly, the modern practitioner, well educated in principles, taught to handle ideas, aware of the direction from which knowledge may flow, and openminded enough to accept it, subject always to the contingencies which he best knows how to manage.

INFLUENZAL PNEUMONIA.

THERE is still much difference of opinion as to the etiology of influenza and as to whether what is known as influenzal pneumonia is a complication of the disease or a stage in the process of its development. In the *Edinburgh Medical Journal* for July and August, 1920, Professor Karl Petren of the Internal Clinic at the University of Lund, Sweden, writes on influenzal pneumonia and its treatment. With regard to the nature of this disease he states that his general impression is that it must, to a very marked degree, be considered a specific one, and he believes that influenza should be regarded as both a general infection and a local infection of the mucous membrane of the respiratory tract. According to this view, instead of pneumonia and bronchitis being complications, the bronchitis and pneumonia of influenza are only different degrees of development of the same local morbid affection. From a close comparative study of influenza, Petren arrives at the conclusion that it is a specific disease; that influenzal pneumonia is part of the disease process, and finds its explanation in quantitative factors which determine the varying degree of development of the local morbid affection in the respiratory tract.

Petren says that if the recent pandemic be compared with that of 1889-90, the same characteristic features from both the nosographical and epidemiological points of view will be found. The most marked difference is the high degree of cyanosis in the latest outbreak. But it seems evident that the last epidemic has been much more severe than those of former times, and, if this is the case, it can be understood that in the former epidemics the tendency to massive involvement of the lungs was not so great, and, consequently, cyanosis was a much less prominent feature. He holds that an acute infectious disease which appears only at certain epochs well separated from each other and which then reappears with identical clinical manifestations and anatomical changes, is, as all experience in pathology has taught, caused by a specific microorganism, typical of and specific to just this disease. Such a microorganism must be constant in the disease, and if a method of finding it had been discovered, it would be found in every case. If influenzal pneumonia is a specific disease, it cannot be the consequence of an accidental secondary infection, for it is impossible that the same disease should be the effect of different infections in different cases; this would be contrary to all pathological experience. The question of the virus common to influenza and to influenzal pneumonia, Petren considers from exactly the same point of view. Consequently, he believes that all the different microorganisms that have been found in influenzal pneumonia have nothing to do with that virus which is the true cause of the pneumonia; and that as a matter of fact they are only secondary in respect of the pneumonia. From the same point of view, he regards it as quite impossible that the bacillus of Pfeiffer should be the true cause of influenza, since that microorganism has not been found in all the cases. He is in accord with many observers in his skepticism regarding Pfeiffer's bacillus. The point of his paper is that influenzal pneumonia is a phase of the disease and caused by a virus which has not yet been isolated.

ACUTE, FOCALLY DISSEMINATE, NONPURULENT (LYMPHOCYTIC), TOXIC-INFECTIOUS, EPIDEMIC POLIOENCEPHALOMYELITIS.

DOCTOR Tobler of the Basle Pathological Institute evidently believes in giving to diseases their full titles, for this is his name for encephalitis lethargica. In an article on this subject, which appears in the *Schweizerische medizinische Wochenschrift* for June 10, 1920, i, 24, he concludes an account of the pathological finds of 10 cases and follows with an elaborate discussion of the intimate nature of the process and its relations to other cerebral affections. The long title facilitates the comparison with other maladies. Among the affections discussed are African sleeping sickness, rabies, certain affections peculiar to various animals, such as Borna's disease of horses, acute poliomyelitis, polioencephalitis of the vertex, and grippal encephalitis. Special attention is called to differentiating the latter. In the author's experience grippal encephalitis is usually cortical by preference and hemorrhagic, while lethargic encephalitis is neither. But as far back as 1895 Nauwerck found grippal encephalitis with lesions in the basilar ganglia and there are in fact transitional cases in which a diagnosis will necessarily be very difficult. For example, in one case of epidemic encephalitis a cerebral hemorrhage was placed in association with a complicating hemorrhagic pneumonia. In the pathological institute the two affections, which had prevailed side by side, ceased at the same time, which was rather a striking coincidence. The author believes that while in the clinic the two affections may at times be readily confounded, the autopsy will readily clear up the confusion so that our own health officers should encourage autopsies in all cases of cerebral death in which one or the other of these two maladies could be the cause.

THE FEBRICULAS.

PROFESSOR RICALDONI contributes an interesting paper on this subject to the *Anales de la Faculdad de Medicina* (Montevideo), March-April, 1920, v,

3-4. He first disposes of the false febriculas or simple hyperthermias, and also of simulation of fever by warming the thermometer, etc. Of the true febriculas the best known is that due to tuberculosis. Menstrual fever is less a result of simple menstruation than an indication of some deep-seated affection in which the act of menstruation determines a crisis of fever. Thus if a woman develops febricula or actual fever during or just before menstruation there is a likelihood of tuberculosis. So-called osteogenic fever is seen in growing children and in some cases may best be regarded as simple hyperthermia. Leopold-Levi regards so-called osteogenic fever as really of endoctrine motivation. Canalicular or cavitary fever is seen in connection with slight infections in various ducts and cavities. A good example is seen in the febricula of chronic appendicitis which indicates an abortive or larvated attack of inflammation in the canal. A rare type of febricula is the renal, of which the author narrates a case. The presence of slight temperature led to a regrettable error in diagnosis, the actual difficulty having been uremia. Of endocrinic febriculæ the hyperthyroid is the best known, and in such cases tuberculosis may be suspected from the tachycardia and other phenomena. Of hematic fevers the chlorotic deserves mention. "Crypto-cancerous fever" is a well known phenomenon and the author relates several cases in visceral cancer. Other febriculæ comprise the prehemorrhagic, verminous, nervous, septicemic and post-infectious types.

Recovery from Fifteen Grains of Cocaine by the Mouth.

Bonjour of Lausanne reports in the *Revue médicale de la Suisse romande* for June, 1920, xli, 6, the case of a homosexual man aged 25 who out of spite against some person not named swallowed the contents of a gram bottle of cocaine. As he was employed in a laboratory there was no trouble in getting the drug. The dose was swallowed at 11 P.M. During the night there was total insomnia and mild agitation with diminution of general sensibility, both superficial and deep. The lower extremities had a dead feel. At 8 A.M. he was weak and ill and summoned the author. Two hours later he dressed and went to his office. The symptoms were remarkably mild, the pulse being apparently normal. There was no elevation of blood pressure from vasoconstriction; there was no "cocaine jag" and no increased reflex activity such as is common among snuffers. There had been no convulsive stage with subsequent motor paralysis. The sole symptoms were agitation and hypesthesia. There was no irregularity of the pulse, no ultimate lowering of tension; in fact, the symptoms agreed with those which follow the ingestion of small doses.

News of the Week.

Another Examination for Commission in Regular Army.—The Secretary of War has directed that another examination be held October 25 to 31, to determine the eligibility for appointment of applicants for commission in the Medical and Dental Corps of the Regular Army. Persons of the following classes who served as officers of the United States Army at some time between April 6, 1917, and June 4, 1920, are eligible to take this second examination: (a) Those who for any good reason did not apply and were not authorized to take the July examinations. (b) Those who were authorized to take the July examinations, but who for some good reason were unable to appear before the examining board. (c) Those who were authorized to take the July examinations and who appeared before examining boards, but who for some good reason of their own volition or through illness or accident failed to complete the examination. (d) Those examined during the July examination who were found disqualified on account of physical defects which have been removed by operation or which do not exist at the time of the October 25 examination. Applications should reach the War Department on or before October 9.

Campaign Against Narcotic Drugs in Canada.—Federal health authorities of the Dominion of Canada announce gratifying results in the campaign being waged against the drug evil. Dr. J. A. Amyot, assistant medical director of the Department of Health, who has just returned to Montreal from an extended trip across the country, states that there has been a falling off in the number of drug addicts. Several attempts to form opium rings have been thwarted, and it is intended to put into force early in the autumn the opium and narcotic drug act passed at the last session of the Canadian Parliament. Under this act wholesale druggists, manufacturers or dealers, are required to obtain a license to deal in these drugs; for this an annual fee is charged. All retail druggists who manufacture narcotic drugs or preparations containing the same are required to obtain a license; all druggists, other than those who manufacture, and all physicians, veterinary surgeons, and dentists are required to make a declaration that they are engaged in the sale or distribution of these drugs. It is also required that all druggists, whether wholesale or retail, and all manufacturers, keep a record of their receipts, together with a record of the quantity manufactured, and a record of their sales. Such records must be kept, in prescribed form, in a special book for the purpose.

Vital Statistics in Vienna.—With the assistance of the Austrian Government, the American Red Cross Commission in Vienna has compiled statistics which show that while in 1912 the birth rate was 19.1 per 1,000 and the death rate 15.4, in 1919 these rates were respectively 13.1 and 22.3. The death rate from tuberculosis has doubled, as has that from other infectious diseases. From the tabulated statistics of the non-military causes of deaths from 1912 to 1919 it is found that cancer, kidney, and stomach diseases have remained nearly stationary since the last peace year, that diseases of the liver have grown less with the lessening of food, and that contagious diseases have diminished with the closing of means of communication between Vienna and the outside world.

Typhus Research Hospital in Poland.—At the request of the League of Red Cross Societies a large typhus research hospital will be operated in

connection with the new American Red Cross hospital recently established in Wilno under the direction of Major F. W. Black.

Further Affliction for Fiume.—It is rumored, according to news from this center of the spectacular, that Fiume has discovered four cases of bubonic plague. Theaters have been closed and other local precautions taken. Steamers and trains, however, continue to run.

Vaccination of Passengers to the United States.—Orders have been issued by the United States Public Health Service to all officers in Europe to permit no third class passengers to depart for the United States without having been vaccinated against smallpox. Dr. Rupert Blue will remain in Paris all winter for the purpose of perfecting the organization of the health service, with an office in every large port in Europe, in order to minimize the danger of smallpox, typhus, and other diseases being brought to this country from overseas.

"Red Tape" in Liquor and Narcotic Laws.—At the opening session of the National Association of Retail Druggists recently held in St. Louis, plans were suggested for the elimination of the "red tape" involved in the handling of alcohol and narcotics. Among other points noted it was brought out that a druggist, in filling a prescription for whiskey, is required to sign his name forty-two times and that alcohol can only be obtained sixty days after application is made. It was stated that the regulations governing the sale of narcotics are so complicated, and change so often that druggists never know when they are complying with the law.

Not Struck by the "H. C. L."—We are reminded, apropos of the coming Red Cross drive, that about the only thing that has not advanced in price during the last few years is membership in the American Red Cross. It is still one dollar.

Drink Record Low for 1919.—According to a recent announcement by the Department of Commerce the consumption of wines and liquors in the United States in 1919 was less per capita than during any year since 1870. In 1870 the quantity was 7.70 gallons per capita, rising to 22.79 gallons in both 1907 and 1911 and falling to 9.17 gallons last year. The total consumption of wines and liquors in 1919 was 992,394,720 gallons, compared with 1,701,827,271 gallons or 15.05 gallons per capita in 1918.

New Insignia for the Medical Department.—According to recent War Department orders the collar insignia for officers of the different corps of the Medical Department of the army will be the Caduceus with the following letters superimposed for the different corps: The Medical Administrative Corps (formerly the Sanitary Corps), "A"; Contract Surgeons, "C"; Dental Corps, "D"; Army Nurse Corps, "N"; Veterinary Corps, "V."

Rest House for Nurses.—A rest house for nurses who have served with the Army, Navy, Red Cross or United States Public Health organization has been opened at Bayshore by the Red Cross. Nurses taking government vocational training courses, those being trained under the Red Cross scholarship arrangement and other nurses who wish to avail themselves of the benefits of the rest house will also be eligible. Application should be made to Miss Florence M. Johnson, director of the Atlantic Division Nursing Department.

New State Hospital for Wisconsin.—Plans have been submitted to the Wisconsin State Architect's office for the new State hospital to be erected on the campus of the University of Wisconsin. The completed hospital, as planned, will include two groups of buildings, in addition to the first group, which is to be started this year. The completed institution will have a capacity of one thousand beds.

Chemical Exposition.—The Sixth National Exposition of Chemical Industries opened at the Grand Central Palace, New York City, on September 20, with 460 exhibitors occupying four floors.

Poliomyelitis Reappears.—Three cases and one death from anterior poliomyelitis were reported to the New York City Health Commissioner on September 24. Two weeks ago the Commissioner issued a warning to physicians to be on guard for the disease, which had appeared at Boston. There have been forty-eight cases, with eight deaths, in New York City since the beginning of the year.

Dr. W. N. Thayer, who for a number of years has been physician to the Eastern New York State Reformatory, at Napanoch, has been appointed warden of that institution.

Dr. Nathaniel Read Norton has removed his office to 111 East Seventy-eighth Street, New York City.

Chicago Still At It.—Another Chicago physician moves up to the front ranks of "booze" prescription writers. When arraigned before the dry officials to show cause why his permit to write liquor prescriptions should not be revoked, this disciple of Æsculapius acknowledged having written 700 liquor prescriptions in four days and that on one day he topped the mark with 308. His permit was temporarily withdrawn pending decision as to its revocation.

Encouraging Influenza Outlook.—The United States Public Health Service gives out the encouraging forecast that there have been no indications of a return of influenza this year. While cases are reported each November and May, it is not expected that the disease will be so widespread or so severe this year as in 1919.

Vaccination of School Children Urged.—Health Commissioner Royal S. Copeland urges that every child in New York City be vaccinated against smallpox before entering school, and that adults who have not been inoculated during the past eight or ten years be vaccinated. About sixty cases of smallpox have been reported here during the past three months.

Red Cross Roll Call.—The fourth annual roll call of the American Red Cross will be held Nov. 11 to 25.

Drug Clinics Closed.—The New York State Narcotic Drug Control Commission, through Commissioner Walter R. Herrick, has ordered the closing of all clinics established by the commission in sixteen cities of the State. The reason assigned is the refusal of hospitals to receive drug addicts to complete their cures. This action followed a confer-

ence with Federal officials, who declared that the clinics, without subsequent hospital treatment, become nothing more than "drug emporiums" for addicts.

The American Electrotherapeutic Association, at its thirtieth annual meeting held in Atlantic City Sept. 14-17, elected the following officers for the ensuing year: *President,* Dr. Byron Sprague Price, New York City; *Vice-Presidents,* Dr. Virgil C. Kinney, Wellsville, N. Y.; Dr. C. M. Sampson, M. C., U. S. A.; Dr. Charles Collins, Washington, D. C.; Dr. Douglas A. Cater, East Orange, N. J.; Dr. W. T. Johnson, Philadelphia; *Trustees,* Dr. Frank B. Granger, Boston; Dr. Frederick H. Morse, Boston; Dr. W. M. Clark, Philadelphia; Dr. E. C. Titus, New York; Dr. William Martin, Atlantic City; Dr. Frederic de Kraft, New York; *Secretary and Registrar,* Dr. A. Bern Hirsh, New York City; *Treasurer,* Dr. J. Willard Travell, New York City.

Medical Society Meetings.—The Medical Association of the Southwest will hold its fifteenth annual meeting at Wichita, Kan., Nov. 22, 23 and 24, under the presidency of Dr. E. F. Day of Arkansas City, Kan.

Charitable Bequests.—By the will of Colonel Thomas W. Bradley of Walden, N. Y., formerly Representative in Congress, the sum of $5,000 each is bequeathed to St. Luke's Hospital, Newburgh, and Thrall Hospital, Middletown.

Obituary Notes.—DR. ELISHA AVERETT JENKINS, of Brooklyn, N. Y., formerly of Natural Bridge, Va., died at Saranac Lake, N. Y., September 18, at the age of forty-six.

DR. JOHN HENRY COTTER, of Brooklyn, N. Y., died recently of cardiac disease, at the age of fifty-two. He was graduated from Albany Medical College in 1894.

Dr. EDGAR MORTON WOOLF died at his home in this city on Sept. 26 of pneumonia. He was born in 1888 and was graduated from the Long Island College Hospital in 1909.

Obituary.

GEORGE MOREWOOD LEFFERTS, M. D.

NEW YORK.

Dr. GEORGE M. LEFFERTS died at his country residence, Katonah, N. Y., on Sept. 21, after a number of years of invalidism, at the age of 74 years. He was born in Brooklyn, Feb. 24, 1846, and was educated at the College of the City of New York. His medical degree was conferred by the College of Physicians and Surgeons in 1870. After serving his term as hospital interne he went to Vienna to study laryngology and rhinology, returning to New York to take up the practice of this specialty in 1873. The following year he was appointed clinical professor of laryngoscopy and diseases of the throat at the College of Physicians and Surgeons, Columbia University, professor of laryngology and rhinology at the same school in 1896, and emeritus professor in 1904. In 1910 he retired from practice. During his active professional life Dr. Lefferts was a member of the Medical Societies of the County and State of New York, the New York Academy of Medicine, and the American Laryngological Association.

Correspondence.

POTASSIUM NITRATE IN CANCER.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—I would beg the indulgence of a brief space to express my pleasure at finding the criticism of Dr. Robert Bell, in your issue of Sept. 11, contains so many points which coincide with my views regarding cancer. That the disease is dependent upon the condition of the blood is agreed upon by those who have given thought to the chemical constitution of this fluid, and it is reasonable to assume that dyscrasias of the body will follow when this medium is vitiated.

I remarked that the Doctor did not say what cancer is, and as he failed to state what particular condition of the blood produces the disease, I am unable to see why he throws discredit on my statement that "cancer is caused by an excess of sodium chloride in the blood and tissues of the body." Doctor Bell does not state why this is not so, but goes on to say that potassium nitrate, which I administer as a positive cure for cancer, is the heritage of some "old wife," and without any apparent beneficial result, so far as he could ascertain. Be this as it may, had the old lady in question given this remedy in accordance with the ionic theory of Arrhenius and in such a manner as to allow of a chemical reaction taking place between the potassium nitrate and the sodium chloride of the blood, thereby forming potassium chloride, the results in the cure of cancer would have been as astonishing as those I am now witnessing in company with other physicians. Anyone realizing the importance of osmosis would at a glance see why a concentrated solution of potassium nitrate would fail to pass into the cells or enter into a chemical combination sufficiently to form a new salt which the cells would take into their composition. In all probability the Doctor has reference to a saturated solution too concentrated for any other purpose than to cause an enteritis or a gastritis.

Doctor Bell seems not to regard those cases of cancer successfully treated by me with potassium nitrate, reported in my article in the MEDICAL RECORD for July 24, as worthy of comment, but fails to suggest any explanation for the results obtained. Nothing succeeds like success, and whether Dr. Bell believes it or not the fact remains that cancer is now being successfully cured by the use of potassium nitrate, not only in my own practice but by those physicians who are following the scheme of treatment of which I have written during the past three years.

With the kindliest of motives I would suggest that Dr. Robert Bell save himself some embarrassment in the future by taking advantage of the clinical material now under his charge in the Battersea Hospital, London, and making experiments with a solution of potassium nitrate sufficiently dilute to enter the cells, and thus prove whether I am right or not regarding the statement that this salt will cure cancer.

A new therapeusis has entered the field of medicine for which I claim priority. I was the first to give scientific reasons why an excess of sodium chloride in the blood and tissues of the body would cause cancer, and also the first to demonstrate that

the disease could be cured by the administration of potassium nitrate. Priority for the use of potassium nitrate by hypodermoclysis in the treatment of cancer also belongs to me. I am furthermore authority for the statement that there is no other salt to be found in nature which can take the place of potassium nitrate in the treatment of cancer, reasons for which were given in the MEDICAL RECORD of May 4, 1918.

From the experience I have gained, coupled with that of other physicians, I firmly believe that the day is not far distant when the medical profession will welcome this discovery as the true and only scientific method of treating cancer, without the use of the knife or other means which might palliate but not remove the cause of the disease, and I feel that when Dr. Bell realizes this he will be in the front rank as an advocate for the use of potassium nitrate in the treatment of cancer.

EDWARD PERCY ROBINSON, M.D.

452 FIFTH AVENUE.

UNNECESSARY NOISE.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Of all the factors which tend to disturb the mental and physical equilibrium of men and women everywhere, and particularly in a large city like New York, there perhaps is none of more subtle and deadly potency than noise; and while there are many kinds and variations of noise, no one of which is to be especially condemned for its harmful influence, for it is a well-known fact that a noise which would be aggravating to one individual would appeal pleasurably to another, it is nevertheless true that all of these contribute in some measure to make up the common din that surrounds us on all sides during our waking and sleeping hours, with injurious effects that are in a general sense as needless as they are incalculable.

From a medical standpoint, the ill effect of noise upon a susceptible individual can only be compared to the cumulative and final result of a series of taps on a diseased organ which had its inception in some minor form of nervous disorder. The effects of noise upon the sick, and particularly upon any patient afflicted with any form of nervous trouble, are quite generally and thoroughly recognized, and the establishment of restrictive measures in and around hospitals, as well as the location of sanitariums in the most quiet and remote sections of the country, bear eloquent testimony not only to the beneficial results thus to be secured, but also to the vital importance and necessity of reducing to the lowest minimum possible the noises attending our daily life.

This is a matter of such pressing concern to the public in general that it would appear not only desirable but highly proper for the medical profession, through some one or all of its associated bodies, to formulate some definite action in conjunction with the civil authorities having in view the establishment of effective measures for the reduction and elimination of unnecessary noise, thereby contributing in no small degree to the public health and welfare.

JOHN COGHLAN, M. D.

137 EAST FIFTY-SECOND STREET,
NEW YORK.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, September 3, 1920.

Dangerous Drugs Regulations.—The British Home Secretary has given notice that under the Dangerous Drugs Act 1920, which came into operation on September 1, the import and export of opium, medicinal opium, morphine, diamorphine (heroin), cocaine, and ecgonine are prohibited except under license of the Secretary of State. The prohibition extends to the salts of morphine, diamorphine, cocaine, and ecgonine, and any preparation, admixture, extract, or other substance containing not less than one-fifth per cent. of morphine or one-tenth per cent. of cocaine, ecgonine, or diamorphine (heroin). Notice has also been given that on and after September 1 next the import and export of raw opium will be allowed only through the ports of London and Liverpool, which are the ports approved by the Board of Customs for the purpose.

Rate Aided Hospitals.—The proposal of the Ministry of Health to allow local authorities to aid hospitals out of the rates has by no means been received with universal favor. The following letter signed by a number of his Bedford constituents has been forward to the member of Parliament for that division. "As members of your constituency we are driven to send you our strong protest against the proposal to provide support for hospitals out of the rates. We are acquainted with the inadequate contributions of the hospital beneficiaries, the highly paid working classes. The Government, judged by the daily reports of the press, have become a mere squeeze committee to yield to every demand, call, or suggestion of the trade unions; the Prime Minister's time, which should be devoted to the interest of the whole nation and empire, is monopolized by them. Have citizens as such no rights? For many months the press has been filled page after page with the reports of the demands and reiterated demands of one section of the community. The time has come, is long overdue, when the socalled middle and upper classes will insist upon relief of their killing burdens." The above letter is expressive of the views of a large portion of the British population with regard to the maintenance of hospitals. It is perfectly true that the working classes are highly paid nowadays, and it is also true that they have not recognized their responsibility and duty toward the hospitals by assisting to support them in a manner commensurate with their increased earnings. This fact lends greater force to the suggestion that hospitals should be supported or largely supported by the institution of the pay or partial pay system. It is fair to all and tends to self respect and independence. It certainly is unfair that the new poor, the lower middle classes, should be taxed almost beyond endurance, while the working classes, comparatively affluent, should get off scot free. There is a fear that the Ministry of Health may become too much of a political body and lean toward those who possess the voting power.

Alcohol and the Body.—At the present time when the question of the value or otherwise of

alcohol as a beverage or drug is arousing intense interest, and is indeed in many countries, as in America, a nationaal question, the advice of the man of science is essential in order that the nation's policy with regard to liquor may be placed on a firm foundation. Personal prejudices and interests are apt to become so entangled with social and moral argument that confusion reigns. When the physiological effects of alcohol can be clearly defined from all points of view there will be a common body of fact to form a basis for discussion and wild statements will be materially and beneficially reduced. It cannot be said that scientific men have as yet defined the physiological effects of alcohol with sufficient definite lucidity. Among men of science there is no complete agreement on the subject. For example, the late Sir Victor Horsley held different views on the subject to those of Professor Karl Pearson and Sir Archdall Reid, and they were all first class scientific men. At the recent meeting of the British Association a somewhat important contribution to the subject was made in a joint paper presented by Miss May Smith and Dr. W. McDougall to the Psychology Section upon "The Mental Effects of Alcohol and Opium." Dr. McDouglall is a well-known psychologist, and it is in the interests of science and of society and morality that he has concentrated his knowledge and experience on the endeavor to elucidate some of the obscure points of this most important matter. The authors of the paper described a series of experiments they have made. They have by mechanical means tested attention and memory as affected by alcohol, both under normal conditions and in subjects suffering from fatigue. The results were that when the factors were in ordinary equilibrium the alcoholic intervention was found to be of a deteriorative character. In cases of fatigue, however, both powers were improved. They found that alcohol taken after a meal produced a much slighter deviation than in other circumstances. The full text of this paper is not available yet so that it is difficult to pass any estimate of its value from the summaries at hand. If sufficiently important it will be referred to at greater length in a later letter.

In connection with the influence of alcohol, Sir J. C. Bose, in the Botanic Section of the Association, provided perhaps the most delightful lecture of the entire week. He told how at his Botanic Institute in Calcutta he discovered that all plants reacted to stimulus, and their actions closely resembled those of human organisms under similar tests. By delicate instruments he had succeeded in making plants record their own movements. A carrot became intoxicated under alcohol, and the recording instrument indicated a line which from being straight, became erratic. Under chloroform or ether a plant became unconscious. He placed the normal rate of the growth of a plant at 100,000th part of an inch in a second. He claimed for his discoveries and particularly for certain magnifiers that they would be of great use to agriculturists, instancing that he had found that certain substances supposed to be harmful, if administered in very small quantities, tended to stimulate growth.

Remarkable Longevity.—The reputed age of Thomas Parr has been subjected to a good deal of destructive criticism, and it has been frankly denied that the Countess of Desmond, who is said to have broken a leg at the age of 119 by falling from an apple tree, reached the patriarchal age of something over 140. Consequently it is more than likely that the paragraph culled from the *Gentleman's Magazine* for May, 1781, and quoted by Mr. Henry J. Mead in the *Sunday Observer*, August 29, will be regarded by the skeptical with suspicion. The paragraph in question reads as follows: "In the churchyard at Ware on the south side of the church, is an altar tomb of brick with a blue marble slab inscribed to William Mead, M.D., who died October 28, 1652, aged 148 years and nine months.

War on Rats in Paris.—In a previous letter it was stated that plague had been reported in Paris and that the assumption was that it had been carried there by rats which abound in that city. According to the Paris correspondent of the Times, writing from Paris on August 26, an attempt is shortly to be made to exterminate the rats, estimated at 8,000,000 or more, which infest the Paris underworld, and by their presence endanger the health of the population. The urgency of this campaign has been manifested by a recent case of plague. All details of the campaign have been drawn up by a special staff at the Prefecture under the generalship of Professor Bordas. Another campaign against rats will soon be inaugurated in Great Britain, and is expected to be of wider range and better organized than the last.

Effect of a Shorter Working Day.—Professor F. S. Lee of Columbia University, New York, spoke at the recent meeting of the British Association on August 27 on "Some Phenomena of Industrial Fatigue." He said in part that the hourly output in physiological operations was practically always increased by a diminution of hours, but the effect on the total output depended on the balance between increased productive power and lessened hours of work. In the very severe tasks of the millmen in the tinplate manufacture Vernon found the total output to be 8.3 per cent. greater in the six-hour than in the eight-hour shift. But this lent no support to the argument for a universal six-hour day. What period, indeed, represented the most nearly universal optimum for a working day was still an open question. A comparison of the diurnal curves of the output of the eight and ten-hour factories investigated by the public health service showed that a conspicuous feature of work on the eight-hour plan was its steady maintenance of output in contrast to the fluctuations of output of the ten-hour plan. Each added contribution of observation and experiment appeared more and more to support the view that from the standpoint of physiological essentials the optimum working period was comparatively short, but varied in duration with the kind of work performed. Eight hours was probably too long for certain kinds of work and too short for others. A universal eight-hour day would be unscientific. Recess periods during the working spell nearly always resulted in increased hourly output and frequently increased output for the whole day.

Shell Shock Inquiry.—The constitution of the War Office Departmental Committee which has been set up by the Secretary of State for War, as a result of the motion of Lord Southborough in the House of Lords on April 28 last, for the appointment of a committee to inquire into the expert knowledge derived from the experiences of the late war with regard to shell shock has been officially announced. By its terms of reference the committee is appointed to consider the different types of hysteria and traumatic neurosis, commonly called "shell shock," to collate the expert knowledge derived by the service, medical authorities, and the medical profession from the experiences of the war with a view to recording for future use the ascertained facts as to its origin, nature, and remedial treatment, and to advise whether, by military training or education, some scientific method of guarding against its occurrence cannot be devised.

A Post-Graduate Course in Venereal Diseases.—A post-graduate course of instruction in the treatment of venereal diseases is to be given at the London Royal Free Hospital School of Medicine for Women. Arranged for the behoof of qualified medical women it will begin on September 13 and conclude on September 25. The Elizabeth Garrett Anderson Hospital and the London Lock Hospital are interested in the fixture.

Obituary.—The death occurred on August 26, at Sydenham, near London, of Dr. Henry Shackleton, the father of Sir Ernest Shackleton, the well-known explorer. Dr. Shackleton, who was 73 years of age, had been ill for some time. He was an Irishman, and resided in County Kildare until he came to London in 1885. Dr. Shackleton did not take up the study of medicine until comparatively late in life, but he became well known as an obstetric surgeon. He had been in practice at Sydenham since he first came to this country up to about four years ago when he retired.

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 16, 1920, clxxxiii, 12.

1. The Value of a County Tuberculosis Survey with Clinics. Miss Bernice W. Billings.
2. A Plea for a Department of Tuberculosis in Medical Schools. William J. Gallivan.
3. Itinerant Consultation Service. H. S. Wagner.
4. Occupational Therapy for the Tuberculous. F. H. Hunt.
5. Nutrition Clinics and Tuberculosis. William R. P. Emerson.

4. Occupational Therapy for the Tuberculous.—F. H. Hunt holds that occupational therapy's chief aim is psychic, and that, based upon its psychic effect, it is applicable to all stages of tuberculosis, early and late, favorable and unfavorable, each case presenting its own problem. When, in occupational therapy, controlled exercise is added, and additional purpose has been brought in, physical upbuilding with enhanced immunity. While it is believed that results are most positively beneficial, only massive comparative statistics, not yet available, can answer the question as to the percentage of cases in which the desired object is accomplished, which, in its final analysis, is to induce the patient to remain long enough under treatment to receive the maximum benefit thereof.

New York Medical Journal.

September 18, 1920, cxii, 12.

1. How May the Tuberculous Patient Secure an Arrestment and Avoid Becoming an Invalid? F. M. Pottenger.
2. The Asthma Problem. Albert Vander Veer, Jr.
3. Broncial Asthma in Childhood. Frederick Raoul Mason.
4. The Treatment of Asthma with Benzyl Benzoate by Injection. Benjamin Woloshin.
5. Examination of the Eye Essential in Physical Examination. J. A. Kearney.
6. Supplemental Action in Reparative Measures. J. Madison Taylor.
7. How to Protect the Health of School Children. Ira S. Wile.
8. Backache from the Viewpoint of the General Surgeon. Moses Behrend.
9. Medical Men in the American Revolution. (*To be continued*). Louis C. Duncan.

8. Backache from the Viewpoint of the General Surgeon.—Moses Behrend says the back may be divided, theoretically, into the gynecological, the orthopedic, the neurological, the medical, and the surgical back. The surgical back refers especially to injuries which may result in a fracture of one or more spinal vertebræ and to injuries in the loin space, especially the kidneys. Injuries to the back may also occasionally cause traumatic inguinal hernia. The appendix is not to be forgotten in the consideration of backache. At times grave disease in the loin space, such as retroperitoneal sarcoma, may be retroactive, that is, in the early stages the pain may be referred to the anterior portion of the abdomen instead of to the back. Renal and gall-bladder calculi are to be considered. Ulcer of the duodenum and ulcer of the stomach on the anterior wall; the lesser curvature, or at the pylorus, rarely give rise to backache, but ulcers on the posterior wall of the stomach, especially those adherent to the pancreas and even to the parietal peritoneum, may cause backache burning in character. Syphilis, when it affects the liver, the author says, may give rise to a continual dragging sensation in the back.

Journal of the American Medical Association.

September 18, 1920, lxxv, 12.

1. Occultism and Insanity. William House.
2. Frequent Causes and the Treatment of Perennial Hay-fever. I. Chandler Walker.
3. Glomerulonephritis as a Complication of Subacute Streptococcus Endocarditis. George Baehr and Herman Lande.
4. Minimum Standards of Organization for Municipal Health Departments. Carroll Fox.
5. Certain Epidemic Microorganisms of the Respiratory Tract. David J. Davis.
6. Acute Cardiac Upsets, Occurring During or Following Surgical Operations: Their Mechanism and Management. Samuel A. Levine.
7. The Present Status of Neurotology from the Borderline Standpoint. Joseph D. Heitger.
8. Optic Neuritis, Associated with Disease of the Nasal Sinuses: Report of Two Cases. E. C. Ellett.
9. Optic Nerve Disturbances in Diseases of the Posterior Nasal Sinuses. James Bordley, Jr.
10. Results of Tests in Hay-Fever and Asthma. Mark J. Gottlieb.

6. Acute Cardiac Upsets, Occurring During or Following Surgical Operations.—Samuel A. Levine bases this paper on observations in nine surgical cases in which there had been some sort of circulatory upset or collapse during or following operations. Surgical shock is excluded from the study. The conditions were diagnosed by the surgeons as acute dilatation of the heart in some cases, and might very well have been similarly diagnosed in others had not the real nature of the disorder been discovered. In this study particular attention was paid to the mechanism of the heart beat, and in each instance this was found to be abnormal. Of the nine patients three had paroxysms of auricular tachycardia, four suddenly went into auricular fibrillation, and the other two had paroxysmal auricular flutter. Every patient had a high grade of auricular disturbance, and in all but two the condition was transient in nature, the normal rhythm subsequently being resumed. Graphic proof of the abnormal mechanism, obtained by taking electrocardiograms of six patients, and the clinical course of the other three, left no doubt as to the real nature of the disturbance. It is urged that well-defined terms which actually describe the abnormal mechanism be employed when possible, rather than the vague name "acute dilatation of the heart." Direct vagal pressure or ocular pressure proved successful in arresting all three of the cases of paroxysmal auricular tachycardia. Proper digitalis therapy controlled the course of the cases of paroxysmal auricular flutter and paroxysmal auricular fibrillation.

The British Medical Journal.

August 28, 1920, ii, 3113.

1. Discussion on the Clinical Significance and Course of Subacute Bacterial Endocarditis. Opening Papers by Sir Thomas Horder and Profesor E. Libman.
2. Chronic Abdominal Pain. Edward Beansly.
3. *X*-rays and the Appendix. R. Allen Bennett.
4. Anaesthesia in Tonsil and Adenoid Operations. Courtnay Yorke.

2. Chronic Abdominal Pain.—Edward Beansly, after calling attention to the difficulty encountered in determining the cause of pain, especially in the case of the viscera, says that in spite of all that has been learned from physiologists as to the innervation of the internal organs and the manner in which painful impressions arising within them are referred to definite skin areas supplied by corresponding somatic nerves, we are far from being able to assign to a definite organ many of the various internal pains for which patients seek explanation and relief. For the present clinical experience and circumstantial evidence must be relied upon. This is particularly the case with pains which are referred more or less vaguely to the abdomen. The classification of such pains as "acute" and "chronic" is ambiguous and misleading, because it confuses intensity with duration. The writer discusses the types of pain due to the several organs, the methods of diagnosis, gives special attention to appendicitis, viceroptosis and intestinal stasis, and exploratory operation.

Western Medical Times.

September, 1920, xl, 3.

1. Performers and Progenitors. C. L. Redfield.
2. The Value of the "No Good"—Phleboliths. Douglas H. Stewart.
3. Will Have the Flu Again? No. A. B. Grubb.
4. Stone in Kidney; Inguinal Hernia. Robert T. Morris.
5. Alcohol and the Doctor. Charles A. Rosewater.

3. Will Have the Flu Again? No.—A. B. Grubb bases his answer to this important question on a painstaking search in a village and country practice, ever since September, 1918, for an individual with, or having had, a second attack. Those who had la grippe in 1889, he says, when "everybody was sick in bed at one time," did not have influenza in our last epidemic.

Southern Medical Journal.

September, 1920, xiii, 9.

1. Syphilis of the Heart and Aorta. I. I. Lemann and A. Mattes.
2. An Analysis of One Hundred Cases of Neurosyphilis. George Mitchell Eckel.
3. Syphilis of the Mucous Membranes. Loyd Thompson.
4. Diseases of the Pancreas: Case Reports. J. E. Knighton.
5. Gastric Neuroses. Alexander G. Brown, Jr.
6. Lessons from the Study of Typhoid Fever Among American Soldiers. Lemuel J. Johns.
7. Recent Advances in Diagnosis and Treatment of Syphilis and Gonorrhea in Relation to Public Health Measures. Daisy M. O. Robinson.
8. Rural Dental and Surgical Clinics. George M. Cooper.
9. Opportunities of the Rural Public Health Nurse to Develop Child Hygiene. Ruth A. Dodd.
10. Demonstration of the Barrel-Stave Splint in Fracture of the Clavicle. H. A. Royster.
11. Injuries of the Spleen: Report of Four Cases. E. B. Claybrook.
12. Accidental Inflation of the Colon. Robert B. Slocum.
13. The Value of Systematic Examination of the Urogenital Tract. G. Timberlake.
14. Surgery of the Prostate. J. Hugh Carter.
15. A New Operation for Ptosis-Cautery Puncture. William Perry Reaves.

5. Gastric Neuroses.—Alexander G. Brown. Jr., enumerates the various stomach conditions which are considered as gastric neuroses, and, after eliminating all changes in organic structure, gives the three following general avenues through which these conditions arise: (1) Nervous mechanism of the motor. secretory and sensory innervation of the stomach during its work. (2) The daily task given the stomach to do in quantity and quality of food. (3) The blood factors supplying the nervous, muscular and secretory structures of the stomach. The points which he particularly emphasizes are: that there is a large group of so-called stomach cases in which the violent misfunction may be and should be corrected before pathological conditions are produced; that this field of work is in the hands of the general practitioner; that such conditions should be investigated and "run down" or else gross pathology will result.

Il Policlinico.

June 15, 1920, xxvii, 6.

Resection of Rectal Cancer in a Youth of Twenty.—Botteselle reports this case, which is of a type of increasing frequency—rectal cancer in comparatively early life. Dr. Jerome M. Lynch is quoted as saying that but 4 per cent. of victims are under the age of 30. But one case is mentioned in which the age approximates that of the present patient; this was reported by Foisy and Rolland in 1916 in a youth of 21. Cancer is less frequent in Italy than in some of the countries nearer the north and this may explain the great infrequency of cases like the present in that country. In the United States Lilienthal and others have reported rectal cancer in youth in their teens. The author's patient was an artisan of negative family and personal history. On consultation it appeared that the symptoms had begun forty-five days before with difficult defecation. The passage was liquid and bloody. This was followed by a deceptive period of normal defecation and stools. The original symptoms then returned in an aggravated form and patient sought the clinic. He was found to be a man of excellent health, red haired and freckled, with well developed muscles and sound organs. An ulcerated, mobile tumor was felt in the right side of the rectum. It reached to within 2 cm. of the sphincter and was about 3 cm. in height. The presacral glands were felt enlarged, hard, and but slightly movable. The seroreactions of tuberculosis and syphilis were negative. There is no mention of an ante-operative diagnosis, but it was evidently malignant tumor which led to resection of the rectum. A low power examination under the microscope rapidly made the diagnosis. The operation was done in September and the patient was under observation until the following January. Retraction had taken place, and the author passed a bougie at intervals to oppose the rectal stenosis. Death came about from peritonitis, the exact mechanism of which is not apparent.

Schweizerische medizinische Wochenschrift.

July 8, 1920, l, 28.

Sporadic and Epidemic Encephalitis.—Wieland sums up an article on this subject as follows: In regard to the epidemicity of encephalitis the motivation of influenza must be considered; and while no direct connection between the two diseases can be shown, an indirect one is possible. There are the possibilities of mixed infection and there may be strain of grippe virus which can produce encephalitis. While nearly all men are perdisposed to influenza, very few are to encephalitis. This predisposition, naturally extremely faint, is increased perhaps by influenza pandemics. But this is not the whole of the predisposition, for in some cases there has been no previous exposure to grippe. The pleomorphism and alternation of encephalitis is not as mysterious as it seems, for it can be accounted for by localization of the virus. Lethargy is only a matter of the focus attacked and is not the genius of the disease. In no previous conception of encephalitis has this question of focal symptoms been active. Economo, who is responsible largely for the essential quality of lethargy, has modified his conception by substituting the term "poliencephalitis hemorrhagica epidemica." The author regards the main distinction between epidemic and sporadic encephalitis as follows: the former is primarily of primary and epidemic incidence and the latter is mostly a sequela of various acute infectious diseases.

Le Bulletin Médical.

July 10, 1920, xxxiv, 35.

Actual State of Our Knowledge of Alimentary Anaphylaxis.—Laroche, Richet, Jr., and Saint Girons contribute this article and begin by citing the labors in this field of Arthus. Besredka, Rosenau and Anderson, Nobécourt, Richet, Wells and Osborne, and Lesne and Dreyfus. This refers only to major anaphylaxis, which

is seen especially after eggs, milk and mussels. It is expressed as anaphylactic shock. But with this form the authors are not here concerned. They are interested in petty anaphylaxis expressed as urticaria, pruritus and angioneurotic edema, asthma, etc. The leading writers on this form are Widal, Abrami, Brissaud and Joltrain, Pagniez and Pasteur Valery-Radot, Cordier (with special reference to asthma), Nast, Nathan, etc. Among affections studied from this viewpoint have been migraine and epilepsy. In the petty type authors speak of crises of anaphylaxis such as might explain any affection which occurs in serial paroxysms. Beyond this type we see chronic anaphylaxis especially in the response of certain infants to milk as studied recently by Barbier. Common to all anaphylaxis appears to be the sequence of emaciation. The greater the emaciation the more readily may anaphylaxis be produced. In the infant with chronic anaphylaxis the emaciation may, of course, be attributed to gastroenteric indigestion, but the failure of digestion and assimilation may itself be explained as a consequence of the anaphylaxis. The authors mention under the head of treatment that pepsine and pancreatine are both indicated to place the *primæ viæ* in favorable condition. The principal therapeutic recourse is injection of boiled milk subcutaneously to desensibilize the patient. The use of peptone in urticaria and even for drug anaphylaxis has given some surprising results.

Brazil-Medico.

June 19, 1920, xxxiv, 25.

Who Was the First to Describe the Socalled Korsakoff's Disease?—In a recently published graduation thesis of Rio University, written by Mourao Mattos, the author insists that the Brazilian alienist Coelho was the first to isolate this affection, and he would henceforth term the latter the "syndrome of Erico Coelho." The date at which the latter presented his contribution before the medical profession was May, 1886. Professor Fajardo, when he made a journey to Europe and learned of the new Korsakoff disease, got the impression that plagiarism from his chief, Coelho, had been committed. There are still other claimants, for, according to Dupre, no less a person than Charcot, mentioned the syndrome in the course of his "Thursday lectures," but no dates are mentioned nor any reference to a published article. It is conceivable that in an affection like alcoholic polyneuritis the coexistence of mental disorder may have been mentioned independently by several men. Charcot had noted amnesia in two alcoholic women with polyneuritis. Korsakoff spoke of oniric delirium superposed on a continuous amnesia. Coelho mentions as characteristic inability to coordinate ideas of the most banal kind, mental confusion and failure of memory, the latter being the most striking behavior; half an hour after a meal there would be no recollection of the event. Memory for long passed events might still be good. The claim of Coelho may be technically invalidated by the fact that he was writing primarily of beri-beric polyneuritis or probably of the general phenomenon of polyneuritis associated with mental disorders, irrespective of the particular motivation. But apparently a specific beri-beric form was not isolated until many years later. The claim of Coelho, as we understand it, is that he first pointed out the "polyneuritic psychosis" as a syndrome, irrespective of the cause.

Le Presse Médicale.

July 10, 1920, xxviii, 47.

Pernicious Anemia in Uremic Nephritis.—Aubertin and Yacoel state that the anemia of Bright's disease has long been known and has in part been explained by hydremia and dilution; but there is over and above a pernicious type which is able to destroy life of itself, and from which a hydremic component can be definitely excluded. Under what circumstances does this type occur? The authors cite cases in point. In one a girl of 21 developed a grippal nephritis which, despite the vegeto-lacteal diet, persisted after recovery from influenza. She was first seen in the fifth month by Vaquez after a profuse epistaxis. The most striking symptoms were profound anemia and dyspnea. Most of the petty signs of uremia were evident, including amaurosis. The dyspnea could be in part attributed to crepitant rales over both bases. The patient had not menstruated since the attack of grippe. There was slight cardiac hypertrophy. The amount of urine voided was satisfactory and even slightly excessive, with 1.5 gms. albumin, blood cells and a few granular casts. The uremia was 2.2 gms. and the coagulation time 8 min. 30 sec., the blood clotting poorly. The blood cell count gave 82 per cent. of neutrophile polynuclears; red cells 1,100,000. The complete diagnosis was pernicious anemia, albuminuric-azotemic nephritis without edema, and dry pericarditis. The patient responded to treatment for about two months, when oliguria suddenly developed, corresponding, perhaps, to terminal atrophy following nephritis. Death was not attended by convulsive phenomena nor did edema supervene. Autopsy revealed chronic nephritis with very adherent capsule and sclerosis of the cortex. The spleen and marrow of the long bones showed the alterations common to severe anemia. The nephritis and anemia had pursued a rapid course side by side. There was initial improvement in both conditions followed by recrudescence and fatal cachexia due to both syndromes acting in concert.

Archives Médicales Belges.

March, 1920, lxxiii, 3.

Child Mortality in the Belgian Congo.—This subject is of interest from several angles, including that of recolonization of Africa by American negroes. Dossin covers it with great thoroughness. He sketches the physical and mental development of the aboriginal infant. Natality is low at present from a mixture of causes. There is no reason why the women should not be more fertile than they are, but very large families —such as twelve children—are quite exceptional. The custom is to bear no further child until the present one is weaned, this taking about thirty months. The women, therefore, breed every three years or more, and there is quite a sentiment of Malthusianism about too many offspring, due in part to the superstition that a new baby means the death of the last one. The Church has combated this view with some success. Prostitution and immorality are universal and with this comes venereal disease and sterility and in general extinction of the desire for maternity. Limited figures are given which show remarkably low birth rates and a large percentage of still births. Concubinage and polygamy are common, but their effects on the birth rate are not stated. Syphilis and gonorrhea both seem on the increase. Artificial abortion has been practised from time immemorial. Among endemic diseases which tend to lower the birth rate are sleeping sickness, leprosy, and yaws. The constant movement of the native troops makes directly against natality. The child mortality is known to be high, due to a variety of causes, as ignorance of child hygiene, the causes of death being given in the order named: digestive disturbances, exposure which leads to respiratory affections due to nocturnal coolness, worm diseases with especial reference to the hookworm, convulsions, malaria, and other affections already mentioned. The youth of the mothers is naturally a condition favorable to high mortality.

Antiquity of the Term "Pedology."—The use of this term for child study is said to have been proposed in 1895 by Chrisman of Jena. Belgium is the pioneer country to push the systematic study of the subject, and before the recent war there were no less than three Belgian periodicals devoted to the new discipline, comprising *Les Annales Pédologiques*, *La Pedotechni*, and *Le Pedologium*. Pedological laboratories were established and the first session of an International Congress was held. It is of interest, however, to note that in 1518 a Latin volume was published, probably in Leipzig, with the title *Paidologia*. The book is one of the rarest and its very existence is ignored by the new school of pedologists. Dr. Blanco y Sanchez intimates that the contents of the work will be reproduced in the first volume of *Spanish-American Pedagogic Annals* soon to be issued as the organ of the new Spanish Society of Pedology.—*El Siglo Medicó.*

Book Reviews.

GRUNDRISS DER AUGENHEILKUNDE FÜR STUDIERENDE UND PRAKTISCHE AERZTE Von Prof. Dr. A. BRÜCKNER und Prof. Dr. W. MEISNER. Leipzig: Georg Thieme, 1920.

THE authors are respectively the director and first assistant of the Berlin University Eye Clinic and the work, a first edition, comprises 649 pages, 126 illustrations, some in colors, and a colored plate. Ophthalmology has two quite different meanings. It is the sum of our scientific knowledge of the eye and it is the art of relieving the morbid affections of this organ and its appendages. To the scientific end proper but 94 pages are devoted, exclusive of course of the dioptrics, etc. The pathology begins in the usual order of locality—conjunctiva, cornea, sclera, uvea, lens and vitreous. The second section deals with affections of the retina and optic nerve, the third with dioptrics, etc., and the fourth—very briefly—with intraocular pressure. The second part of the work deals with affections of the adnexa and the third with injuries. Special sections are devoted to general diagnosis and general treatment but these are brief, for the subjects are all given in appropriate connection under the various diseases.

EATING TO LIVE LONG. By WILLIAM HENRY PORTER, M.D. With Introduction by EDWIN F. BOWERS, M.D. Chicago: The Reilly & Lee Co., 1920.

DIETETICS is the most inexact of sciences, if we may judge from the contradictions which we find in the doctrines promulgated by the professors of it. As the author of this interesting book says in his preface: "One might rather expect that in the half million or more years in which human beings have been inhabiting this planet, they would have developed an ample and adequate understanding of the uses of food, or an instinctive if not an acquired knowledge of proper food selection. Such is not the case." And the trouble is that the preacher of every system—Haig, Kellogg, Porter, Salisbury, Christian—each and every one points to results to prove that he is right, and each and every one does really get results in many cases; he hears of these good results and records them with joy and ever-increasing confidence in his regimen; the failures do not report themselves but go off to try some other system or abandon all system. In this book Dr. Porter writes very pleasingly and plausibly in support of some novel dietetic views; the reader may not accept these views, but whether he does so or not he will be set to thinking—and the author who makes his readers think has done his work well and justified his undertaking.

ÉTUDE CRITIQUE DE L'ÊTIOLOGIE DES BRONCHITES CHRONIQUES AVEC SCLÉROSE PULMONAIRE. Par DOCTEUR JACQUES DALSACE. Paris: Félix Alcan, 1920.

THIS volume is a separate imprint of a Paris thesis. It is largely taken up with 18 case histories, which are followed by summaries of the symptomatology, the cyto-bacteriology, the investigation for syphilis and tuberculosis, the causal factors and the pleural complications. There is a two-page summary from which it appears that bronchiectasis is not at all considered, the picture consisting of chronic bronchitis, emphysema, and sputum which may or may not contain Koch's bacillus; to which is added a focus of pulmonary sclerosis, usually at the apex. This sclerosis plays a preponderant rôle in the genesis of the affection.

INGUINAL HERNIA, THE IMPERFECTLY DESCENDED TESTICLE AND VARICOCELE. By PHILIP TURNER, M.S., F.R.C.S., Assistant Surgeon, Guys Hospital. Pp. 104 with 22 illustrations. London: J. & A. Churchill; Philadelphia: P. Blakiston's Sons & Co, 1919.

WITH perhaps a few exceptions under special circumstances, Turner agrees with the hypothesis advanced by Russell of Melbourne, in 1899, that in all cases of inguinal hernia, both in children and in adults, the sac is always a congenital structure and is always derived from a persistent patent funicular process. This is generally known as "Saccular Theory." After discussing this at length, together with the anatomy of the parts and certain pathological considerations, Turner says: "The practical bearings of the saccular theory, and the considerations which arise from it on the operative treatment of hernia, may be summed up as follows: (1) The essential cause of inguinal hernia is the presence of the congenital sac. There is no primary weakness of the abdominal wall which causes the hernia to appear. (2) Hence, to cure the hernia, it is essential to completely remove the sac. As there is no primary weakness, there is no need to attempt to strengthen the inguinal canal. (3) The operation should be carried out as soon after the appearance of the hernia as possible, before the development of any secondary weakness. (4) In cases where there is advanced and irrecoverable secondary weakness the sac should be completely removed and an attempt made to strengthen the inguinal canal. (5) The operation should, in all cases, be carried out with the least possible damage to the structures entering into the formation of the inguinal canal. (6) The external abdominal ring, since it is an important insertion of the external oblique, should not be divided unless, for some reason, absolutely necessary for the satisfactory performance of the operation. Based on this conception of the conditions, Turner recommends an operation along lines first suggested by G. L. Chiene, and which differs in many respects from the Bassini and its more common modifications. The incision in the external oblique is not prolonged through the interlacing intercolumnar fibres which form the intercolumnar ligament binding together the pillars of the external ring at its apex, but stops about ½ inch short of the ring margin. By blunt dissection the aponeurosis is freed from underlying structures and the lower edge of the internal oblique is retracted upwards and inwards. The cremaster is torn through exposing the cord and sac just below the internal ring. The sac is separated and ligated very high up and the excess of sac cut away. The operation is then concluded by suture of the external oblique aponeurosis, sometimes with a stitch or two extra to narrow the external ring, and suture of the skin. In most cases he does not think that the customary suturing of the conjoined tendon to Poupart's ligament is either necessary or advisable; but he says it may easily be done through this exposure if there seems to be general weakness of the abdominal wall. We doubt if this method will meet with much favor in this country, where most of us, at least, suture the conjoined tendon to Pouparts ligament in children as well as in adults, even though we have various methods of imbricating, overlapping or doing plain sewing when it comes to the aponeurosis.

The chapters on imperfectly and abnormally descended testicles are interesting but there are much better methods of treatment than the possibly rather dangerous one suggested by the author. The author's operation for varicocele differs from the ordinary excision method only in minor details. Turner's book makes interesting reading but we doubt its having much influence in modifying the commonly accepted methods in operative technique.

EMOLISI URINARIA. Prof. ALFREDO AMATI. Napoli: G. Borelli e Figlio, 1919.

THIS brochure of 46 pages written by a docent of Semeiotic Medicine in the University of Naples has neither index nor table of contents. The sections of the text are devoted to osmonocivity, acidity—alkalinity, coloring matters and other substances concerned in hemolysis, with clinical cases and protocol of animal experiments. The conclusions reached are that physiologic urine has a constant uro-hemolytic coefficient, and that in nephritic subjects and subjects with malignant tumors this coefficient is notably and constantly altered.

IL MOVIMENTO DEMOGRAFICO A NAPOLI DURANTE LA GUERRA (1915-1918). Prof. GIUSEPPE CRISTALLI. Napoli: Officina Cromotipografica "Aldina," 1920.

THE author who is distinguished as on obstetrician has as *motifs* the lowered birth rate which must be restored to that of peace times, the problems which arise from sexual relations, the saving of infant life including the illegitimates and analogous subjects, including the increased mortality from tuberculosis. The volume is a small brochure of 47 pages presenting numerous tables of vital statistics, to which class of literature it belongs.

Society Reports.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

(From Our London Correspondent.)

THE eighty-eighth annual meeting of the British Association opened at Cardiff, Wales, on August 24 last, when Dr. W. A. Herdman, F.R.S., Professor of Oceanography in the University of Liverpool, gave his presidential address.

Oceanography.—The address was a remarkably lucid explanation of the scientific and practical aspects of oceanography and was in effect an urgent appeal to the inhabitants of the British Isles to become better informed in regard to their national sea fisheries and to take a more enlightened interest in the basal principles that underlie a rational regulation and exploitation of these important industries. Professor Herdman very rightly insisted on the point that national efficiency depends to a very great extent upon the degree in which scientific results and methods are appreciated by the people and scientific investigation is prompted by the Government and other administrative authorities. He emphasized the fact that the principles of science apply no less to aquiculture than to agriculture. To increase the harvest of the sea the fisheries must be continuously investigated, and such cultivation as is possible must be applied, and all this is clearly a natural application of the biological and hydrographical work now united under the science of oceanography.

Anoxemia.—Mr. J. BARCROFT of Cambridge, as president of the Physiological Section, offered a constructive criticism of the latest views enunciated by Dr. J. S. Haldane of Oxford on anoxemia or lack of oxygen in the blood. It must be borne in mind, he said, that this condition should be distinguished from excess of carbonic acid, the usual popular conception of lack of oxygen. The condition in its purest form is met with at high altitudes, where there is literally too little oxygen to breathe. It is also met with in cases of anemia, where the red corpuscles of the blood are deficient in number and so carry too little of the gas to the tissues of the body. And lastly it occurs when the blood does not circulate freely, as in various diseases. According to Dr. Haldane "Anoxemia not only stops the machine but wrecks the machinery." The president showed that the first part of this statement was absolutely correct. The second part, however, remained somewhat less certain. He enforced the point by examples telling how Dr. Haldane and Dr. Kellas spent an hour in a chamber in which the air had been reduced to a low pressure. Both these observers certainly became mentally affected. As Mr. Barcroft said. "Clearly each believed the other to be complete master of his own faculties, but it is evident that Dr. Haldane was not so. I gather that he has no recollection of what took place, that whenever he was consulted about the pressure he gave a stereotyped answer which was the same for all questions, that even with a little more oxygen present he was sufficiently himself to wish to investigate the color of his lips in the glass, but insufficiently himself to be conscious that he was looking into the back and not the front of the mirror. Dr. Kellas, who could make observations, never discovered Dr. Haldane's mental condition, though boxed up with him for an hour, and went on consulting him automatically. Yet the after-effects show that there was no destruction or "wrecking" of the brain in either case. The conclusion therefore is that "no degree of anoxemia which produces a less effect than that of complete unconsciousness leaves anything more than the most transient effects. The train of symptoms in anoxemia suggested alcoholic poisoning, if the condition was rather less acute, *i.e.*, more chronic, fatigue was simulated and irritability occurred. As Mr. Barcroft stated, "anyone who has experience of high altitudes knows to his cost that life does not run smoothly at 10,000 ft." Nevertheless, it was a fact that men lived and worked at high altitudes. Two reasons as to how this was accomplished had been advanced. First, more red blood corpuscles appeared in the blood, to carry more oxygen, and secondly, the lining membrane of the lung developed a power to "clutch at the oxygen" in the air and force it into the blood under pressure. In discussing these views the speaker pointed out that at high altitudes the blood may contain plenty of oxygen but does not contain it at the necessary pressure. In his words "the lowness of the pressure and not the deficiency in the quantity is the cause of the symptoms observed." He showed that an increase of red blood corpuscles could not give the needful increase of oxygen. He also criticised adversely the view of the Oxford School and notably that of Dr. Haldane, that the lining membrane of the lungs could act as described. He himself had lived for six days in a glass respiration chamber under reduced oxygen pressure in order to put this theory to a practical test. If the lungs were capable of acting as the Oxford School suggested his blood should have been oxygenated, that is, bright red. But if the Oxford School were mistaken, his blood would be dark—an artery was opened by a surgeon. The blood was dark. Mr. Barcroft contended that the sound method of dealing with anoxemia at high altitudes was "to give oxygen." This was being done in connection with aeronautics. It may be remembered that during the war, gas warfare brought fresh interest to bear on the study of gases of the human blood, and of oxygen in particular. In investigations in this direction Drs. Haldane and J. Barcroft were especially prominent.

The Usefulness of Anthropology.—Professor KARL PEARSON, President of the Anthropological Section, in his presidential address, laid stress on the need for rendering science (anthropology included) useful, and sketched the methods by which this object might be attained, so far as anthropology was concerned. He said in part: "I fear that 'the best is yet to be' cannot be said of our multitudinous observations on 'height-sitting' or on the censuses of eye or hair colors of our population. These things are dead almost from the day of their record. It is not only because the bulk of their recorders were untrained to observe and measure with scientific accuracy, it is not only because the records in nine out of ten cases omit the associated factors without which the record is valueless; it is because the progress of mankind in its present stage depends on characters wholly different from those which have so largely occupied the attention of the anthropologist. It is that, seizing the superficial and easy to observe, he has let slip the more subtle and elusive qualities on which progress, on which national fitness for this or that task, essentially depends. The pulse-tracing, the reaction-time, the mental age of the men under his control are far more important to the commanding officer, nay, I will add to the employer of labor, than any record of span, of head-measurement, or pigmentation categories. The psychophysical and psychophysiological characters are of far greater weight in the struggle of nations to-day than the superficial measurements of man's body. Physique in the fullest sense counts for something still, but it is physique as measured by health, not by stature or eye-color. But character, strength of will, mental quickness count for more, and if anthropometry is to be useful to the state it must turn from these rusty old weapons, these measurements of stature and records of eye-color, to more certain appreciations of bodily health and mental aptitude, to what we may term 'bigorimetry,' and to psychometry. It appears to me that if we are to place anthropology in its true position as the queen of the sciences, anthropologists must not cease: (1.) To insist that our recorded material shall be such that it is at present or likely to be in the near future, utile to the State, using the word 'State' in its amplest sense. (2.) To insist that there shall be institutes of anthropology, each with a full staff of qualified professors whose whole energy and time shall be devoted to the teaching of and research in anthropology, ethnology and pre-history. At least three of our chief universities should be provided with such institutes. (3.) To insist that our technique shall not consist in the mere statement of opinion on the facts observed, but shall follow, if possible, with greater insight, the methods which are coming into use in epidemiology and psychology.

Zoology.—Professor J. STANLEY GARDINER, president

of the Section of Zoology, dealt with the professional side of zoology and deprecated the fact that the subject was being broken up into small sections devoted to special economic objects, while at the same time sufficient trained zoologists could not be found for posts that were vacant. He said that during the war men were required who had passed the Honors Schools in Zoology, and hence were presumably capable of doing the work, to train for the diagnosis of protozoal disease. All names from 1905 to 1914 were asked for and the average number was under 14 per year from all English universities. In the year 1913-14 every student who had done his Honors Course in Zoology in 1913, could, if he had taken up entomology as his subject, have been absorbed into the economic applications of the subject. Trained men were needed to undertake scientific fishery investigations, and could not be found. Posts were advertized in animal breeding, in helminthology, and in protozoology, three other economic sides of the subject. The Natural History Museum wanted systematists and there were many advertisements for teachers. The speaker did not know how many of these posts were filled, but it was clear that not more than one-half, or even one-third, could have been filled efficiently. Could any zoologist say that all was well with his subject in the face of these deficiencies? He therefore urged that more attention should be paid to zoology as the science of living animals, and less to the bare facts of anatomy and classification.

In this connection reference may be made to the discussion on medical education at the recent meeting of th British Medical Association, when suggestions were made by many leading men of the medical profession as to lightening the medical curriculum. A tendency was displayed to shelve zoology, and in the discussion the other day following Dr. Gardiner's address, in which many well known zoologists took part, this tendency was commented upon as well as the action of the Board of Education in excluding zoology from curricula in favor of botany.

The Mendelian Theory.—MISS SAUNDERS, president of the Botanical Section, discussed the latest developments of the Mendelian theory, holding that the outlook was promising for proving many of the moot points, referring to the relative influences of genetic constitution and of the environment in shaping organisms, she drew attention to the fact that with regard to some characteristic the organism was a self-controlled independent system. In such cases the soma reflected under all observed conditions the genetic constitution expressed in the Mendelian formula. Knowing the constitution of the parents, the appearance of the offspring could be predicted accurately and no correction was required for the effect of conditions of temperature, humidity, illumination, and the like. Per contra, most somatic characters showed some degree of variability arising as the result of reaction to environmental conditions. The speaker emphasized the need for more organized co-operation in the experimental study of genetics. The attitude was not uncommon to regard the study of genetics as a science apart, but the complex nature of the problems required that the attacking force should be composite, representing all arms.

Mendelism and Darwinism.—Dr. BATHER, president of the Geological Section, considered the relation of Mendelism and fossils. The discussion which was joined in by the president of the association, by the presidents of Botany and Zoology and many other representatives of the three branches of science concerned, was summarized somewhat as follows: It may be premised that the discussion dealt with the mode of the process of evolution. No speaker doubted the fact of evolution, but it was apparent that unanimity has not yet been reached in this controversy. Darwin held the view that whatever might be the cause of evolution, it had come about by the summation of small modifications. Examination of every individual plant or animal showed the presence of minute differences from other animals and plants of the same kind and Dr. Bather thought that these were the chief material on which natural selection acted. There had always been a school which looked to occasional large variations called sports or mutations, as the more probable source of the new species, urging that as species were discontinuous, that is to say separated by gaps, it was more natural to assume that they had come into existence by the selection of discontinuous variations. This school was suddenly reinforced by the rediscovery of Mendel's work on hybrid peas, and his theory that organisms were compounded of unit factors and each of which was transmitted and inherited in a state of purity. An eager body of experimental workers followed the Mendelian line of investigation and added triumph after triumph to their experimental dissection of organisms into unit factors and their tracing of the fate of these factors in inheritance. Some of the more extreme partisans of the view discarded natural selection and the influence of environment from their conception of the process of evolution. They returned to a new form of a mystical medieval theory and held that evolution was simply a development of unit factors, all of which had been contained in the primordial germ of life. Mutations were inherited or transmitted in all their purity, but variations due to the environment left no trace on the permanent chain of life. Students of fossils might have been expected to support the view that evolution had come about by sudden changes, especially as the gaps in the series of fossils were great. But, on the other hand, they were unanimous as to the evidence from the rocks being in favor of slow, continuous change. Wherever a series was complete, and had been studied carefully, it showed a slow continuous evolution. It showed, moreover, that the points in which old animals differed from young animals, very frequently anticipated the changes by which newer or later species differed from older earlier species. The facts strongly supported the belief that somehow or other the environment had an effect on living creatures, and that the effect became grafted on the constitution of the race, so that it would subsequently appear independently of the environment. They believed, therefore, that evolution was continuous, that some force like natural selection directed it, and that the environment and not the unrolling of latent possibilities was the chief factor in eliciting variation. As was to be expected in the case of an extremely active branch of experimental science, the advocates of Mendelism were not all in agreement. But it was admitted by many that Mendelians had laid too much stress on discontinuity, and that what they called mutations and unit factors were often so minute that only experts could identify them. Still more important was the admission that the Mendelian theory of the purity of the unit factors could not be maintained. In certain cases Mendelian units were transmitted without alteration, while in a growing number of cases it appeared that blended inheritance was the rule. On the whole, the discussion tended to show that Mendelian work, instead of being opposed to Darwinian principles of evolution, was likely to reinforce them.

This discussion on Mendelism and Darwinism was the *pièce de resistance* of the meeting. The members of the British Association seem to take much delight in arguing as to whether Darwin's hypothesis that evolution may take place by the accumulation of small preferential differences still holds good, while the Mendelian members either put on one side Darwin's theory or endeavor to make it coincide with the principles enunciated by the wonderful priest. It may be remembered that when the British Association met in Australia six years ago Professor William Bateson, the leader of the British Mendelians, denied the validity of the Darwinian theory, remarking that we were indebted to Darwin for his matchless accumulation of facts, but that we could not follow him in his philosophic theory. Since that time arguments between the respective theorists have waxed hot and almost furious. Nothing was decided in this year's discussion. As said before, Darwin's position as a teacher was reaffirmed and the value of his ideas as a working hypothesis was substantiated by the majority of the speakers, who were probably Darwinians. But the hard and fast Mendelians will continue in their belief that changes in species, the birth of species, and possibly the decay of species, do not take place because environment changes the germ-plasm in the reproductive organs of animals, but arise from the germ-plasm itself.

The Mental Effects of Alcohol and Opium.—The work

in the Psychology Section was extremely interesting. One of the first papers read in this section was by Miss May Smith and Dr. W. McDougall, dealing with "The Mental Effects of Alcohol and Opium." In order to test the effects of alcohol, dotting machines were used for "attention" and lists of related words for "memory." It was found that the general effects of alcohol were to deteriorate these powers except under certain fatigue conditions, when alcohol improved both powers; opium, on the contrary, improved both powers, whether under normal or fatigue conditions. The fatigue was engendered by loss of sleep for three nights. The tests were made every day, and the growth of recovery traced. Precautions were taken with the drug experiments, so that the person subjected to the test did not know what drug was being taken. The results were not due, therefore, to suggestion. The more diluted the alcohol was, the weaker was the effect; and alcohol taken after a meal had a much less evident result than when taken four or five hours after a meal.

Dreams of Children.—At a joint meeting of the Education Section and the sub-section of Psychology, Sir Robert Blair presiding, Dr. C. W. Kimmins discussed "the dreams of children who are physically abnormal." He said in part that the great value of the dream of the neurotic in the diagnosis of cases of mental disturbances had been proved beyond all dispute in the treatment of war neurosis and a great variety of nervous ailments. On the other hand, the dream of the normal healthy child also appeared to him to open up a very useful field for research as being the best method of investigating the unconscious, which played such an important part in human behavior. Dealing with an investigation of the dreams of 500 physically defective, blind, and deaf children who were not suffering from mental defects, he said that the dreams of the physically defective differed from those of the normal in the following ways: (1) They dream far less about food, from which it would appear that the crippled child is better fed than the normal child. (2) Among the fears, a larger proportion dream of accidents, and the fear of animals is clearly greater than among normal children. (3) The kinesthetic (falling, flying, etc.) dreams are more common, especially at the ages of thirteen and fourteen years. (4) Among the fulfilled wishes, visits to the country bulk very largely. (5) The death element in the dream occurs more frequently than is the case in normal children, and more even than in the dreams of the deaf and blind. A curious feature of the dreams of physically defective children was that the dreamer was always a normal child. They even dreamt of acts of bravery and adventure. The dreams of deaf and blind children were clearly marked by special characteristics. Those of the deaf child were far more interesting and full of life. The content of the mind was much richer with its vast store of visual experiences, and there was a wealth of variety which was absent from the dreams of the blind. His investigation fully confirmed the results obtained by Jastrow and Heerman, viz.: (1) That a child who becomes blind before the age of five never sees in his dreams. (2) That when total blindness occurs between the ages of five and seven, much depends on the mental development of the child as to whether he sees in dreams in after life or not. The well developed child mentally certainly does; the evidence with regard to the others is not so clear. (3) That all deamers becoming blind after the age of seven see in dreams even after an interval of many years, and apparently with little diminution in clearness. Blind children under normal conditions dreamed far less often than deaf children; but this was not true at the time of the air raids. The air raids had comparatively little effect on the dreams of the deaf, but the influence of these on the blind was very marked, more so on this than on any other type of child. Long after air raids had ceased, the blind child dreamt of them, though there was practically no trace of them left in the dreams of the deaf. Bravery and adventure played an important part in the dreams of the deaf, especially in those of the girls, who, in their dreams, took an active part in the war, performing deeds of valor; but they had no place in the dreams of the blind. The fear of fire was very common in the dreams of these children. A study of the dreams of the deaf threw an interesting light on the much discussed question of the cause of the kinesthetic dream. As a result of the investigation, it appeared that this type of dream only rarely occurred before the child reached the age of ten, and that then a fair proportion of children's dreams were of this nature. The proportion steadily increased up to the age of seventeen. Further, any illness involving a high temperature tended to increase the number. In the dreams of children who had been deaf from birth, however, no falling element appeared. This fact supported the physiological theory as against the other suggested solutions of the question. Muscular memory played an important part in dreams. It was remarkable how little school activities apart from those involving muscular movements affected the dream; whereas, in blind children in whom reading was acquired by the sense of touch, the memory of stories formed a large proportion of the dream material. Dr. Kimmins was convinced that from an educational point of view there was in the dream a valuable and fascinating field for research, and that a further study of the dreams of children who were physically abnormal might clear the way to a fuller understanding of the significance of the dreams of normal children. A careful study of children's dreams might throw much light on the special interests and desires of the child at different ages, and especially where persistent dreams were recorded of unfulfilled wishes on those elements which were conspicuously lacking in the life of the child and which might seriously interfere with his natural development. From various sources there comes a large body of evidence as to the very great influence the unconscious exerted in every department of mental activity, and a fuller knowledge of the unconscious might be as essential in dealing with the normal development of children as in the abnormal cases, in which it had proved to be of such extraordinary value. If this were true, then the dream, as the best means of investigating the unconscious, must play a very important rôle in the educational developments of the future.

Relation of Physiology to Medicine.—In the Section of Physiology, Dr. T. Lewis, F. R. S., discussed this subject. He said in part that in dealing with the relations between the science of physiology which studied the normal functions of the animal body, and medicine which treated the human body in disease, he spoke primarily as a physician. Physiology, originally the offspring of medicine, had become to medicine in its old age a chief pillar of support. It was his personal conviction that human as opposed to animal physiology should form the central point of physiological teaching to medical men. To confine the physiological lessons to the human body was impossible, for by far the largest part of our knowledge of the functions of the human body was still derived analogically from observations of the lower animals. But knowledge that had been obtained, or was now obtainable by observation from man himself should be constantly stressed, and animal physiology should be taught where it supplemented knowledge so obtained. It was of considerably greater importance to the student of medicine that he should witness a normal phenomenon, or rather a given principle, by observation upon the human rather than upon the animal body. It was where it could not be displayed in man, or where it could not be displayed with the same fine degree of certainty, that animal physiology should be called in. There were several reasons why this should be the trend of modern physiological teaching to medical students. First and foremost, students in their most impressionable period would thus learn how to investigate the human body. In talking with physiologists he found not infrequently that they but dimly realized the difficulties of this task and failed fully to appreciate how enormous was that barrier between physicians and the working organs of man, namely, the unbroken skin. Yet that barrier must be and could be passed, for its passage was vital to the present and future success of medical science and practice. The problem of what was happening in the human body was infinitely harder to solve than that which asked what was happening in the animal body, for in the former case the methods of examining and observing were usually far more indirect. The student was taught to stimulate the vagus nerve in the frog and to note the effects. At the same time he should be taught to press upon the vagus in the carotid sheath

of his fellow-student and to observe the similar lapse of heart beats. Physiologists had to face the fact that the large majority of students who passed through their hands would encounter in their daily work problems far harder to solve than those which they themselves dealt with in their laboratories. He spoke from personal experience in saying that medical students, when they came to the teaching hospitals from the physiological laboratories, had not yet learned to handle a man, their senses of hearing and touch were not sufficiently developed, and yet they were to handle men for the rest of their days.

The Prevention of Myopia.—Dr. F. W. EDRIDGE-GREEN, taking as his subject the prevention of myopia, said in part that the direct exciting cause of myopia appeared to be increase of intraocular tension through back-pressure on the eye, therefore lengthening its anteroposterior diameter. There was no satisfactory evidence that the use of the eyes for near work either increased or caused myopia. In the prevention of myopia any cause which would increase the intraocular tension by obstructing the outflow should be avoided. All exercises in children which involved strain with the eyes pointing downward should be avoided. A typical example of this was the exercise in which a child moved itself up and down from the floor with the eyes pointing downward. Physical training was of great importance, and it would be noticed that the ordinary forms of exercise, cricket, football, golf, etc., did not cause myopia, whereas lifting heavy weights, dumbbells, wrestling, boxing, or riding a bicycle uphill in a stooping position did. It was, particularly in those who had sedentary occupations, and who were not in a fit physical condition, and had an hereditary tendency to myopia, these forms of exercises should be avoided. Exercises which were found to cause a feeling of pain or tension in the eyes or distension of the veins of the neck should be strictly forbidden to myopes. Reading in a recumbent position with the eyes pointing downward was not advisable.

Psychology in Relation to the Industries.—In the Section if Psychology a series of papers were read on psychological aspects of industrial life. Professor E. L. COLLIS, in a paper on "The Psychology of Industrial Convalescence," said that the nation had recognized the need for dealing with convalescing disabled soldiers. The most successful treatment had been found to be that with an occupational objective, the reason being that occupational therapy was practical and largely psychological. What was only just coming within the realms of national conscious thought was that for many years industry had been providing and was continuing to provide as many disabled persons as did the war. Experience with disabled soldiers had demonstrated how few disabilities were sufficiently serious to cast a worker upon the industrial dust-heap. To enable him to train himself to become a productive, wage earning citizen he needed guidance and help. Yet one of our judges had pointed to the lack of medical and orthopedic treatment for injured workmen and of provision for their occupational reeducation. The strain of industrial life in peace time was just as productive of neurasthenia—machine shock, if they choose so to term it—as the conditions of active military service. Industry could be made a unique therapeutic agent; what was required was a hair from the dog that did the biting. Industrial neurasthenia played an important part in every illness which befell a worker, whether due to accident or disease. Such a worker required confidence in the future to enable him to resist the onset of illness or to enable him to recover. This confidence could only be created by the master he served—industry. The size and complexity of industrial concerns made the duty of creating this confidence a matter to be delegated by the firm to a special branch of management containing within its personnel medical and social experts. Referring to particular types of cases, he suggested that a worker who was recovering from injury should have his convalescence facilitated by re-admission to work for part time under medical supervision. Then there was the case of the loss of a limb. Men crippled in the war were fitted with artificial limbs, taught to use them, and encouraged to learn a new occupation. He submitted that a moral obligation rested with industry to finance treatment on these lines. Industry ought to provide means for industrial convalescence. What might be hoped for was that the dominant industry of each district would be developed at each place rather than an effort to develop indiscriminately. Then convalescing skilled workers from one district could, if necessary, be transferred to their own special trade carried on in another.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

Forty-second Annual Meeting, Held at Boston, Mass., May 27, 28, and 29, 1920.

THE PRESIDENT, DR. NORVAL H. PIERCE, OF CHICAGO, IN THE CHAIR.

Address of Welcome.—President A. LAWRENCE LOWELL of Harvard University delivered this address. Looking at American professional men and comparing them with men of the same class in Europe, one was brought to the conclusion that the American specialized more and specialized earlier than did the European. The men in other countries were supposed to know more along general lines, as well as the subject of particular study. This was due to delay in all subjects. It took men a longer time here to fit themselves for medicine than for other subjects, because the amount of material they had to command was very much greater. One looked forward to the time when a simplification would take place; when some particular form of information would make way for the advent of general principles that would simplify the processes of education and that would permit of the command of a larger variety of facts than could be available through isolated factors. Why was it that Americans entered professions, at a later age than men in any other countries in the world? They were delivered at college later than men in other countries, in the same stage of education. Secondary education was completed at a more advanced stage, and was considerably behind that of Europe. Men entered college at 18, and the amount of information they possessed could easily be attained at 16 years. Medical men always advised against pushing boys and girls as rapidly as they might be pushed; and the whole weight of the profession was on the side of the slowing down of education. Family, physicians were constantly saying, "Don't push your boy too hard." The speaker, however, believed it better to put the work a little above a boy's head and let him reach up to it. It was a fact that boys were learning to make boats at an age when their grandfathers were commanding ships that sailed round the world. The war had shown us that the boys could rise to anything that occasion required of them, and he believed that they were capable of commencing college life at sixteen. The mind was more active at twenty than at twenty-five. However, his purpose to-day was not to give views on problems of education, but to extend a very cordial welcome to Harvard University.

Presidential Address.—Dr. NORVAL H. PIERCE of Chicago, in this address, said the history of laryngology could be said to be bound up with that of the American Laryngological Association, despite the fact that the membership was a small one, and that the policy of exclusiveness had been rigidly maintained. Many regarded this association as a kind of aristocracy, but this did not mean that the members could be content with things as they were. The war had brought men face to face with reality and with demands for new endeavor, and unproductive effort would soon be swept aside. In the past there had existed among American young men a spirit of satisfaction with superficial knowledge; this was shown by the large number of American candidates who failed to pass for the Rhodes scholarship at Oxford. The American seemed to resent the demand for close and long-continued study. Examination of candidates for the Army Medical Corps for the department of laryngology, disclosed the same condition. A large proportion of young men who considered themselves laryngologists were totally unqualified. In the teaching institutions there was an appalling lack of enthusiasm on the part of young men for beginning at the bottom and thoroughly schooling themselves for diagnosis. Young men who pre-

sented themselves at clinics and asked to be instructed in laryngology often appeared to think the course consisted of three operations tonsillectomy, septum resection, and turbinectomy! Thus laryngology needed to be protected against itself, by widening the scope of those who practised it. This was to be done first by better education of specialists. The instruction and equipment in medical colleges was inadequate for this. Two or three years' special study was necessary for this work and the degree of M.S. or Ph.D. might properly be offered to encourage students to attempt the work. For those who had not the time or means to cover it, a shorter course, comprising fundamentals, might be given. Students entering upon the study of a specialty should have received the degree of M.D. from one of the Class "A" medical schools, and in addition should have a year's experience as interne or laboratory worker. A minimum of one year's study of otolaryngology would then be necessary to fit the candidate for practice. The year's program should include 4½ months of fundamental study and 7½ months of clinical study. Fundamental study (24 weeks full time) should include: (1) Advanced gross anatomy of the head and neck: (*a*) paranasal cavities; (*b*) epipharynx, mesopharynx, hypopharynx; (*c*) larynx and esophagus; (*d*) three divisions of the ear; (*e*) surgical relations of the temporal bone; (*f*) venous sinuses of the brain. (2) Advanced histology of the nose, throat, middle and internal ear. (3) Embryology of the nasal cavities and paranasal cavities; the pharynx; especially of the tonsil, epipharynx; and of the middle and internal ear. (4) Physiology of audition, olfaction and voice. (5) Physics of sound. (6) Neurology. (7) General pathology. Clinical study should include: (1) Special pathology of the nose, throat and ear, including bacteriology; (2) otoscopy, rhinoscopy, pharyngoscopy; (3) direct laryngoscopy and bronchoscopy, esophagoscopy and suspension laryngoscopy; (4) functional tests of the middle ear, cochlea and static apparatus; (5) clinical diagnosis; (6) treatment, local, general and surgical; (7) operations on the cadaver; (8) skiascopy; (9) relation of the ear, nose, and throat to (*a*) internal medicine, (*b*) neurology, (*c*) pediatrics, (*d*) industrial medicine, (*e*) public hygiene; (10) preparation of history and records. Assistance in the form of fellowships should be given to students preparing to undertake this course.

Retention Crypts in the Infratonsillar Nodules as Common and Extensive Harbors of Pathogenic Bacteria.—Dr. THOMAS R. FRENCH of Brooklyn said that little attention had been paid to the presence of chronic infectious material in the chains of infratonsillar or lingual lymph nodes. The tonsilloscope, however, had discovered that these structures, when associated with diseased tonsils, acted as pathogenic foci. They had been very briefly described in the text-books. The speaker had studied particularly the chains of nodules lying on the lateral walls of the pharynx and the base of the tongue, directly beneath the faucial tonsils. These often became the seat of chronic infection. He had hesitated at first in introducing operative procedures, on account of the underlying venous network of these structures. Operation, however, had disclosed the existence, under the nodes, of a smooth limiting mucous membrane, obviously a fibrous capsule. Examination of the enucleated structure revealed pus and débris. It was clear that such disordered tissue could not be left without danger to the system. The nodules were easily and safely enucleated from the throats of children. In adults, under tonsilloscopic examination, numerous small slits or pin points, flush with the surface on the nodules, were shown, with the aid of a thin bent probe, to be minute crypts containing necrotic material, with pathogenic bacteria. The nodules were not present in a state of health. They appeared in the form of foreign structures, set upon the submucosa like a plaster form upon a ceiling. The underlying capsules were a continuation of the tonsillar capsule. The size varied from one-eighth to three-eighths of an inch in children; in adults they increased progressively in size. In children the masses were smooth, round-topped, and firm; in adults they resembled irregular folded material placed on edge. The interspaces formed deep pockets. The lingual tonsil appeared enlarged far less frequently than the faucial tonsil. The surface of the nodule might contain anywhere from 25 to 100 or more openings or crypts, varying in depth; some were shallow, but some were deeply penetrating, and with small mouths, often practically sealing up necrotic material. Such crypts sometimes evacuated themselves from overdistention. Thus far the *Streptococcus hemolyticus*, *Streptococcus viridans*, and *Staphylococcus aureus* had been isolated from these crypts. The diagnosis was made by means of the tonsilloscope, and with the use of a tongue depressor specially designed by the writer to facilitate examinations. The key to operative measures lay in the use of a block moulded to fit over the angle and under the lower edge of the jaw, in such a way as to serve as a resisting wall for an undercutting scoop of the arc of the Sluder guillotine. With this resistance the enucleation of a pharyngeal nodule was quite simple. The technique of the procedure was given in detail. Disposal of lingual tonsils presented more difficulty, and the best method had yet to be evolved. These structures were so close to the orifice of the larynx as to present a particular problem. Hemorrhage from nearby large vessels was one danger, and the risk of edema of the larynx from septic obstruction was to be feared. A possible solution would be to shave the tops of the nodules, thus cutting away their crypts and freeing the necrotic material. At all events the nodular trunks and pharyngeal branches could be safely enucleated. The blood loss during these operations had been found to be negligible. Any hemorrhage had been so far arrested by pressure by stick-sponges and counter pressure outside under the angle of the jaw. The operations were performed under general anesthesia. Other methods, such as curettage, and emptying of the crypt contents, could be tried in selected cases, and in those patients who refused more radical operation.

Dr. D. BRYSON DELAVAN of New York said that Dr. French's presentation was not the result of cursory and superficial work, but was the outcome of much knowledge and of patient and laborious study. The more one studied along the lines Dr. French had pointed out, the more one was convinced of the folly of the ordinary ways of removing the tonsil. Where septic conditions were present and failed to disappear after tonsillectomy, and where the tonsil remnants were removed as Dr. French had advised and instructed, the results were most gratifying. He trusted that this contribution, which was epoch-making in its way, would be carefully studied. The experience of those who had already followed it would be a guide to others.

Dr. G. SLUDER of St. Louis said Dr. French had launched a perfectly new study, and he did not think many of them had followed these cases as he had followed them. Upon the introduction of the tonsilloscope, five or six years ago, Dr. Sluder had predicted that it had a future capable of great development. This work was the result of careful and painstaking investigation; few had been so industrious. The nodules of which Dr. French had spoken seemed to be in close proximity to the lingual mass and crossed over behind the lingual fossa. In five or ten years these masses filled up and practically reproduced the entire tonsil.

Dr. H. L. SWAIN of New Haven, Conn., considered it impossible to intelligently discuss such a brilliant piece of work as Dr. French had presented, especially as it was upon territory in which they had not made a special study, and so could not achieve an intelligent conception of it. It had been said that all the new work was being done by young men; but this wonderful piece of work had been done by one of the oldest members. This tissue was definitely encapsulated and mechanically loosened upon enucleation. He was a little in doubt as to the location of the nodes. It was not clear what the lateral column of the pharynx had to do with the situation, but one had to deal with a group of lymphoid tissue, with the lingual tonsil above and the faucial tonsil below. This was related to the amount of growth of the intermediate body. The tissue seemed to be identical with the tonsil and lingual tonsil. The lymphoid structure was, to all intents and purposes, the same as the tonsil, in its effects upon the system, and was able to poison the system, so that the importance of removal was equal in value to that of the full-sized tonsil in any other situation. He admired

the first man who had had the courage to go into this mass and excise it. All had had experience with hemorrhages from the lower pole of the tonsil, which was exactly the part into which he put his tonsillotome.

Dr. C. W. RICHARDSON of Washington, D. C., paid tribute to Dr. French, who had been a member of the Association 41 years. This new contribution had come not from the younger men, but from one of the older ones, who had set all the men thinking. He thanked Dr. French for what he had done for himself individually in making this presentation.

Dr. L. A. COFFIN of New York thought Dr. French was not showing so much how to grow old gracefully, as how to maintain youth.

Dr. FRENCH, closing, said he was very much gratified by this appreciation and endorsement. He would have to be very much older before he would even begin to feel old.

A Case of Multiple Strictures of the Esophagus, Cured After Repeated Dilatation with Graduated Bougies.—Dr. C. F. THEISEN of Albany, N. Y., reported this case. The patient, a woman of 51, had been in the habit of using smelling salts for headaches, and when lying down, on one occasion, had swallowed some of the strong ammonia. Later she developed an inability to swallow any but liquid food. When first seen she was emaciated and cachectic, giving the impression of malignancy. Examination of the esophagus with barium salt showed five distinct strictures, the upper one near the cricoid, being very tight. The esophagoscope, with a special bougie, was passed through the upper stricture, the patient allowed to rest, then again passed. Flexible bougies made of lead were employed, of 14 mm. diameter. After a few weeks' treatment the patient was able to swallow, and began to gain in weight. Time would be required to say whether the cure were permanent or not.

Report of a Case of Syphilis, Vincent's Angina, and Sarcoma of the Pharynx, one Condition Following the Other in the Order Named.—Dr. THEISEN also reported this case in which second case an unusual combination was present in a male patient, aged 38, with ulceration of both tonsils. The physician had said there was no syphilis, but the Wassermann gave a four plus. Iodides were pushed, but the ulceration extended and the curious characteristic odor of Vincent's angina was noted. Smears from throat swabs gave a diagnosis of Vincent's spirillum. The ulceration continued to spread, until in three months the mucous membrane of the tonsils, tongue and cheeks was destroyed. The edges of the ulceration showed nodular formation. On pathological section a diagnosis of round-celled sarcoma was obtained. Radium was ineffective.

Symposium on Radium. Dosage, Envelopes and Duration of Treatment.—Dr. WILLIAM DUANE said that in the study of the treatment of malignant disease by radium and radio-active substances, he had worked on the principles underlying the methods of treatment. The fundamental principle was destruction of the tumor cell by filling the tumor with radium. There was no evidence that radium could transform tumor cells into normal cells. Destruction of an army was in two ways: shooting the men: cutting off supplies. This was what radium must do. The primary principle of a radioactive substance appeared to be the ejection of atoms of electricity from the substance radiated. Redistribution of the atoms followed. Radium had an inhibitory influence on the reproductive powers of the tumor cell. This made it valuable in treating metastases. The tumor must be filled so that the cells would not subdivide. Normal cells were much less sensitive to radiation than were tumor cells. As a rule radium did not affect surrounding structures.

Factors Influencing the Quantitative Effects of Radiation.—Dr. WILLIAM T. BOVIE, Harvard University, said that radiotherapy was different from chemotherapy. Studies of radiotherapy, using photographic principles were made. The rays had a tendency to spread from their source, and the intensity of the rays varied as the square of the distance from the source. The rays that passed through tissue did not alter the tissue, only those that remained affected it. If the first layer of tissue absorbed fifty per cent. of the rays, the underlying layer would receive fifty per cent. less. The effect on embryonic cells was according to the rate of conductivity. Beeswax was used in experiments to replace tissue, and the nature of the burns was noted. Models of these burns were made, and the size of them noted in relation to the quantity of radiation that produced them, and the different applicators. Studies were also made of the action of silver on the gelatin plate. Light was absorbed by the silver particles, which impressed the image on the plate. The Germans and Austrians used a threshold exposure to measure the speed of the plate, but apart from the blackness of the plate there was a latent image, so that if a plate were once exposed, the image was there, though not visible. An arm exposed to radium did not show it but the effect was there, so that a physiological process must be involved. Another point was that the influence of temperature on radiumized tissue was marked. The studies on the rays included intensity; effect of the rays on the tissues when they were absorbed; the physiological processes. The radiographer who did not know the physiological processes was apt to think his patients had an idiosyncrasy.

Results of Treatment of Malignant Disease of the Upper Air Tract by Radiation.—Dr. D. CROSBY GREENE of Boston, Mass., made this presentation, dealing with two groups of cases,—malignant disease of the larynx and that of the upper jaw. The material was collected from the Huntington Memorial Hospital where the treatment was carried out. The results of treatment in 37 cases of laryngeal cancer and in 15 cases of growths on the upper jaw were given in detail. The conclusions as to treatment were: (1) That in malignant disease of the regions considered the chief value of radium lay in its supplementary, rather than primary value. It should not supplant operation. (2) That in cases of extensive extrinsic laryngeal carcinoma about the upper orifice, in which operation entailed excessive risk, benefit might be expected in a very few cases by radium alone. The method of insertion of seeds gave the best results. In early intrinsic carcinoma of the larynx, thyrotomy and excision was still the best method. Active radiation of the cartilaginous framework of the larynx was followed by destruction. In moderately advanced cases, however, radium could be used supplementally. (3) in most cases palliative results in the way of retardation of the growth and relief of pain might be expected by radium treatment in some form. (4) in advanced upper-jaw cases treatment by operation followed by radiation gave promising results.

Dr. C. G. COAKLEY of New York said that in the treatment of malignant disease by radium, one had to learn more of the technique to be employed than one now knew. Experimentally it should be put in where the surrounding structures could not be reached. Usually radium would retard the progress of the disease for a time. He thought it had been proved experimentally and clinically that while there was a partial destruction of the tissues of the pharynx and larynx and improvement of the patient, a rapid extension and increase of the growth was apt to occur suddenly such as took place in no other way. One point observed in radium treatment of the nose and nasopharynx was the extraordinary amount of pain and burning produced, which no medication would allay. He had had eleven cases of cancer of the larynx. One case, radiumized in November, 1913, was favorable, for such treatment, as the growth was limited to one-half of the cord The man was given an improperly screened dosage, and while the growth diminished, there was terrible destruction of tissue and the trachea was destroyed. Dr. Wood sectioned the cord. Not a trace of epithelioma was found, but there was a septic bronchopneumonia, due to absorption of toxic material. In another case, there was an epithelima involving the upper part of the larynx. A tracheotomy tube was kept in two weeks. When the tube was removed there was considerable granulation tissue that was radiumized. The man was going about now with his tracheotomy tube still in position. The granulation tissue was burned out by the radium. Surgery could be used in cases where radium failed. Five cases of fibroma of the nasopharynx did remarkably well. One case of epithelioma of the palate had a recurrence after eight months. A young woman whose constant asthma was caused by nasal polyps was

treated by radium, the asthma was relieved, and some months after it was found that the polyps had entirely disappeared. This might have been due to radium.

Dr. H. P. MOSHER of Boston had seen few cases of cancer of the larynx and pharynx but had had more experience with cancer of the upper jaw. Since the war he had seen several cases. Radium had raised hopes, and he hoped it would not destroy them. It should be of use in superficial growths and in growths that had been rendered superficial. Dr. Coakley's case was opened into the mouth. He was strongly against opening into the mouth.

Dr. HARRY BARNES of Boston had used radium with success as a postoperative measure after excision of the malignant growth. The tubes were placed in the cavity (35 to 40 millicuries) left in about two weeks. If used at once to kill off any cells which might have been transplanted by traumatism, this measure prevented metastases Of six carcinoma cases, three died, two were alive and well, three successful cases in all making about 50 per cent. of good results.

Dr. HARMON SMITH of New York said Dr. H. H. Janeway had sent him all his cases. He had seen five cases of carcinoma of the larynx in 18 months. They were all inoperable cases. The growth might have been inhibited but the patients went on to ultimate death. One patient with lymphosarcoma of the tonsil died of metastases in the chest and brain. One man with lymphosarcoma of the right tonsil had radium applied and he disappeared. That might be a favorable sign. Fibroid tumor of the nasopharynx was malignant unless controlled. Very rapid progress of a growth should be classified as malignant. In one boy of 16 the tumor recurred as fast as it was removed. He died of hemorrhage. In another case, a young man, the tumor was radiumized, but radium had no effect. Operation was done and the man got well. Another man was sent from Bogotá, to have radium applications. They must make good with radium or else must use it only to lessen the growth, or post-operatively to dissipate the growth.

Nasociliary Neuralgia.—Dr. GREENFIELD SLUDER of St. Louis, Mo., made this presentation. He said that pain in the eyes, brow, and root of the nose was frequent, and of various origins. Localization of the pain of the several origins by the patient was not precise. Pains of frontal, ethmoidal, or sphenoidal sinuses, or nasal (sphenopalatine, Meckel's ganglion), or supraorbital, or nasociliary nerve origin, might overlap in their sensations. This last pain was usually referred to the small district bounded by the supraciliary ridge above the supraorbital notch laterally, and the nasal bones below. Sometimes it extended to the tip of the nose; rarely it was referred to the eyes. Patients often complained that they could not wear glasses because of soreness of the nasal bones. Severe degrees, however, of whatever origin, might be referred beyond these limits. Pain of supraorbital neuralgia was more widespread. Pain of suppuration of the frontal or ethmoidal sinuses under pressure, was of long-known recognition. Pain of vacuum frontal sinus origin was described in 1900. Pain of nasal ganglion origin, referred to this district, was described in 1907; it was usually accompanied by other painful sensations. Pain of sphenoidal origin referred to this district, was described in 1912; it, too, was usually accompanied by other painful sensations. Pain of supraorbital systemic toxic neuralgia was of classical description. After describing the nervous anatomy of the parts he said that this showed that the nasociliary nerve was quite near the surface of the membrane, and was more superficial than the nasal ganglion and was more easily cocainized than the nasal ganglion. A small applicator with 20 per cent. solution sufficed. This was passed upward on the inside of the nose, being held forward in contact with the anterior limit of the nasal fossa until it reached the roof of the fossa. By this procedure it arrived automatically in the apex of the angle formed by the cribriform plate above and the anterior limit of the nasal fossa. At this point the nasociliary nerve entered the nasal fossa. When the pain in this region was of nasociliary origin such an application of cocaine would stop it in a few minutes. Should it be of the other origins mentioned above, it would not be influenced by such an application. The differential diagnosis would furthermore reveal a tender spot in the floor of the frontal sinus if it was a case of vacuum or purulent frontal sinus origin (Ewing's sign). The speaker's observation so far had been that nasociliary neuralgia had usually been a transitory phenomenon in the course of cases which had been under observation or treatment for something else. The nasociliary neuralgia would appear from time to time in the course of other clinical conditions, and was usually not obstinate. It would yield to cocainization and applications of dilute carbolic acid. Four times, however, he had seen it the only clinical phenomenon. Once he had injected the nerve trunk at its entrance into the nose, with relief to the patient. The technique was that first advocatd by Otto J. Stein in his alcohol injection treatment of hyperesthetic rhinitis. A straight needle was passed upward in the nose in the same way as the applicator for cocainization. A few drops of 95 per cent. alcohol with 5 per cent. phenol were instilled into the nerve trunk at its exit from the ethmoidal slit.

Dr. H. L. SWAIN of New Haven, Conn., said Dr. Sluder had gone to a refinement that others had not approached. He called attention to the sphenopalatine ganglion syndrome, and now he was teaching the nasociliary type, to be added to the neuralgias that had borne his name all over the world. Dr. Swain had had an interesting case of the Sluder syndrome, which he referred to Dr. Sluder, who said it was a remarkable case. The sign that most worried the patient, an elderly woman, was Ewing's sign, which was very marked. That was relieved by the application of cocaine to the sphenopalatine ganglion. The pain immediately left. The woman had no knowledge of the subject and the supposition was that if one could have maintained enough pressure, the pain could have been relieved. In this case the pain in the angle of the orbit was the troublesome feature. Several eye specialists had been consulted, but their treatment did not relieve the Ewing's sign. A single application to the sphenopalatine achieved the effect. Dr. Sluder had advised injections of phenol and alcohol; that might no doubt be a good thing, but one would rather see him do it first. One hoped that he would discover something less extreme. The application of a weak solution of nitrate of silver prolonged the benefit of the cocaine. One might get a severe reaction with carbolic and alcohol. On four different occasions this winter he had seen these nasal neuralgias and had put cocaine and adrenalin over the ganglion. If Dr. Sluder's new discovery would relieve pain in this area one should follow him up in his work.

Dr. HARMON SMITH of New York said Dr. Sluder's article had helped to sell the volume in which it was printed; there were requests for the volume containing "Sluder's Syndrome." He had seen one case in which there was no relief by cocainization of the sphenopalatine ganglion. Dr. Faulkner injected the ganglion without effect. The ganglion was later removed.

Dr. J. E. MACKENTY of New York said that Dr. Sluder had always explained what one had seen and did not understand. All had had this experience. He had had a patient with nasociliary neuralgia. There was considerable inflammatory tissue in this region, which he removed with the Sluder knives, thus relieving the condition. There was another type of case. The patient had a sense of pressure over the distribution of the nasal nerve, as if something were pressing inside of the nose. This caused a great deal of distress and did not yield to treatment. He would like to know if Dr. Sluder would include this in the nasociliary cases.

Dr. HANAU W. LOEB of St. Louis said the interesting part of this report was that it made it possible to differentiate this type of pain from other types of pain of nasal origin. One could see the logic of this work. Had Dr. Sluder met any cases with pain referred to this region, but with a distant point of origin?

Dr. NORVAL H. PIERCE of Chicago had had a patient, an Episcopalian minister, who was obliged to give up his work in the church on account of a phonetic spasm, which when the larynx contracted, made him go through all kinds of grotesque facial contortions. He was greatly depressed about his condition. His son brought him to the office because of pressure symptoms in the nose—a sensation as if the nose were clamped by very

tight pince-nez. Dr. Pierce used equal parts of cocaine and sugar of milk for blowing up the nose. The man began to talk in a perfectly natural manner, the facial spasm disappeared, and the voice became normal. That lasted while the effect of the cocaine lasted. After that, whenever he had to preach or talk he used a tablet of 50 per cent. cocaine and sugar of milk. This was done long before Dr. Sluder published his work. The case must have been one of reflex trouble from the nose. Two things were puzzling, however, one was that cocaine relieved the pain whether applied on the right or the left side; the second, that hypodermic injections of cocaine had precisely the same effect. In nervous conditions one could not eliminate the systemic effects of cocaine any more than one could eliminate the constitutional effects of morphine when injected. One would like to know whether the local effect of cocaine was what produces the relief.

Dr. JAMES E. LOGAN of Kansas City, Mo., said Dr. Sluder was always able to crystallize their experiences for them. Several cases were seen in the last few years which might be called vasomotor neuroses. Dr. Sluder was pointing out the way in which one could localize treatment and handle these cases more intelligently. Dr. Sajous had used cocaine on the turbinates in his study of the reflex neuroses of the nasal cavity, but Dr. Sluder had brought out more clearly the connections of the subject from the diagnostic and remedial standpoints.

Dr. SLUDER, in closing, said Dr. Swain's case was evidently a nasal ganglion neurosis, the type that could be exploded by a single touch. The patient was very neurotic. In such cases the injection should be carried out under nitrous oxide anesthesia and a small amount of cocaine applied to the nasal ganglion. The gas did not complicate the issue. When coming out of the gas the patients were analgesic and responded readily to suggestion. Care must be taken in directing the needle. One must be on guard for the sphenoidal sinus. The middle turbinate made one think that one had transfixed the anterior process of the sphenopaxillary process. One might strike the pterygoid and then the injection was in the nasal fossa and a drop of alcohol ran down the throat. This was difficult to control under general anesthesia. Methylene blue with the alcohol facilitated matters as the blue solution was easily seen running down. A straight needle was better than a curved one, which was apt to catch.

Dr. HARMON SMITH of New York said the case mentioned by him had been operated on for maxillary sinusitis and had continued to suffer from neuralgia. Cocaine did not do any good. Dr. Sluder advised against continuing.

Dr. SLUDER said such cases transcended all categories for difficulty. The nerve supply of the nasal ganglion might come through the sphenoid fossa. In Dr. Smith's case a gasserian ganglionectomy was done. If one removed the entire sensory supply it made a cure in some cases but not all. The question was what is the source of the pain? Probably pain was transmitted by the sympathetic fibres that run in through the nose. However, masters of the study of the sympathetic, had declared that the sympathetic was purely a motor system, containing no fibres of a sensory nature at all. There was considerable literature, however, on the other hand to prove that the sympathetic had a sensory mechanism, that there existed a motor and a sensory supply, taking in the spinal ganglion. All cases of facial trigeminal neuralgia were not relieved by semilunar ganglionectomy. Cushing considered all this work a mistake. Many patients complained of inability to wear glasses because they hurt. Dr. Loeb had spoken of the orbital pain—Ewing's sign. The floor of the sinus was very thin. Other types of pain were associated with toxic origin or systemic disturbance. The nerve of the notch was extremely sensitive, and in these cases Ewing's sign was absent and the floor of the sinus was most tender. In the ganglion cases the nerve was more sensitive. Pain of the sphenoid might be the result of the trigeminus. Dr. Pierce's case was very interesting and raised the question as to how much of this effect was referred to absorption and systemic influence. In the beginning of this work in 1903 many of these patients were put to the test. An ignorant patient would tell one unmistakably what was the matter. He suffered and one could see by his expression that he was in pain. Cocaine was put in one the lower turbinates. One need not ask questions; if he were better he would say so. If he did not get better one could put in cocaine on the middle turbinate. If that helped he would say so. Then one could take the nasal ganglion. The statement of relief of pain would finally settle the question. If he were relieved, the diagnosis was made. The man begun to smile and say he felt better. The question of separation of local from constituional effect was not decided. Next time he got a case he was going to give a subcutaneous injection of cocaine to see if Dr. Pierce's point could be proved. In regard to Dr. Logan's question as to vasomotor neuroses in the nose, these were controlled by nasal ganglion injections. He had injected in the edema of hay fever when the whole nose was occluded, and this was cleared up by injection. Some of these results were very good.

An Unusual Type of Nasal Tuberculosis.—Dr. GEORGE E. SHAMBAUGH of Chicago presented this topic. Tuberculosis of the nasal cavities was rather a rare condition. Two forms were known: the hyperplastic or tuberculoma, and the ulcertaive, with tissue destruction. The two were often combined. In the case reported miliary tuberculous nodules involved the nasal mucous membrane, not associated with general miliary tuberculosis. The patient, a man of 43, of strong robust build, was seen first sixteen years before, he complained of nasal symptoms accompanied with marked enlargement of the cervical lymphatics on the left side. He had annoying dryness and burning in the nose and pharynx, chiefly on the left side, and he had left-sided frontal headaches, usually lasting two or three days. There was a daily rise of temperature to about 101 degrees F. General examination disclosed the fact that the cervical lymphatics were enlarged and tender; the axillary and inguinal lymphatics were palpable but not tender, and there was a nodule in the epididymis on the left side, probably tuberculous in origin. Examination of the nose showed congested membrane, with dry, glazed appearance, and atrophy of the turbinates. The septum presented an unusual appearance, being deeply congested and studded with many discrete, pin-head nodules, greyish in color. There was no tonsillitis. A nodule from the septum was sectioned and found to be of typical tuberculous appearance, but no bacilli were found. The clavicular gland was removed and found to be the seat of a chronic tubercular process, and a few bacilli were found. The patient was sent to Colorado for two years, and put on tuberculosis regime, during which time the cervical and nasal condition practically disappeared, and he had continued in good health since. It would appear possible that the nasal infection was secondary to a tuberculous focus in the epididymis, and that the process had travelled thence to the cervical glands. The nasal tuberculosis was in no way secondary to any pulmonary involvement.

Esophagism and Allied Disorders.—Dr. THOMAS HUBBARD of Toledo, O., said the pharyngeal plexus was concerned with a primitive function of such vital importance, that even slight disturbance might provoke psychic interference with resulting confusion of automatic reflexes. Thus chronic spasmogenic phenomena, esophagismus and cardiospasm, might be primary manifestations of irregular or reversed peristalsis. In this connection the hysterical throat was a manifestation of paresthesia and incoordinated muscle action, with psychic fixation in neuropathic individuals. It could be considered probable that disease conditions and local irritations of the gastrointestinal tract might initiate the reverse peristalsis, involving the esophagus. Abnormal reflexes and sensations could be referred to the beginning of the vegetative tract,—the region of the pharyngeal plexus. It had been found that through intimate anatomical association, the throat and larynx participated in the clinical syndrome, thus explaining the gastric factor in asthma. It should be remembered that the more peristalsis was emphasized as a factor in digestion, the more important it became to properly interpret abnormal peristalsis as a factor in disease.

Dr. B. R. SHURLEY, Detroit, Mich., said that under older procedures one was comparatively limited in the means of helping the large number of individuals who exhibited the various phenomena of a hysterical condi-

tion of the esophagus. These neuropathic and psychopathic conditions could be relieved with the same certainty that one relieves hysterical aphonia in laryngeal cases. One saw a number of cases in this rapid, nervous age. They could be watched through the fluoroscope and the spasm seen. Dilatation caused great relief. Triple bromides three or four times a day would help. These cases represented instability and short circuiting of the nervous system, of the vasomotor type. Many nervous women exhibited these phenomena. Reestablishment of the nerve tone by hypodermic injections of glycerophosphates and dilatation of the esophagus were beneficial. He had had one patient who was unable to eat when anyone was looking, and another who could only eat standing up. This was due to a fixed psychic idea. Later these same patients were eating ham sandwiches and peanuts and other foods which they declared they could not eat. These cases required special differential diagnosis. The personality of the patient and that of the physician counted for a great deal in the cure of these cases.

Dr. L. A. COFFIN of New York City, said if he understood aright Dr. Hubbard, he said that the chemistry of digestion was considered nowadays less than was the peristalsis. He would take issue with that statement on account of the present-day methods of the gastroenterologists. How much reverse peristalsis there was he did not know. For instance, in belching of gas, he had thought of it as gas expansion. Some years ago he had read a paper before the Trilogical Society dealing with the different forms of pharyngitis caused by marked gastric indigestion. He spoke of hypertrophy of the posterior tips of the turbinates as illustrative cases. He thought it might even account for the growth of adenoids. These granular pharyngitis cases were most amenable to treatment. He was speaking of gastric indigestion. The intestinal form was another matter, although one could also get reverse peristalsis from the bowel. One case was recalled of a man who came from the South and whose wife complained of his foul breath. The antrum was all right. An intestinal examination was made and the man was found to have a 5 + indol. He was cleaned up and the breath cleared up absolutely. He had had a regular fecal breath; but whether that was explained by reverse peristalsis one could not say. With intestinal putrefaction one got other disturbances, filled up nose, hay fever, ethmoiditis. One should not think of treating hay fever with the best vaccines made unless one first cleaned up the bowel. No class of patients gave such splendid results as did those patients in whom one treated the nose through the rectum,—from above downwards. The general practitioner sent cases all the time for laryngeal treatment, but if he had taken proper care of them they would not have come to the laryngologist. In one hospital with which he was connected a chair had been founded in the eye, ear and nose department for the treatment of the gastrointestinal tract. No operation was permitted and there was nothing but treatment of the gastrointestinal tract. There was no more satisfactory therapy in the clinic.

Dr. H. L. SWAIN of New Haven, Conn., was immensely interested yesterday by the esophageal exhibit by Dr. Mosher. He noted that the lobe of the liver was very near the lower pole of the esophagus. Supposing the lower lobe of the liver impinged on the lower end of the esophagus, a marked effect might be produced, both mechanical and obstructive. It certainly might induce contraction. Whether one had a history of reverse peristalsis or not, one had to cure these cases.

Dr. H. L. LYNAH of New York said that if one swallowed air one had to get rid of it. These neurotic cases suffer from that. In the bismuth meal one could see the reverse peristalsis of air bubbling through, although the meal was going down. A great many cases of malignant disease of the esophagus were labelled hysteria and they were discovered only after death. These functional spasms become organic sooner or later. One could use a small esophagoscope in these cases. Esophagoscopy without anesthesia was the surest cure in cases in which the patient thought he could not eat certain foods.

Dr. HUBBARD, in closing, said, in answer to Dr. Shurley, that he did not talk about treatment except by suggestion, through study of the etiology. The subject of cardiospasm, for instance, would take up a whole paper. There was no disease more difficult to cure than cardiospasm. Many cases died labelled organic stricture, that were purely cardiospasm. The autopsy showed no lesion. In these cases the psychic factor was not the important one. Just what made the formation of the sacculation was not determined. In regard to Dr. Coffin's remark as to the chemistry of digestion, the fact that one could remove large portions of the gastrointestinal tract without interfering with digestion showed that the chemistry of digestion had immense reserves. Peristalsis was more likely to be the cause of indigestion. Belchers were nearly always air swallowers. The actual volume of gas was not very great. Dr. Coffin labeled his cases granular pharyngitis, but that was wrong. All pharyngitis was caused by chemical irritation and autointoxication, perhaps due to retarded peristalsis. Chemical digestion took place in the gastrointestinal tract and disturbance of rythm upset the whole process. Organic disease was the cause of spasm. That was important and one should be warned. One could have small tumors in the esophagus which tended to produce esophagismus. He had had one such case, in a man who could swallow only liquids. A small pendulous tumor was discovered, just below the cricoid. The mass was not malignant and the next step would seem to be to snare it off. The paper was intended to account for certain obscure throat conditions, and also to develop a good working theory. Since he had had this idea in mind, the importance of reverse peristalsis as a cause of obscure throat lesions had been apparent.

Intrinsic Carcinoma of the Larynx With a Second Report of Cases Operated on by Suspension and Dissection.—Dr. R. C. LYNCH of New Orleans, presented this communication. Cases suitable for this procedure should be carefully selected; cases in which the growth involved the cricoarytenoid joint, the arytenoepiglottic fold, or the cricothyroid membrane were considered unsuitable. The procedure cited had for its basis a careful diagnosis, eliminating all other lesions by clinical and laboratory aids, excluding syphilis and tuberculosis, and taking careful pathological data of the tumor mass as excised. Under suspension it had been found possible to make out definitely the area of involvement and to cut sufficiently wide to insure its complete removal. Essential points for the operation were: (1) consent of the patient to do anything or all things necessary to save life and preserve natural respiration; (2) in intrinsic dissection, once the forceps take hold of the mass, they should not let go, thus avoiding transplantation of malignant cells; (3) the tumor should be circumscribed as far as possible and delivered on a cartilaginous plate, the cutting instruments not being permitted to come in contact again with the tumor mass; (4) the saving of tissue for functional use should not interfere with necessary complete removal; (5) all raw surfaces should be sealed with the actual cautery, thus closing the lymphatic outlet from the raw surface, and killing any transplanted cancer cells. The advantages of the operation were that it could be done quickly and without external incision, it was carried on within a closed box, offering the best resistance against matastases; the normal breathway was not interfered with, and there was more likelihood of nature establishing a cord for restoration of voice function. The cases operated on were nine in all. One died of recurrence. Two others had recurrence and subsequent laryngectomies and were now well. The other six remained well, during periods from six months to six years after operation.

Dr. D. CROSBY GREENE of Boston said Dr. Lynch had accomplished by his wonderful technique very much what those who had had experience with thyrotomy had done by the external route. There was no quarrel with anyone who removed cancer, provided the whole mass were removed. He had used the suspension apparatus from outside. In thyrotomy, where the region of the anterior commissure was involved, the patient must be well under the anesthetic, and the larynx must be cocainized and adrenalized. Thyrotomy was then done with an observer at the upper end to see if the knife was wide of the tumor while the suspension was being made.

Dr. J. E. MACKENTY of New York was very much interested in this wonderful presentation. Dr. Lynch had had nine cases with eight recoveries, which was better than the results with the external method. In New York cases very rarely came in in the early stages; 75 per cent. of the cases he had seen last year were inoperable. He had done three thyrotomies; otherwise, he did a total laryngectomy. He believed that Dr. Lynch's procedure was available in his hands, but he was very expert with his instruments; one would not consider it a safe procedure for the average technician. Dr. Mackenty did not believe he could carry it out with such success as thyrotomy. Another point was leaving the cartilaginous wall of the larynx. It left an indurated mass which would granulate and give trouble. Removal of the laryngeal wall with the cancer mass was of advantage in the technic of this operation.

Dr. LYNCH said he removed the perichondrium, but not the cartilage.

Dr. MACKENTY believed that it was disadvantageous to leave the cartilage there, with such a poor blood supply. He used the suspension a great deal, but it was difficult to judge of the extension of the cancer of the larynx, looking down upon it in that direction. He was often surprised on opening the larynx to see the extent of the disease. He was averse to removing tissue for examination, as it disseminated morbid cells.

Lung Mapping by the Injection of Bismuth Mixtures in the Living.—Dr. HENRY L. LYNAH of New York presented lantern slides illustrating his technique of outlining the bronchial tree and lung by means of bismuth insufflation.

Dr. T. HUBBARD of Toledo, O., said Dr. Lynah had mentioned accidental aspiration in pneumonia. Dr. Hubbard had one experience of accidental aspiration of bismuth, which made a diagnosis. The man, who was thought to be a globus case, was given bismuth. The apparatus was not working well and it was necessary to wait for another operator. The later examination discovered the fact that instead of being esophageal spasm it was esophageal paralysis. The bismuth had gone into the lung without causing a cough. The man was fed through a tube and recovered fairly well, and later developed general paresis, of which the esophageal paralysis was the first sign. Dr. Lynah's technique was perfectly marvellous and the possibilities were immense. Besides the diagnositic value, bismuth had certain healing properties. Injection in cavities was a therapeutic aid. Dr. Lynah, in closing, said the cases had improved before the bismuth was injjected. They could be got well if they could be kept long enough out of the hands of the thoracic surgeon. The bismuth was injected for only experimental and not for curative purposes.

Some Indications for Operation on the Nasal Sinuses in Children.—Dr. L. W. DEAN of Iowa City, Iowa, presented this paper. Operations on the nasal sinuses in children were not often indicated, as acute infections of these cavities tended to disappear spontaneously. Cases classed as chronic empyema yielded more readily in children than in adults. During three years routine examinations had been made of the nasal sinuses in 1,108 infants and children under 14 years, and in a large number of cases chronic empyema had been diagnosed. Most of these had been cured by the removal of diseased tonsils and adenoids. Hemolytic streptococcic infections, while resistant, could be treated without operation. Atrophic rhinitis and syphilitic cases were improved by simple ventilation and drainage, with local and general treatment. Extensive operations were rarely indicated, unless called for to remove immediately a source of infection. The pathology and systemic complications were factors in determining the need for operative procedures, but the size of the sinuses was an important factor. The *x*-ray was inaccurate in regard to the latter point. In operating upon the nasal accessory sinuses in young children it should be borne in mind that destruction of the bones of the face might have a deleterious effect in development, that the functions of the nose were important, and that injury should be avoided. Several cases of infection of the nasal sinuses in children, associated with multiple arthritis, were given in detail. These cases had required many months of study and treatment. With a large number of cases referred to the laryngological department it had been necessary to operate the sinusus in few instances. The hemolytic streptococcus disease of the sinuses was most difficult to eradicate. The only satisfactory way to treat the cases was by having them in the wards for as long a time as necessary—from six to nine months—in order to get results. Operations on the nasal sinuses to remove infective foci, where necessary, had been attended with good results. The patients, though cripples, were well-nourished and happy, and enjoyed play. With proper education they would be self-supporting. Their gratitude was compensation in itself for the time and care spent on their cases.

Dr. B. A. RANDALL of Philadelphia had had 35 years' duty at the children's hospital and had seen many cases of diseased sinus. In extreme cases he had had to resort to a crude, or perhaps brutal form of procedure to get drainage. Alligator forceps were put into the sphenoid and opened drainage through the front wall, thus securing drainage of the sphenoid. The ethmoid was different.

Dr. C. W. RICHARDSON of Washington, D. C., thought Dr. Dean and Dr. Coffin deserved great credit. Sometimes one did not differentiate these cases. A child came to him in April with a well formed mastoid in the right ear and abscess in the left ear. He incised the abscess and went away expecting to operate when he came back. On his return the child had marked exophthalmos of the left eye. The mastoid had cleared up without operation, the left ear was well. The exophthalmos was greater and the child appeared very ill, so that he saw the symptoms were related to the exophthalmos. The child was heavy, disinclined to play. He could not find evidence of sinus infection. The child went to the ophthalmologist and was kept two or three weeks, but nothing was done. The exophthalmos was so intense that the lids could not be closed. *X*-ray examination showed possible infection of the ethmoid cells. The blood count was 68,000 white blood cells, and increased polynuclears; temperature not above 99°. The eye man said he would open up the orbit, so Dr. Richardson planned to clean up the ethmoid cells, but found nothing, not even granulations. Then he thought of thrombosis of the cavernous sinus. The next blood count was 78,000 white blood cells. The pathologist said that it looked like leucemia. The child was taken to the most proficient *x*-ray man he could find, who made the diagnosis of suppuration of the ethmoid and sphenoid. However, the exophthalmos became so intense that they were convinced that it was orbital leucemia. There were no other enlarged glands anywhere, but the child had very large tonsils and adenoids.

Dr. HENRY L. SWAIN of New Haven, Conn., had been confronted with exophthalmos associated with orbital abscess, and had been tempted to do destructive work, which one should not do. In one case infection was caused by a single tooth, the only remaining one, and the infection passed up the ramus of the jaw, out by the pterygoid fossa and pterygomaxillary fossa, and into the orbit. There was no pus in the orbit, simply a great swelling. He had never heard of leucemia of the orbit, and was absolutely ignorant of that condition. There was a purulent infection with edema and swelling and the exophthalmos stretched the nerve, making it amaurotic for all time. In the case he had spoken of, he did not enter the sinus, it would have done harm. He made an incision in the jaw.

Dr. HARRIS P. MOSHER of Boston had been uncomfortable since Dr. Dean had read his first paper, thinking that there were things that he had been missing. He was in the same position as Dr. Skillern; he felt that one had not always found these cases and that one was not allowed to treat them for the necessary length of time—eight or nine months. How did one wash out the ethmoid in a child? In antra he had seen they were referred from the eye side and presented fistulæ below the eye, and were operated on through the anterior wall. How did one find the sphenoid in a child?

Dr. J. H. BRYAN of Washington, D. C., said the question of sinus involvement was very interesting and important. We all had met these cases to a greater or less degree. Dr. Dean's experience had been more decided as far as operation was concerned. One saw

cases that had constant involvement of the sphenoid at the expense of the other sinuses. Dr. Robertson, in the A. E. F., and at Walter Reed General Hospital, had found that the sphenoid was more frequently involved. The size of the sphenoid was almost constant. These were desperate operations, but nevertheless they were justified. Many thought that because a child was young no radical measures should be done.

Dr. J. E. LOGAN of Kansas City, Mo., said one should be grateful for Dr. Dean's work on sinus conditions. He would like to know if Dr. Dean had ever used autogenous vaccine before or after operating in the hemolyticus cases. This had proved a very potent factor in clearing up the case before operation. He had used it as a regular procedure.

Dr. GREENFIELD SLUDER of St. Louis, Mo., said a debt of gratitude was due Dr. Dean for his work on the sinuses in children. This question had been raised at the meeting of the American Medical Association three years ago. Now Dr. Dean had advanced knowledge and cleared up another difficult problem. He had said he did not operate quickly or lightly on the bones of children, and the speaker was glad to hear that statement, as he had had the same feeling for many years. One might conclude that no matter how much bone one took out of a child's nose, the activity of the bone cells was such that in three months time the bone would be replaced. One took desperate chances in bone removal in children. He had had a case in a child of orbital phlegmon from the paranasal walls. The only satisfactory drainage of the orbit was by the route of infection, that was through the nose. Drainage into the tranverse meridian was very difficult and complicated. He had operated on the middle turbinate with a small-handled knife and cut through the capsule to the ethmoid quickly. Three months later the orbital phlegmons recovered, the drainage was instituted, and the bone resumed the convolutions of the middle turbinate. One should not operate on the paranasal sinus in children except in conditions of dire distress. Dr. Dean's failure in the first case was not due to faults in his technique, but to rapid reproduction of bony growth on the part of the child. Sphenoidal headaches in childhood presented a difficult question. There were no nasal suppurations. Hyperplastic sphenoid without pus was difficult to diagnose because of the difficulty of the post nasal image. In such cases one should avoid operation and secure results by the sedulous pursuit of the lesion for treatment and not for surgery. Dr. Dean had called attention to the size of the sphenoid in childhood. W. B. Davis, in his monograph on the sinuses, had described a most ingenious device by which he removed the face and patched it up so that at autopsy it was hardly visible. He secured material from the early days of infancy, had followed back to the sixtieth day of fetal life, and had proved that sphenoid development began at that time; at two years it had progressed as far as the foramen rotundum and at five years to the meeting of the vidian canal. One could consider it as a sinus to be dealt with at that age.

Dr. CLEMENT THIESEN of Albany, N. Y., asked about another class of cases that had puzzled him very much, in children from five to fourteen years—a vasomotor rhinitis, with profuse discharge and supraorbital headache, with no pus, and with no evidence of sinus involvement by the *x*-ray.

Dr. J. E. MACKENTY of New York had derived much inspiration from Dr. Dean's paper. They were very much at sea on this question and needed light thrown on it. They had many facts in mind, but they were uncorrelated. In adults one could trace back the beginning of the trouble to childhood. They were persistent cases and most difficult to treat. These were the pain cases Dr. Sluder has described. The sinus trouble of childhood left the individual more or less crippled. As regards the bacteriology in these cases, the *Streptococcus hemolyticus* was one of the most difficult organisms to deal with and to eradicate. In the long chronic cases the *Staphylococcus aureus* was the most common germ. The sphenoid sinus was the most difficult sinus to treat; all the others simple, compared with the sphenoid. Bone, in these chronic cases, would tend to reproduce as fast as one could remove it. He had seen ocular trouble with children and had had three cases of retrobulbar neuritis that had to be operated upon. There was no profuse nasal discharge, but some change of coloring of the mucous membrane on the side affected. He had operated on suspicion; in one case vision was restored to a great extent. He would be glad to hear a word upon the treatment of chronic sinusitis; children were apt to have sinusitis all winter which would clear up in the summer. He had used suction and had had some success with autogenous vaccine. The child could be trained to use the suction apparatus at home. Used with the nasal douche the water was dragged through the nose. The question to settle was how much one was justified in operating on the sinus in children; how far might one dare to go in a given case.

Dr. B. R. SHURLEY of Detroit had found in these cases that a daily douche of bismuth and lime water, with suction and negative pressure, cleared up the sepsis very quickly. Dr. Dean had given them a new line of thought that ought to interest pediatrists and orthopedic men, who saw these cases first.

Dr. SLUDER wanted to know how Dr. Dean reached his diagnosis. Dr. Mackenty had said he operated on suspicion; he noted a change of color of the membrane; that was not suspicion; that was the diagnostic lesion. If one noticed that sign one would save many more eyes.

Dr. HARRIS P. MOSHER of Boston maintained that Dr. Sluder's pathology was suspicious. It seemed to be a question of color entirely.

Dr. SLUDER said he would let future generations decide that point.

Dr. DEAN in closing, expressed his appreciation of the discussion and emphasized a few points. These were the only four cases he had operated on in children. A child of five was the youngest had had seen with an operative sphenoid. He was glad Dr. Sluder had mentioned the reproduction of bone. He had noted it at autopsy. As to diagnosis, he thought careful daily study of the case, using the nasopharyngoscope, was of most value. They had also put the trocar into the sinus and cultured the contents. They used the long German silver cannula for the sphenoid. They surrounded the sphenoid with methylene blue, but got none back by this procedure. He had prepared a paper on the treatment of chronic empyema in children and would be glad to present it. Dr. Thiesan had asked about vasomotor rhinitis; the cases they had studied had been in children under twelve years. The antrum was washed out for diagnostic purposes. In one case of trophoneurosis, in a boy of two years, the antrum of Highmore was washed out and thick white pus was found. This was interesting to the pediatric men, as the cause of the disease was not understood. They did the puncture of the antrum in young children, with the *x*-ray plate in front of them. The floor of the antrum of Highmore did not extend below the inferior turbinate in the infant, but if one watched the plate one could get through the sinus and aspirate the antrum.

A New or Hitherto Undescribed Form of Maxillary Sinusitis.—R. H. SKILLERN of Philadelphia presented this case report. After a severe cold, the patient, Miss P., aged 50, had experienced a hemorrhagic discharge from the nose. This had become thicker and heavier, and had assumed the form of small pieces of liver, expectorated with great frequency, and always via the post nasal passage. Examination showed little that suggested sinus involvement, and the teeth were negative. Needle puncture of the left antrum, however, withdrew an ounce of pure unclotted blood. The cavity was irrigated and afterwards 50 per cent. alcohol with 1/2000 bichloride solution was injected. The blood withdrawn showed abundant hemolytic streptococci. The irrigations were continued, and the discharge became purulent instead of hemorrhagic. The alcohol injections were increased in strength. An abscess developed on the septum, which was incised, and a few days later a bloody discharge came from the right side of the nose, and the right antrum became filled with bloody fluid. Both antra were now irrigated and the secretion became diminished and milky in character. Triweekly irrigations were continued, but the disease became stationary. If untreated, it reverts to the hemorrhagic form. The exact status of the infection has not been determined.

Extradural and Subdural Abscess Following Sup-

purating Frontal Sinusitis and Osteomyelitis of the Frontal Bone.—Dr. J. H. BRYAN of Washington, D. C., presented this case. The patient, a well-nourished boy of 15, was first seen in Virginia in January, 1919, suffering from frontal sinusitis. His condition was serious and he was brought to Washington and admitted to the Episcopal Eye, Ear and Throat Hospital, where the left frontal sinus was opened, the anterior wall removed and the sinus curetted. There was always a large amount of purulent discharge from the wound, and after two weeks an abscess of the left upper lip appeared. A second operation was performed two weeks later, when the sinus was exposed and a sequestrum removed from the inner sinus wall, leaving a perforation into the cranium and exposing the dura for ⅛ inch. In April the right maxillary sinus became infected and he was again operated upon. In May, upon another examination, the whole left frontal region was found markedly swollen, pitting on pressure and exuding bloody purulent secretion through an orbital fictula. Another operation was decided upon. This was done by free incision from the outer angle to the inner angle of the orbit, and a vertical incision for an inch and a half, detaching a flap of skin and periosteum from the frontal bone as high as the eminence. A large quantity of pus and granulation tissue was found and curetted. The cavity was packed with gauze and dichloramine-T, and the wound left open. The secretions were profuse and convalescence was tedious. In July two-thirds of the external wound were allowed to close, but gauze packing was still left in on account of the profuse discharge. A probe inserted passed into the cranial cavity, but no diseased bone as found. In September the patient was in good condition, but secretions still flowed through a fistulous opening over the orbit. A cannula introduced at this time evacuated about six drachms of thick, bloody, purulent fluid. The *x*-ray showed the probe between the frontal lobe and the skull. Injection of nitrate of thorium showed a large extradural abscess between the skull and the anterior frontal lobe. This abscess was opened and drained of half an ounce of bloody purulent secretion. Granulations were removed and tincture of iodine applied. A large drainage tube was inserted. Culture of the pus showed non-hemolytic streptococci in pure growth. The patient progressed rapidly and was discharged in ten days. By December the drainage had subsided and the patient said he felt well. In January word was received that he was ill with influenza and sinusitis. In February he was reported as critically ill and he was brought to Washington again. It was then seen that he was in a markedly septic condition, temperature 103°, and swelling over the left frontal region. He was readmitted to the hospital, and was seen to be apathetic, with right nystagmus and twitching of the facial muscles. The old operative tract was opened. The sac was filled with secretion under tension. Some necrotic bone was removed from the inner table of the frontal bone. After operation the patient remained semi-comatose and developed convulsions. He died five days after operation. The neurological condition before death pointed to a lesion of the temporal lobe or tracts. Examination of the animal fluid pointed to the fact that the condition was one that was not in free communication with the spinal fluid. The acute condition was so rapid that decompression was considered inadvisable when it was possible to recognize the existent condition. At autopsy the entire left hemisphere was covered with purulent exudate over an area 8 by 5 c.m., in extent, with center at the junction of the Rolandic and Sylvian fissures. The pia-arachnoid was thick, injected and swollen. There was marked vascular injection. The frontal sinus, ethmoid cells and sphenoid were injected and swollen, the latter filled with yellow, cloudy fluid. Streptococci in short and long chains were abundant in the brain exudate.

Meningitis Due to Frontal Sinus Suppuration With a Report of Three Fatal Cases.—Dr. RALPH BUTLER of Philadelphia presented this case. Inflammation of the nasal accessory sinuses and their serious complications called for intensive study. The number of reports of intracranial involvement from nasal conditions were few as compared with those of otitic origin. In the literature only 56 cases had been reported as due to frontal sinus suppuration up to 1913, and since that date five more had been found. Meningitis, complicating either chronic or acute sinusitis was most common in the male sex and during the second and third decades. Usually it ran a rapid course and terminated fatally in five or six days. Localized meningitis might be present for some time previous. The infection might be transmitted through a congenital or carious defect in the posterior sinus wall, through the veins or lymphatics, or by osteomyelitis. It was found that colored fluid injected into the perimeningeal lymph spaces could be recovered in the lymphatic plexuses of the mucous membrane of the frontal sinus and also that the veins of the sinuses communicated with each other and through the bones with the meninges and cranial sinuses. The larger the frontal sinus, the greater the danger of intracranial complications. If purulent leptomeningitis developed the prognosis was found to be very bad. Evidence would seem to show that mortality was increased by operation on the sinuses. On account of the considerable operative risk, surgeons hesitated to resort to radical operation unless intracranial infection was suspected, or unless diseased bone was present. One should not hesitate beyond this point.

Acute Abscess of the Lateral Wall of the Laryngopharynx.—Dr. CHARLES W. RICHARDSON of Washington, D. C., made this presentation. The occurrence of abscess in the laryngopharynx was sufficiently rare to warrant special mention. This type of lesion was sometimes seen in an easily recognized relationship with the coexisting peritonsillar abscess, but in the special case described there was a normal faucial region with primary laryngopharyngeal abscess. The etiological factors in abscesses of this character were not clear; possibly the numerous lymph glands in this region became infected, or some foreign body in an article of food might have scratched the mucosa and produced infection. The symptoms were characteristic. Intense pain located just below the angle of the jaw was the first symptom; tenderness here was marked and pain in swallowing was exquisite. Profuse mucus secretion occurred, but no insalivation. Respiration was not affected, and the voice was normal. Chilly sensations were occasionally felt. The temperature was moderately septic. The patient was restless, uncomfortable, and anxious about the outcome. The local manifestations were depression of the tongue, painful, distinct swelling, protruding in on the lower pharynx at the level of the fossa navicularis, where congestion was marked. After two or three days distinct pointing, with evacuation, might take place, or the abscess might be incised at this time. The distinctive symptoms of this lesion were its sudden onset, severity of symptoms, normality of the tonsils, peculiar location, obscure etiology.

Antiquity of Antiepidemic Measures.—Cabanès, in a recently published monograph on the scourges of humanity—among which he includes bubonic plague, lepra, cholera, smallpox, and grippe—shows that most of our repressive measures were practised centuries ago. In the pestilence which raged at Nancy in 1631 it was obligatory to report new cases and to disinfect the premises of the sick. Isolation, sequestration, compulsory reporting of cases, disinfection of clothing, suppression of animals believed to transmit disease, cleansing of streets and houses—all of these were carried out in the seventeenth century. The author fills the chair of history of medicine in the University of Brussels.—*Gazette des Hôpitaux*

Encephalitis Lethargica in Spain.—Dr. Fernandez Sanz reports a series of seventeen personal cases of this malady seen in Madrid. Of this number three at least succumbed. The majority are styled primary cases, hence the so-called secondary cases should receive especial attention. The first of these was clearly an example of grippal meningo-encephalitis accompanying bronchial pneumonia but ending in recovery. The second developed in the course of influenza, but presented ocular pareses and lethargy, while the third and fourth were of the same type—typical encephalitis lethargica developing in the course of grippe. Such experience must incline the beholder to a unicistic conception of the two maladies.—*El Siglo Medicó.*

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

THREE YEARS OF WORK FOR HANDICAPPED MEN. By JOHN CULBERT FARIES. 95 pages. Published at the institute, 101 East Twenty-third Street, New York City.

TREATMENT OF THE NEUROSES. By ERNEST JONES, M.D. 233 pages. Published by William Wood & Co., New York.

MARINE HYGIENE AND SANITATION. By GILBERT E. BROOKE. 409 pages, with illustrations. Published by William Wood & Co., New York.

A MANUAL OF NEURASTHENIA By IVO GEIKIE COBB, M.D. 366 pages. Published by William Wood & Co., New York.

EPIDEMIOLOGY OF TUBERCULOSIS. By GEORGE E. BUSHNELL, M.D. 221 pages. Published by William Wood & Co., New York.

THE DIAGNOSIS AND TREATMENT OF BRAIN INJURIES. By WILLIAM SHARPE, M.D. 757 pages, with illustrations. Published by J. B. Lippincott Company, Philadelphia.

DISEASES OF CHILDREN. By JOHN LOVETT MORSE, M.D. 639 pages, with illustrations. Published by W. M. Leonard, Boston.

THE MECHANISM AND GRAPHIC REGISTRATION OF THE HEART BEAT. By THOMAS LEWIS, M.D. 452 pages, with illustrations. Published by Paul B. Hoeber, New York.

EATING TO LIVE LONG. By WILLIAM HENRY PORTER, M.D. 243 pages. Published by The Reilly & Lee Company, Chicago.

DIAGNOSTIC METHODS. By RALPH W. WEBSTER, M.D. Sixth Edition. 844 pages, with 37 colored plates and 170 other illustrations. Published by P. Blakiston's Son & Company, Philadelphia.

EPIDEMIC ENCEPHALITIS By Drs. FREDERICK TILNEY and HUBERT S. HOWE. 252 pages with illustrations. Published by Paul B. Hoeber, New York.

THE DUODENAL TUBE. By MAX EINHORN, M.D. 122 pages with illustrations. Published by W. B. Saunders Company, Philadelphia.

DIAGNOSTISCHER LEITFADEN FUR SEKRET UND BLUTUNTERSUCHUNGEN. By Dr. C. S. ENGEL. 303 pages with illustrations. Published by George Thieme, Leipzig.

THE NEW PHYSIOLOGY IN SURGICAL AND GENERAL PRACTICE. By A. RENDLE SHORT, M.D. 291 pages. Published by William Wood & Company, New York.

AN INDEX OF SYMPTOMS. By R. W. LEFTWICH, M.D. 595 pages with illustrations. Published by William Wood & Company, New York.

ELECTRIC IONIZATION. By A. R. FRIEL, M.D. 78 pages with illustrations. Published by William Wood & Company, New York.

THE MEDICAL CLINICS OF NORTH AMERICA. July, 1920. Number 1, Volume 4. 370 pages with illustrations. Published by W. B. Saunders Company, Philadelphia.

THE DIAGNOSIS AND TREATMENT OF HEART DISEASE. By E. M. BROCKBANK, M.D. 158 pages with illustrations. Published by Paul B. Hoeber, New York.

AUTOEROTIC PHENOMENA IN ADOLESCENCE By K. MENZIES. 96 pages. Published by Paul B. Hoeber, New York.

MEDIEVAL MEDICINE. By JAMES J. WALSH, M.D. 221 pages with illustrations. Published by A. & C. Black, Ltd., London.

AN EPITOME OF HYDROTHERAPY. By SIMON BARUCH, M.D. 205 pages with illustrations. Published by W. B. Saunders Company, Philadelphia.

THE AMERICAN RED CROSS IN THE GREAT WAR. By HENRY P. DAVISON. 302 pages with illustrations. Published by The Macmillan Company, New York.

TRANSACTIONS OF THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION. Volume 26, (1919). 600 pages with illustrations. Published by American Medico-psychological Association.

Therapeutic Hints.

Spirit of Camphor in Hay Fever and Asthma.—Stuver tells of a blacksmith who has suffered from asthma all his life, the first attack following whooping-cough when he was nine months old. After trying all sorts of treatment, from that prescribed by eminent specialists and general practitioners to the cults and sure cures that infest the byways of medicine, all without more than temporary relief, the man used a solution of carbolic acid, camphor, and borax, applying it to the mucous membrane of the nose by means of an atomizer. Later he used spirit of camphor alone. His asthmatic attacks were always ushered in by hay fever symptoms; as soon as he felt these symptoms coming on he would pour some of the spirit of camphor in his hand, hold it to the nose and inhale freely, repeating several times if necessary to check the trouble. He had used the camphor in this way for eighteen months and during that time had not had an attack of asthma.—*Western Medical Times.*

Bromidrosis.—Isaac L. Peebles recommends the following local treatment for bromidrosis, with special reference to the feet. The parts should be cleansed night and morning. Also change shoes and socks daily; paint feet lightly twice a week with tr. iodi. Wash feet in weak solution of permanganate of potassium, about 5 grains to the basin of real warm water. Wash at bedtime. Remove feet from basin. Do not dry with towel, but allow feet to dry in the open. Next morning wash feet well in ordinary sterile water, then powder shoes and socks freely with the following powder:

℞ Acidi salicylici.....grains xx
Pulv. amyli 3iij
Pulv. talci .....℥ij
Acidi borici .....℥ij

M. Sift into shoes and stockings each morning freely.—*The Medical World.*

Infusion of Parsley in the Treatment of Gallstones.—H. Cameron Kidd cites the case of a woman over seventy years of age who had suffered for many years from gallstones. Examination by the writer during a prolonged attack revealed a large palpable mass in the region of the gallbladder, in which gallstones could be felt. Operation was advised, but the patient objected, relating the cure of a friend under similar circumstances brought about by drinking infusion of parsley. She had begun herself to take about 1½ pints daily of an infusion made by soaking a good double handful of fresh parsley leaves in cold water, which was afterward brought to the boil, strained and allowed to cool. She persevered in this treatment, which seemed to have cured her. After nearly two years she remained free from pain and sickness, and the mass in the region of the gall-bladder disappeared. She was no longer emaciated and the general condition was satisfactory. The fruit of parsley, and apparently also the whole plant, contains an essential oil, which is pretty well known under the name of "apiol" as a remedy for dysmenorrhea. Common garden parsley is recommended in the French *Codex*, in combination with other aromatic plants, as a diuretic.—*British Medical Journal.*

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Original Articles.

CHRONIC TONSILLAR INFECTIONS.*

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THE great importance of diseased tonsils as foci whence infection, especially by streptococci, gains entrance to produce various systemic diseases, has been well established during recent years. Still more recent investigations of the virulent type of pneumonia, often accompanied by empyema, following measles and influenza, have shown that hemolytic and to some extent, other types of streptococci, taking advantage of the lowered systemic resistance due to the primary disease, have been largely responsible for these serious complications and the appaling mortality which resulted from them.

Numerous epidemics of severe tonsillitis have been traced to milk, contaminated by hemolytic streptococci from the udders of cows affected by garget, or milkmen suffering from tonsillar infection. Even apparently wholesome, certified milk has frequently been shown to contain hemolytic or other varieties of this organism.

The extreme facility with which streptococcal infections are carried from patient to patient in hospitals and barracks, the greater liability to pneumonia and other serious complications in measles and influenza among streptococcus carriers as compared with non-carrier, and the importance of segregating the former, are matters upon which there is marked unanimity of authoritative opinion.

Investigation of the bacteriology of the tonsils by many competent authorities has shown that commonly streptococci are found on examination of excised tonsils or materials expressed from the crypts, so much so that most investigators state that these organisms are normal inhabitants. That they are dangerous tenants, under conditions favorable to infection, is generally admitted. The degree of virulency of the three types—hemolytic, viridans, and non-hemolytic, is in the order named—the exogenous strains from milk, contact, and droplet infection being considered more virulent than the so-called normal inhabitants of the crypts.

*Read before the American Therapeutic Society at its twenty-first annual meeting, held in Philadelphia May 7 and 8, 1920.

The *Streptococcus viridans* and other non-hemolytic varieties, are more widely distributed, represent more heterogeneous groups than the hemolytic as determined by immunity reactions, and produce more local, chronic, and milder lesions. They do not call forth an active local or systemic resistance from the body's defensive mechanisms in the way of leucocytic exudate or antibodies and therefore produce infections less easily eradicated by treatment.

It is generally admitted that laboratory tests of the morphologic, cultural, and biologic characteristics of these organisms are insufficient to determine the degree of pathogenicity of a given strain. To establish in a given case whether we are dealing with a harmless saprophyte or an organism capable of producing or actually accounting for systemic symptoms, however, is a matter of the greatest practical importance to the clinician, and I believe this may most readily be done by considering the laboratory and clinical findings side by side. If these organisms are found in the tonsil, unassociated with local or systemic evidences of disease, though one would recognize certain pathogenic possibilities, he would not attribute importance to them under such circumstances, unless as possible carriers of infection to others. If, on the other hand, they are associated with definite local and systemic evidences of disease, is not one warranted, on clinical grounds, in incriminating them as the probable cause of trouble?

It will be noted that investigations on the tonsils carried out so far have been largely in *group* cases, occurring in military camps, in hospitals, or in connection with local epidemic outbreaks, with the consequent liability that the infection has been carried from patient to patient, or to those exposed to such influences as a contaminated milk supply. The cases coming under the observation of throat specialists are usually those that have local symptoms directing them, or have been referred because they are suspected of having throat trouble.

The clinician, dealing with private patients, on the other hand, comes in contact with more isolated rather than group cases, and has to study not only *local*, but the *systemic* evidences of infection, and has usually an opportunity to follow his cases over a longer period, noting the ultimate results of operative or other treatment, and thus is in a favorable position to determine many of the unsettled points regarding tonsillar infection. It is his duty in a given case to decide whether an active infection in the tonsil exists, capable of producing attendant systemic symptoms, and as he must advise the patient regarding the general plan of treatment to be followed, the question of the tonsils necessarily comes under his consideration.

The clinical evidences of disease in a patient, local and general, represent the *reaction* of the tissues to the infecting organisms, and therefore should afford the best criterion of their activity and virulency.

In order to determine the condition of the tonsils and the bacteriologic findings more generally in the population, during the past 15 months, in association with my assistants, Dr. R. W. Mann and Dr. N. C. Sharpe, the writer (Anderson) has made routine examinations of the throats of cases in office practice, comprising patients widely distributed throughout the Province of Ontario, and therefore representative of conditions more generally obtaining among the subacute and chronic, *ambulatory* sick in the community as a whole. The method of investigation in each case has included observations covering the following points:

(*a*) A careful history of previous attacks of tonsillitis; quinsy or sore throat.

(*b*) A history of any systemic disease, such as is known may arise from focal infection of the tonsils.

(*c*) Evidences of coincident infection of the teeth, sinuses, nasal cavities, etc.

(*d*) The presence of hypersecretion of the throat, pharyngitis, and the condition of the lingual and pharyngeal tonsils.

(*e*) The presence of redness, granular appearance, or thickening of the anterior pillars and adjacent soft palate.

(*f*) Noting the size and color of the tonsils, fissured, ragged, or cryptic conditions, adhesions or sealing over of the mouths of the crypts with scar tissues, interference with drainage.

(*g*) Firm pressure backwards upon the anterior pillars so as to extrude the tonsils, noting evidences of atrophy, fibrosis, edema, adhesions to the pillars and peri-tonsillar tissues, areas of inflammation in the substance of the tonsil: caseous or purulent material expressed from the crypts, peritonsillar tissues, or supratonsillar fossa, and the odor of the exudate.

(*h*) The presence, after operation, of scarred remains of the tonsil, tags, evidences of trauma, residual inflammation in the tonsillar fossæ or the pharynx, etc.

(*i*) Enlargement or tenderness of cervical lymphnodes.

(*j*) Bacteriological examination of swabs from the crypts or the cheesy or purulent exudate, expressed therefrom.

The bacteriological examination was as follows: The swabs from the tonsil crypts were streaked on glucose-human blood-agar and incubated. The plates were examined for hemolysis, 24 to 48 hours later. Stained smears were examined to identify the organisms. In all, 937 patients were carefully examined by the above methods, and of these 623, or 66 per cent, showed definite clinical evidences of tonsillar infection.

In this series, *Streptococcus viridans* was found in 260 of the 937 cases, or 27.8 per cent, though there was a marked seasonal variation, being lowest in the autumn—viz., 16 per cent in September, 4.2 per cent in October and 5.2 per cent in November, rising rapidly to 44 per cent in December, 65.3 per cent in January, and 75 per cent in February. The clinical evidences of tonsillar infection also showed a great increase during these months, and it was also believed that *Streptococcus viridans* was especially associated with a more markedly edematous inflammation, dark red in color, rather than with distinctly cryptic and purulent types, so much so that we were usually enabled to foretell this type of infection from the local appearances presented. Other nonhemolytic forms were second in order of frequency, being found in 137 cases, or 15 per cent, the percentage being lowest in the periods when the other forms were most frequent.

The *Staphylococcus aureus* was found in 114 of the 937 cases, or 12 per cent. In November, 1919, it was found in 42 per cent of 47 cases examined. This is relatively a much higher percentage than most observers have reported.

The hemolytic strepococcus was found in 79 cases, or about 0.9 per cent, being much more frequent in the autumn, winter, and spring months than in the summer—rising at times to 25 per cent of the cases examined during the former periods.

The largest percentage of the most pathogenic forms, therefore, correspond to the colder weather,

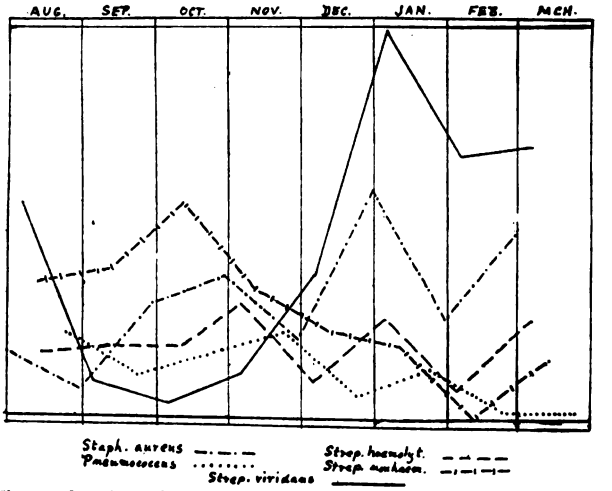

Chart showing the relative frequency of pathogenic organisms in cases of tonsillar infection from August, 1919, to March, 1920, inclusive.

indoor life, and the period when pneumonia, rheumatism, etc., are most prevalent. Two or more form not infrequently were isolated from the same case. Less frequently bacteriological findings were diphtheroid baccilli, pneumococci, *Micrococcus catarrhalis*, etc.

Considering together the results of our clinical and bacteriologic investigations, they lead to the conclusion that a large percentage of the adult population of the class seeking private consultation present definite evidences of tonsillar disease, associated with the presence of pathogenic oganisms, producing or capable of producing, under conditions favorable to general infection, more or less serious systemic symptoms. In our experience in the chronically ill, typically healthy tonsils are the exception, rather than the rule. In fact, it would appear that more or less evidence of active tonsillar infection is about as common in this class as recent investigations have shown to be the case with oral infection. So often does one find in patients chronically ill evidences of definite infection in the tonsils that one might almost consider it as a concomitant of the normal process of atrophy, or that a chronic infection of

low intensity is designed to stimulate a systemic response which renders the subject refractory to more serious attacks. The latter view point has been elaborated in an interesting manner.

It seems to us, however, that we may too readily give a certificate of character as normal inhabitants to potentially dangerous bacterial invaders of the tonsils.

There are certain conditions to which the general population is exposed at the present time, which predispose to infection of the tonsils and help to explain its frequency. Those who have studied the condition are aware of the difficulty of ridding the tonsils of infection, once it has been well established (Billings). Their exposure not only to pathogenic bacteria in food and drink, but to local irritation, the low vitality of the tissue itself, the long, sinuous crypts, so readily occluded so as to interfere with drainage—all are favorable to continuance of infection.

The common diseases of childhood—scarlet fever, measles, and diphtheria—are practically always associated with throat involvement, due to streptococci, and the same may be said of postnasal and sinus disease draining into the nasopharynx. The oral infection with which *Streptococcus viridans* is constantly associated, not only in the neglected mouths of the poor, but in a more serious form in the mechanically maintained infections so commonly found among the well-to-do, are foci whence infection extends to the surrounding tissues, including the tonsils.

The kissing of children by adults with infected mouths is another obvious means of transmission of infection to the tonsils. Incomplete operations in children, leaving stumps and tags and the producing of trauma and scar tissue, are frequent causes for the persistence of chronic infection in adult life. Even after complete enucleation, there is often an hypertrophy of lymphoid remains in the nasopharynx, that is the seat of recurrent infection.

Whether the infected tonsils produce symptoms or not, apart from the degree of systemic resistance, is often a question of drainage. The action of the palatoglossus and palatopharyngeus muscles, in mechanically compressing the tonsils during deglutition and the abundant secretion of mucus to destroy bacteria and wash out the crypts, are among the means which nature has provided to ward off infection, but where previous inflammation has occluded the crypts, sealed over their openings by scar tissue, or produced adhesions, these means become less effective. Thus the small, concealed, atrophic, adherent tonsils and stumps and tags left after incomplete operation, which may present little evidence of disease on superficial examination, are commonly the seat of the most serious type of infection. The atrophic tonsil itself is often evidence of long continued infection, and, as Carmichael has stated, tonsils having undergone repeated attacks of inflammation, with resulting fibrosis and loss of nearly all the glandular tissue, finally offer no resistance to pathogenic bacteria. We wish to protest against the frequent assumption as unwarranted on pathological grounds, that a given tonsillar infection is clinically unimportant because the amount of tissue involved is not extensive. Obviously the virulence of the infecting organism, the patient's resistance and the question of drainage may be of greater moment.

Often very firm and long continued pressure on the pillars is necessary in order to express the pus sealed in by firm adhesions. Infection may often be demonstrated by this means which would be overlooked by retraction of the pillars or bringing the tonsils into view by a tenaculum. Direct palpation of the tonsils is a procedure too often neglected in routine examination for evidences of infection. These are the cases where chronic enlargement and tenderness of the upper cervical lymphnodes is of most clinical significance though many cases of definite tonsillar infection do not show lymphnode enlargement, and it must be remembered that all parts of the pharyngeal ring do not drain into glands readily accessible to palpation. At times, patients gave a history of recurrent attacks of tonsillitis, quinsy or sore throat, indicative of persistent infection, but in many cases where investigation has revealed definite evidence of disease, the patient had complained of no local symptoms. The throat of inhalers of cigarette smoke and the so-called "smoker's throat," usually showed clinical evidence of infected tonsils and the throats of soldiers seriously exposed to the effects of chlorine and othe irritant gases, commonly showed chronic tonsillar infection.

The persistence of evidences of residual infection about the pillars, in the tonsillar fossæ and those of the pharynx, after enucleation, is very common, suggesting that at times we take too mechanical a view of the possibilities of removing an infection which has extended more widely into the surrounding tissues or adjacent lymphnodes or produced systemic disease. This is especially the case where a coincident oral or sinus infection has not been cleared up as a preliminary to operation, when the general health is below par, or when some systemic disease, such as diabetes, gout, or acid intoxication, or digestive disease exists. These factors help to explain some of the disappointing results following operation.

The rapidity with which marked improvement in the condition of the tonsils follows when a diabetic patient has become sugar-free, as well as the rapid reduction in carbohydrate tolerance coincident with an acute exacerbation of a tonsillar infection, emphasize the importance of constitutional conditions which reduce systemic resistance.

The presence of certain symptoms of systemic disease may be an important indication of the activity of a local tonsillar infection in a given case. In 574 cases in our series, the patients presented the following associated conditions:

1. Rheumatic group, including arthritis, lumbago, sciatic and other pains, neuritis, etc. .....166 cases, or 27.1 per cent
2. Cardiovascular, including valvular disease, hypertension, myocardial disease, angina pectoris .....115 cases, or 20 per cent
3. Goitre (Simple, 80; exophthalmic 20) .....100 cases, or 17.4 per cent
4. Gastro-intestinal, including appendicitis, gastric and duodenal ulcer, hyperacidity, gastric atony, cholecystitis and gallstone disease, unspecified indigestion.....
   116 cases, or 20 per cent

5. Diabetes and glycosuria..28 cases, or 4 per cent
6. Respiratory diseases, including bronchitis, asthma, and pleurisy ...30 cases, or 5.4 per cent

Oral sepsis was noted in 320 cases or 55 per cent, but if we included the edentulous, in whom previous serious infection obviously had existed, the percentage would have been higher. It may further be stated that healthy tonsils are rarely if ever found where the mouth is seriously infected.

There is a notable lack of harmony among observers as to the relative frequency of the different pyogenic organisms found in the tonsils, apparently depending upon the bacteriological technique employed, whether the examination has been of excised tonsils or of swabs from the surface or of the crypts, whether during epidemics of tonsillitis, measles, or influenza, etc., whether among group cases as in barracks, hospitals, and schools, or among more widely scattered individuals, and according to the season of the year. A point of great importance, moreover, which has not received the attention it obviously deserves, is whether the cultures have been made from healthy or clinically diseased tonsils, as has been in the case of the epidemic diseases before mentioned, and in the statistics of Smillie, Tongs, and others. Conclusions regarding the normal flora can obviously not be drawn from the study of diseased tonsils.

These factors offer a reasonable explanation of the widely divergent results reported by competent investigators as to the frequency with which *Streptococcus hemolyticus* is found, varying from 1 per cent, as reported by Smillie, to 100 per cent reported by Davis.

If definite tonsillar infection is as common as our investigations have led us to conclude, the importance of our endeavoring to control, as far as possible, the causes producing it, is obvious; but some of these are so bound up with inevitable social conditions that the problem is a difficult one. Others, however, are more possible of control, as milk supply, oral and sinus infection, incomplete operations, unnecessary trauma, etc.

The maintenance of the highest degree of general health, the treatment of constitutional conditions which lower resistance, the value of alkalies and similar means, one need not discuss. Opinion as to the ineffectiveness of vaccines is very general, and local applications, such as iodine, argyrol, chlorine preparations, etc., are equally disappointing as means of clearing up a chronic infection. Irritants should be avoided and the best results apparently are obtained from bland, alkaline remedies, or physiological saline solutions. Preliminary attention to oral and other foci of infection certainly would give nonoperative measures a better chance and the fact that improvement in the condition of the tonsils in the summer months with the lesser frequency of pathogenic organisms in cultures, suggests a tendency to spontaneous cure under favorable conditions.

The use of the cautery and caustic drugs, by increasing the amount of scar tissue and thus interfering with drainage, appears difficult to justify on pathological grounds. These, like partial removal of the diseased tonsils, may be followed by temporary improvements, but often the ultimate results are worse than the original condition. Complete enucleation, with the least possible trauma, apparently gives the best ultimate results. The removal of oral, sinus, nasal, and other local foci of infection is a prerequisite to successful operative treatment. The continuance of general and local treatment in order to get rid of residual infection is too often overlooked.

The decision as to the necessity for operation must be made in the individual case after careful consideration of the local and systemic evidences of infection, including bacteriological examination, and in regard to this there appears in practice a marked divergence of opinion. The nature of the infection and the question of drainage appear to be all important, much more than the size or outward appearance of the tonsil. Moreover, conclusions as to the actual size of the tonsils, based on their prominence on throat examination, are known to be erroneous, since the adherent tonsil, when concealed in a deep fossa or behind a prominent plica, is quite often much larger than outward appearances suggest.

Different attitudes regarding operation are illustrated by a case which I saw a few days ago in which a prominent throat specialist, after examination, said the tonsils were infected, but not sufficiently so to call for enucleation.

The patient was a vigorous, well-developed woman, a vocalist, aged 37, and her symptoms, consisting of recurrent attacks of laryngitis and bronchitis, pains about the angle of the jaw and in the neck, for which she had had recourse to osteopathic treatment, rhonchi in the apex of the right lung, producing an uncomfortable sensation on breathing, had followed an attack of tonsillitis three years ago. Radiographic examination of the chest was negative, she had no expectoration and no fever. The tonsils were small, and the pillars red. They were healthy looking on a superficial examination, but were so adherent that one could not extrude them by firm pressure. A small amount of caseopurulent matter was obtained after prolonged pressure and culture from this showed *Staphylococcus aureus* and *Streptococcus viridans*. The upper cervical glands were slightly enlarged and tender.

This is cited as illustrating a type of case in which the clinical findings, we believe, offer an indication for enucleation as the proper method of treatment, but in which the local evidences are so unobtrusive, that the opinion is frequently given by the specialist that there is not sufficient infection to warrant it—a view which we do not think is in accord with a proper understanding of the pathological condition or the clinical findings. In dealing with infection, the virulence of the organisms, the local and systemic resistance of the patient, and the question of drainage are more important than the extent of the area involved.

In conclusion, we wish to say that our object has been to bring up numerous practical considerations which confront the clinician, with a view to eliciting the opinions and practice of the members of this Society in dealing with them. We have dealt with the question from the standpoint of the clinician rather than of the throat specialist, believing that from this angle, the whole question may be studied in its widest relations.

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THE ANATOMY, PHYSIOLOGY, AND PATHOLOGY OF THE TONSILLAR STRUCTURES IN RELATION TO CRYPTOGENIC INFECTIONS *

By GEORGE B. WOOD, M.D.,

PHILADELPHIA.

I PROPOSE in this paper to review as succinctly as possible, various facts concerning the anatomy, physiology and pathology of the tonsil structures and their relation to tonsillar infection. The question which I will strive to answer is: "Do the tonsils show any peculiar anatomical structure or possess any specific physiology or undergo pathologic changes which would make them more liable to act as a gateway of infection than other structures of the nose and throat?"

The tonsils are simply accumulations of lymphoid tissue occurring in certain angles of the throat and are more important than the lymph follicles and other lymphoid structures found in the nose and pharynx only because of their greater size. The pharyngeal tonsil is situated in the vault of the pharynx and when enlarged is commonly termed "adenoids." The faucial or palatal tonsils occupy a space between the throat and the mouth bounded in front by the anterior pillar, and behind by the posterior pillar of the fauces. The lingual tonsil is found at the base of the tongue just above and in front of the epiglottis. Because of their size and the very frequently embedded character which they show, the faucial tonsils must be given precedence in importance as a source of cryptic infection, yet all of the tonsillar tissues of the throat show a very similar histology, varying chiefly in the character of the epithelium lining the crypts. There are four elements making up the tonsillar structure: the capsule, the follicles, the interfollicular tissue, and the crypts. The fibrous capsule which separates the tonsil from the underlying musculature has extensions called trabeculæ, which pass into the substance of the tonsil and act as a supporting frame-work to the parenchyma proper. These trabeculæ contain the blood-vessels and lympathics. The lympathic vessels of the tonsil are all efferent in function, as the substance of the tonsil does not possess afferent lymph vessels. The parenchyma of the tonsil consists of the germinating follicles and the interfollicular tissue. The germinating follicles are made up chiefly of accumulations of large mononuclear cells which in the active functioning tonsil are undergoing rapid mitotic division. This mitosis is productive of small lymphoid cells which accumulate around the periphery of the follicle, becoming gradually dispersed throughout the interfollicular substance. The lymph vessels of the trabeculæ are frequently found filled with these lymphoid cells, and in very active tonsils we occasionally see them in a crypt where they have obtained entrance by rupturing the cryptal epithelium. Supporting both the follicles and the interfollicular substance is a reticulum formerly supposed to be derived from the connective tissue, and frequently spoken of as endothelial. Lately, however, there has been brought forward some evidence to support the belief that this reticulum is, in part at least, derived from the epithelium of the tonsillar crypts.

The most peculiar anatomical feature of the tonsil is the crypt, which is formed by an invagination of the surface epithelium. The epithelium of the crypt differs, however, from the surface epithelium in that it has no sub-epithelial connective tissue, and in many places no basement membrane. Further, the basal cells undergo a disintegration, so that in many places an intact layer of epithelium is found only in the extreme surface cells. In the tonsil which has become fully developed, the crypts or lacunæ are found penetrating to the extreme depth of the tonsil, invading its structure so that it is practically impossible to cut into the tonsil without opening one or more of the crypts. If we review its histogensis, we will find that the earliest evidence of the tonsillar structure is the change in the epithelium which later develops into the crypt, and even at this early date, the peculiar disintegration of the basal cells of the epithelium is very strikingly seen. Apparently, therefore, the cryptal epithelium does not offer as strong a mechanical barrier against the invasion of outside influences as does the intact epithelium of the surface of the tonsil and neighboring structures.

The lymphatic drainage of the tonsils is as follows: The tonsil parenchyma possesses spaces which are continuous with the lymph radicals, which latter terminate in the efferent lymph vessels situated in the trabeculæ. The direction of the lymph current of the tonsil is as a rule, from the crypt and germinating follicles toward the lymph vessels in the trabeculæ. From the trabeculæ, the lymph vessels pass to the capsule, finding their way to the deep cervical lymph nodes of the neck. The lymphatics from the pharyngeal tonsil penetrate the posterior pharyngeal wall and pass back under the big vessels of the neck to the posterior group of the deep cervical lymph nodes, while the lymphatics from the faucial tonsils pass in front of the big vessels to the anterior group of the deep glands, especially to one lymph node which is usually larger than the others, and placed just above the posterior belly of the digastric muscle. This lymph node is the one that is so frequently found enlarged just below and back of the angle of the jaw.

As to the physiology of the tonsillar structure, almost every conceivable function has been assigned to it. For instance, the tonsils have been said to excrete certain cells that tend to prevent infection, that they develop an internal secretion like that of the suprarenal glands, that they aid in salivary digestion, and that they help in the production of general immunity by the absorption of toxins from the crypts. This latter may at times occur, though in a small series of observations I was unable to prove it. A number of observers such as, Schoenmann, Lenhart and later Henke, believe that they have sufficient experimental evidence to show that the tonsils act as excretory organs for foreign elements which may be brought to the tonsils by way of the lymphatics. Henke's work was based mostly on his observations made in both animal and human experiments in which minute, inert, foreign particles, such as carbon and Chinese ink, when injected into the gums or into the nasal mucosa were later

*Read at the Twenty-first Annual Meeting of the American Therapeutic Society, held in Philadelphia, May 7 and 8, 1920.

found passing out through the tonsillar crypts. Because of these observations he claims that tonsillitis is caused by virulent organisms being carried to the tonsillar parenchyma by the lymphatics and is rarely if ever due to surface infection, further, that the tonsillitis occurring in joint rheumatism, endocarditis, and other septic conditions is the result of and not the cause of the general condition.

Karl Amersbach, stimulated apparently by Henke's work, carried out a more complete and more carefully made series of similar experiments with an absolutely opposite result, and he believes that Henke is not only guilty of faulty technic, but that his published observations do not warrant his conclusions. In quite an elaborate study of the lymph drainage of the accessory nasal sinuses, W. B. Mullin, in all his experiments, did not succeed in injecting the tonsils, even when the palate or the nasopharynx was involved, and says that, therefore, the region draining into the tonsils in the animals used in his experiments must at least be very limited. There is little doubt that Henke's idea is entirely wrong and further, that it must be considered as an established fact that the lymph drainage of the tonsil is strictly efferent, and that the tonsils cannot be considered in any way as excretory organs.

The only tonsillar function which has stood the test of time and observation is the production of the lymphoid cells in the germinating follicles. Personally, I also believe that some day we shall find that the peculiar disintegration of the epithelial cells of the tonsillar crypts may play some rôle in the formation of the various free cellular bodies of the blood and tissues.

It would seem, therefore, that the tonsil is important to the welfare of the body only as far as the production of lymphocytes is concerned and is only valuable at such time in life when this function is not being properly cared for by other organs. Its function is very similar to that of the thymus gland and it is interesting to note that its development follows closely after the involution of the thymus. Later on, the tonsillar structures tend to involute, gradually losing their activity as the other blood forming organs develop. I have never been able, however, to prove to myself that the absence of the tonsillar structures of the throat, due to operative interference, had any deleterious action on the health or growth of the individual, no matter at what age they were removed, though I try to avoid operating before two years of age.

The tonsils, however, possess other properties which may be more properly termed pathologic than physiologic, for although the property in itself is not of or pertaining to a disease, the exercise of that property may result in the production of pathologic conditions. For instance, as the tonsil grows the crypts are elongated and the mouths may become more or less constricted, resulting in the retention of debris in the tonsillar lacunæ which may develop into a culture media for pathogenic organisms. Also it has been shown by numerous observers that for some reason the cryptal epithelium will permit inert foreign bodies to pass between the cells of said epithelium so that they are absorbed into the interfollicular tissue and, gaining access to the lymph radicals, finally enter the efferent lymph vessels. This property of absorbing foreign material has been sufficiently substantiated by the work of men such as Goodale of Boston, Kayser, Hendelsohm, Piera, and other careful observers, so that we must accept it as an established fact.

There is, however, a marked difference in the behavior of the tonsil toward the absorption of inert material and of living organisms. If we examine the crypts of healthy tonsils we may find a large number of cocci and bacilli in the lumen of the crypt but none in the substance of the tonsil itself, not even below the first layer of vital epithelial cells. It would seem that, in what we might term the state of health, there is a distinct negative chemotaxis between the bacteria and the living tissue. However, under certain circumstances this vital resistance becomes lessened and pathogenic organisms will then penetrate through the cryptal epithelium and produce disease of the tonsil. Further, certain types of bacteria may pass not only through the epithelium into the tonsil, but may also follow the course of inert foreign bodies and gain access to the regionary lymph nodes without visible lesion in the tonsil. It is probable, however, that the great majority of tonsillar infections follow after the infecting organism has first made a breach in vital cryptal epithelium. This mode of tonsillar infection we will consider briefly later in taking up the question of the pathology of tonsillitis.

In tuberculosis, the tonsils are more readily infected than almost any other tissue in the body, and in tuberculosis of the cervical lymph nodes they are the portals of entrance in probably 90 per cent. of the cases. Primary tuberculosis of the tonsils will be found in approximately 6 per cent. of all tonsils removed routinely. This proportion was according to my own examinations, and was about the ratio found by other observers whose statistics I collected in 1904. Twenty-three different observers reported 1,671 cases examined, and primary tuberculosis of the tonsils was found 88 times, giving an occurrence of 5-2/10 per cent., and I believe that if a more careful histologic examination of the tonsils had been made, a greater percentage would have been obtained. The tonsil is more frequently infected secondarily in pulmonary tuberculosis than any other organ, and from a study of autopsies at the Phipps Institute, I found that practically every patient who came to autopsy as the result of pulmonary tuberculosis showed some lesion in the faucial tonsil. In a series of studies of the tonsils of hogs, I found that tuberculosis of the tonsils could be easily produced by gently swabbing the surface of the tonsil with a culture of virulent bovine tubercule bacilli, and that the disease then spread to the regionary lymph nodes. Though many of these animals developed tuberculosis in other organs, the tonsil was always infected without lesion in any other part of the pharyngeal mucosa, and that the cervical adenitis was always more advanced than any other tuberculous area. It was interesting to note that although the tonsil was involved as early or even earlier than the cervical lymph nodes, the disease progressed much more rapidly in the lymph nodes than it did in the tonsil. In some of the experiments the presence of

the tubercle bacilli in the lymph nodes of the neck was demonstrated before any lesion could be detected in the tonsil itself. In other words, the organism had passed through the healthy tonsil and was arrested in its forward progress only when it had gained access to the regionary lymph node. This, of course, was an extremely interesting finding as it demonstrated without any reasonable doubt that there exists an open pathway for infection through the tonsil, at least as far as the tubercle bacilli are concerned. I did not, however, actually see the tubercle bacilli going through the tonsil structure and it remained for a series of experiments with the anthrax bacillus to furnish this last evidence of the vulnerability of the tonsil to certain types of bacteria. In these experiments, the tonsils were inoculated by swabbing the surface with an emulsion of anthrax bacilli. It was shown that the tonsils of the hog are more readily infected by the anthrax bacillus than any other portion of the buccal or pharyngeal mucosa and that the bacillus penetrates through the cryptal and not the surface epithelium. Further, the anthrax bacillus gains access to the parenchyma of the tonsil by passing through the living, unaltered cryptal epithelium. After the bacilli had entered the tonsil substance, they apparently passed in the direction of the lymphatic vessels of the trabeculæ though they also tended to congregate around the germinating follicles. Only very few were found in the interfollicular tissue.

In the experiments with both the tubercle bacillus and the bacillus of anthrax, the infection was from the surface of the tonsil, not from the throat or supposititious afferent lymph-vessels; of this, there can be no doubt. Also, while it was supposed, and with a good deal of reason, that the tubercle bacillus penetrated through the normal epithelium of the crypt, it was absolutely demonstrated that this was the source of entrance for the anthrax organism.

However, it is probable that in the majority of infections of the tonsil there has been some break in the epithelium due to the necrotic action of the bacterial toxins which have developed from the organisms in the lumen of the crypt. It is possible, however, that a certain amount of toxic material is absorbed directly through normal cryptal epithelium, especially in those cases of chronic tonsillar disease in which the lumen of the crypt has been obliterated, forming within the tonsil a retention cyst of necrotic infected material.

In acute tonsillitis, the tonsil is infected in the following manner. The infecting organism gains access to the crypt, producing there, by its growth, sufficient irritation to cause a distinct reaction in the epithelium. This reaction is manifest by a proliferation of the epithelial cells, as shown by the increase of desquamation and of penetration of the basal cells into the tonsil parenchyma and the presence of mitotic figures in the epithelial cells. If the infecting organism is not of sufficient virulence, this proliferation of the epithelium may prevent invasion, and we have as the result a simple parenchymatous tonsillitis. When the toxic action, however, is more severe, certain portions of the epithelium become necrotic and this process may progress until the parenchyma of the tonsil is opened to the infecting bacteria. The bacteria then passes with the current of the interfollicular tissue toward the lymphatics, or they may become arrested in the germinating follicles where, through their development, abscess formation takes place in the follicle which later ruptures into a neighboring crypt, producing a purulent discharge at the mouth of the crypt which is so characteristic of suppurative tonsillitis. The organisms that reach the efferent lymph vessels are carried to the regionary lymph nodes producing the lymph adenitis which is associated with all severe cases of tonsillitis.

In summing up the evidence which I have tried to present in these rather dogmatic statements, it would seem that systemic infection, because of the peculiar anatomy of the crypts, and because of the peculiar property of absorbing substances from its crypts, and of the extremely low resisting quality of the cryptal epithelium to bacterial attacks, takes place more readily through the tonsillar structures than through any other portion of the upper respiratory tract. That the tonsil itself is not destroyed by the numerous invasions to which it is subjected must be ascribed to its great power of recuperation and regeneration.

1830 SPRUCE STREET.

THE THERAPEUTICS OF BENZOSULPHINIDE.*

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THIS remedy, discovered in the laboratory of Remsen in 1879, has been in use for more than forty years, chiefly as a condiment. It was incorporated in the Eighth Edition of the United States Pharmacopœia, which became official on September 1, 1905, and its sodium salt was added to the Ninth Edition, which became official on September 1, 1916.

Benzosulphinide ($C_7H_5O_3$ NS or $C_6H_4SO_2$. CONH = 183.12) is the anhydride of orthosulphamide — benzoic acid (Benzoylsulphonicimide.) Its synonyms are: Glusidum, saccharin, orthosulphamide, benzoic anhydride, and glucimide.

Source.—It is obtained from toluene, $C_6H_5CH_3$, a derivative of coal tar. The toluene is treated with concentrated sulphuric acid at 100°C. (212°F.), by which results in the formation of Ortho- and Para-sulphonic acids; these are first converted into calcium salts and then, by the use of sodium carbonate, into sodium salts. From these a mixture of ortho- and para-toluene-sulphochlorides is obtained by the action of phosphorus pentachloride; upon thoroughly cooling the mixture, the para-modification crystallizes out and is thus separated. From the other isomeric chlorides, ortho-toluene-sulphamide is formed by means of dry ammonia gas. This sulphamide is next oxidized by potassium permanganate, converting it into potassium ortho-sulphamide-benzoate, the solution of which is freed from precipitated manganese dioxide and decomposed by means of an acid; instead of separating as free ortho-sulphamide-benzoic acid, the latter splits up

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into its anhydride, which is known as saccharin, and water.

Characters.—White crystals or a white crystalline powder, odorless or having a faint aromatic odor, and having an intensely sweet taste even in dilute solutions (1 of saccharin in sweetening power being equal to 300 of cane sugar.

Solubility.—In 290 parts of water and 25 parts of boiling water; in 31 parts of alcohol; slightly soluble in chloroform or ether; easily dissolved by ammonia water, or alkali hydroxide solutions; also by a solution of sodium bicarbonate, with the evolution of carbon dioxide.

Impurities.—Glucose, milk sugar, benzoic and salicylic acids, ammonium compounds, carbohydrates, inorganic impurities. Commercial saccharin is not a pure or uniform product; it often contains less than 50 per cent of actual saccharin.

Dose.—0.200 gm. = 200 milligram (3 gr.).

Sodium Benzosulphimide is the sodium salt ($Na\ C_7H_4O_3NS + 2\ H_2O = 241.14$), of Benzosulphimide. Its synonyms are Sodium-Saccharin, and Soluble Saccharin.

Source.—By neutralizing an aqueous solution of Benzosulphimide with Sodium Carbonate or Bicarbonate and slowly crystallizing the solution.

Characters.—Colorless rhombic prisms or a white crystalline powder; odorless or having a faint aromatic odor and an intensely sweet taste, even in dilute solutions (1 of soluble saccharin, in sweetening power, being equal to about 500 of cane sugar); somewhat efflorescent.

Impurities.—The same as for Benzosulphinide, with the addition of benzoates and salicylates.

Dose.—0.200 gm. = 200 milligram (3 gr.).

Action of Benzosulphinide and Sodium Benzosulphinide.—These are antiseptic, but as such are of very limited use because their properties in this direction are not marked. Their principal use is as a sweetening agent, the sodium salt being the preparation usually employed. They are not foods, but condiments, which, because they have no action upon any organ, tissue, or function of the body are absolutely harmless. They are eliminated in the urine and saliva, and, after the ingestion of large amounts, by the bowel, without change.

Therapeutics of Benzosulphinide and Sodium Benzosulphinide.—Sodium Benzosulphinide is quite generally employed as a substitute for sugar when from any cause this cannot be taken or its use must be limited.

Diabetes mellitus.—Benzosulphinide may be used in tablets for sweetening tea or coffee, 1/10 gr. (.006 gm.) to ½ gr. (.03 gm.) to a cup is sufficient Inasmuch as this substance is largely excreted into the saliva, unless small amounts are used, a disagreeable taste in the mouth may be established. It has been demonstrated that even when long-continued, its use does not interfere with the action of the ptyalic, peptic, tryptic or lipoclastic enzymes. Small daily amounts (5 gr., 0.3 gm.) may be taken during long periods of time (months) by normal adults without any detriment to health ascertainable by all available methods of study. It is believed, however, that relatively large doses, especially above 15 gr. (1 gm.), if continued for months, are liable to induce disturbances of digestion, but this amount is likely never to be reached, even if taken with foods to which it has been added.

Obesity.—It is useful in satisfying the craving for sugar and so rendering more tolerable the reduction of the food ingested.

Gout.—In limiting the protein intake, usually a desire for a larger ingestion of carbohydrates is established inasmuch as the successful dietetic treatment of this disease requires not only the regulation of the quality but as well the limitation of the quantity of the food, saccharin is valuable in replacing sugar as a sweetening agent.

Digestive and Metabolic Disturbances.—The fermentation set up by cane sugar and the consequent disturbances of nutrition, result in this being the ailment most frequently interdicted. In addition, the auto-intoxication is distinctly harmful. The various results of faulty metabolism commonly known as rheumatism are often obviated by the avoidance of sugar and its replacement by saccharin, to the marked benefit of the patient. New-born infants, before lactation has been established in the mother, should receive cool water to which saccharin—in from 1 to two one-hundredths of one per cent—has been added, thus insuring the proper ingestion of water and avoiding the alimentary disturbances so frequently caused by the administration of sugared water. Saccharin to the amount daily of one grain (0.06 gm.), thus administered, is routine practice.

Benzosulphinide has been used as an internal antiseptic in cystitis with ammoniacal urine, and has been commended as a lotion in aphthous stomatitis —replacing the ancient borax and honey solution which is objectionable because of the honey, and in ozena.

My personal observations with saccharin began in 1884, when it was discovered that a member of my family was afflicted with diabetes mellitus. Upon complaint that it tasted bitter instead of sweet, I undertook by personal experimentation to ascertain at what amount the bitter taste would appear, and I found that up to a daily amount of 15 grains (1 gm.) could be taken without provoking a permanent taste of bitterness, until that amount had been taken for about two weeks. A daily amount of 5 grains (0.30 gm.) continued over many weeks never produced any disagreeable (mawkish) nor bitter taste. This amount was chosen because it represents, in sweetening power 5 ounces (150 gm.) of cane sugar, which is usually the limit of sugar tolerance for the adult; so that for a person who uses it for all purposes—tea, coffee, in puddings, pastry, cereals, etc.—for which sugar would be used for sweetening, saccharin can be employed in its place without producing any disagreeable taste whatever.

Then I began a series of experiments with a daily amount of 10 grains (0.60 gm.) about one-half of which is about all that can be used in foods or drinks which are ordinarily sweetened with sugar, so that the remainder was taken in a capsule. After about two weeks, I observed that when food was taken with saccharin, I would notice a bitter taste in my mouth, which, however, was persistent for only a few days after ceasing its use. It will be noted that this is more than the amount set down in the U. S. Pharmacopœia—which is 3 gr. (0.20 gm.), and as three doses daily would amount to 9 gr.

(0.60 gm.). The result of weeks-long administration of 15 gr. (1 gm.) daily of saccharin resulted simply and solely in a permanent bitter taste in the mouth. When the report of the Remsen Board appeared in 1912 and confirmed my personal observations, I ceased experimentation. For practically thirty-six years I have advised the use of saccharin to replace sugar when the latter is contraindicated, to whatever amount is agreeable to the taste, knowing that 5 grains (0.30 gm.) represents in sweetening power the maximum amount of cane sugar which can be safely ingested, and that this amount is not sufficient to produce any disagreeable taste or any physiological effect whatever. Its use as a condiment—a food accessory to make it more appetizing or more palatable—is absolutely without any harmful effects, no matter how long the period of its use.

The widespread and still increasing use of saccharin as a condiment has led to various efforts to limit or abolish its use. Generally speaking, the basis of these endeavors has been that it is harmful in itself or that by its presence it lowers the value and impairs the quality of foods sweetened by it. In general it is employed commercially in non-alcoholic beverages—the so-called soft drinks—in which it serves a double purpose: it avoids the fermentation which is likely to arise if sugar is employed for sweetening purposes and which produces unsightly and unpalatable mixtures and makes them more acceptable beverages in that they better satisfy thirst if saccharin, instead of sugar, is used. The amount generally employed is one one-hundredth of one per cent. To ingest a quantity of saccharin which would equal the daily amount authorized by the Pharmacopœia, about eight quart (liter) bottles of the commercial size would necessarily be drunk, which quantity is obviously unlikely to be taken. In preserved (canned) vegetables which require to be sweetened to meet popular approval—for instance, corn—saccharin is preferable in that the brown color which sugar develops during the process of preserving is avoided. In various sweet food products—as jellies and jams—the substitution of saccharin for sugar would be illegal because the product would be misbranded—not because it contains saccharin but because it is not jelly or jam, the sugar content, about one-half, having been prescribed by regulation. In its use in pastry no amounts could be ingested which would cause even a bitter taste because the desire for sweetness would be satisfied long before the upper limit of sugar tolerance was reached. Should the manufacturer add more of saccharin than is necessary for sweetness, he would destroy the market for his wares.

Recent investigations have shown that there is not any pastry product which neutralizes the sweetening power of saccharin as compared with sugar, so that proportionately more of the former would necessarily be used to produce the same amount of sweetness. Four decades have passed during which no instance of harm has resulted even from enormous amounts ingested at one time (75 gr.—5.50 gm.) or from long-continued use of amounts equal in sweetening power of sugar to the upper limit of tolerance, nor indeed to amounts far in excess of the possibility of its introduction in food—the quantity of which is limited only by the capacity of the individual, or by ingestion in capsules in daily amount of 15 gr. (1 gm.). It has been demonstrated that saccharin is absolutely harmless, and the only untoward effect of its ingestion—namely, the disagreeable bitter taste—results only from amounts that are entirely unnecessary in its use as a condiment. Its use can never be unrestricted, because the unpleasant taste developed after the ingestion of unnecessary amounts limits its employment. As a condiment, it is absolutely fool-proof.

In regard to the second proposition—that it lowers the value and impairs the quality of foods sweetened by it, the statement is fair in that when saccharin, which has no food value, is substituted for sugar which has food value; the food value of the substance is lowered just in proportion as sugar is lessened in quantity. On the other hand, since many other carbohydrates—flour, for example—have a higher caloric value than sugar, finished products which are sold by weight—as cookies, for instance—would have a higher caloric value if sweetened by saccharin instead of sugar, and this increased caloric value would be increased by precisely the difference between the caloric values of sugar and flour.

That saccharin impairs the quality of foods sweetened by it has been abandoned as entirely untenable. Simply as a sweetener for foods which are ordinarily sweetened, it is absolutely harmless and is often the condiment of choice, which by rendering food more appetizing and more palatable increases its ingestion.

Joslin, in his "Diabetic Manual," 1918, page 19, states that "in the United States between 1800 and 1810, the average consumption of sugar *per capita* was eleven pounds per year; between 1910 and 1917, this amount has risen to 73 pounds; and Hoover estimates that for the year 1918 it will be 90 pounds. This last amount is nearly four ounces (120 gm.) per day, which closely approximates the sugar tolerance of the organism." Joslin also remarks that diabetes was four times as prevalent in Boston in 1918 as it was in 1890, and twice as prevalent in the registration area of the United States as in 1900. In his "Treatment of Diabetes," 1916, p. 19, the very suggestive statement is found: "If diabetes should continue to increase in the next thirty years at the same rate statistics show it has increased in the last thirty years, it would rival tuberculosis as a cause of death, and if this rate progresses for another generation diabetes would be responsible for almost the entire mortality of the world."

Evidently, if we are to escape the serious menace to health from the inordinate consumption of sugar and at the same time satisfy the "sweet tooth" of the community the proper use of saccharin as a condiment—which has been demonstrated to be absolutely harmless and as a sweetening agent is nearly perfect, its only drawback being the bitterness provoked by unnecessary quantities—must be encouraged by all scientific physicians.

679 Madison Avenue.

Value of Cartesian Physiology.—Descartes has been claimed as the father of physiology by Huxley, Richet, and other prominent scientists because of his mechanistic conception of life, although he has been exculpated by others of materialism.—*Le Progrès Médical.*

NEW PROCEDURE FOR THE PREVENTION OF SPINAL PUNCTURE HEADACHE.*

By GUSTAV BAAR, M.D.,

PORTLAND, ORE.

AMONG the by-products of "modern" medical methods we find one infant: Spinal Puncture Headache. It is an entirely new thing in pathogenesis and neurology; it differs from all other headaches by coming over the patient in about twenty seconds after he sits up and subsiding in about the same time after he lies down; it begins usually the day following the puncture, when the patient is allowed to sit up; it is throbbing, mostly in the occipital and frontal region, sometimes accompanied by nausea or vomiting; it persists for days or weeks, disappearing often abruptly. The only effective treatment—so far—has been lying down with head low. Charles Dana admits spinal puncture headaches in about one-half his cases; C. With (Copenhagen) in 28 per cent.

Various speculative explanations have been brought forward as "causative" factors of this headache: (1) The rapidity with which the fluid is removed; (2) The amount of fluid withdrawn; (3) The position of the patient during the spinal puncture; (4) The degree of intraspinal pressure at the time of puncture; (5) Whether the fluid is normal or pathological; (6) Whether or not the patient lies flat on his back for twenty-four hours after spinal puncture; (7) Whether or not the amount of fluid withdrawn was replaced by autogenous serum, etc.

Most of these points I regard now as unimportant on account of my observations made in many hundreds of spinal punctures. I followed, for the purpose of comparing results, strictly the following technique: The patient lies on the right side with the cerebrospinal axis as nearly as possible in a position horizontal with the table, the spine well arched by flexing the neck and thighs, approaching knees to chin, the left arm thrown over the head (to widen the vertebral interspace). The needle is then introduced in the midline, between the third and fourth or fourth and fifth lumbar vertebræ (easily found by choosing as point of puncture the interspace just above or below the line connecting both iliac cristæ). As soon as the first drops of fluid appear a rectangularly bent glass tube, thirty centimeters long, with one millimeter bore, and bent at the top, is attached and the pressure is read in millimeters of spinal fluid (water-manometer). As the glass tube holds less than one and one-half centimeters of fluid it is evident that there is hardly any withdrawal of fluid made *before* reading the pressure; each thirteen millimeters of water correspond to one millimeter of mercury. By inclining the tube, the fluid is dropped into the collecting tubes; thus the withdrawal of the fluid is at all times under full control, guided by the effect on the pressure. In my earlier spinal punctures I figured the pressure by counting the drops and noting the force with which the fluid came out of the needle, anything above ten drops per minute indicating an abnormal pressure. Following this technique I could rule out No. 1 "the rapidity with which the fluid was removed" as a possible cause of headaches, because I had full control over the rapidity of flow.

As to No. 2 it made no difference, whether two cubic centimeters were withdrawn or twenty centimeters; I saw fierce headaches follow a withdrawal of four to five centimeters (Cases No. 9, 31, 37, 43, 49, 106), and no headache at all after withdrawing twenty to thirty centimeters (Case No. 102) in patients with nuormal fluids and normal pressure.

Point No. 3, the position of the patient during the puncture, is not valid, because the percentage of headaches reported by authors who punctured the spine in the vertical position is about the same as the percentage obtained in puncturing the spine in the horizontal position.

Point No. 4, degree of intraspinal pressure at the time of puncture; it is claimed that spinal puncture in low pressure is more prone to be followed by headache than spinal puncture in high pressure. I divide my cases into (*a*) normal fluid and (*b*) pathological fluids, and each of these two main groups shall be subdivided—for the sake of argument—into normal pressures (100-150 water), subnormal (20-100), supernormal (above 150). Thus we find in (*a*) group of normal fluids and normal pressure (cases 43, 44, 52, 53, 70) four times headache of two to five days duration; once no headache; in the group of normal fluid with subnormal pressure (cases 32, 34, 42, 45, 47, 48, 49, 51, 76, 90, 106) all followed by headache of two to fourteen days' duration, with the exception of case No. 76, who after the first puncture showed no headache (pressure 80), and after the second puncture (pressure 70) showed three days' headache; in the group of normal fluids and supernormal pressure we find ten cases of headache lasting from four to fourteen days (Nos. 10, 21, 55, 57, 58, 59, 60, 71, 77, 103), one case (No. 59) being remarkable insofar as his previous headaches were relieved by the first spinal puncture (pressure 190) for nine months and when they came on again with intraspinal pressure of 230 millimeters, the puncture was followed by a severe headache of five days duration;

Turning to the (*b*) pathological fluids with normal pressure, we find five cases (Nos. 2, 40, 83, 105, 107), three of which showed no headaches in six spinal punctures performed, while two developed headaches of three to four days' duration respectively; the subnormal pressures of this group are illustrated by case No. 69 with no headache following and case No. 29 with headache of three days following; the supernormal pressures are illustrated by six cases (6, 18, 35, 72, 92, 102) of which three were free of headache, while three developed headache of one to five days' duration. These observations are not in keeping with Landon's statement (*Journal American Medical Association*, May 26, 1917) that he never saw an increased pressure in a purely functional condition, while in organic lesions this complication was nearly always present at some stage. These observations seem to prove further that the intraspinal pressure *per se* at the time of rachicentesis does not play any causative role in spinal puncture headaches; that spinal puncture is less often followed by headaches in luetic fluids than in normal fluids (this answering point No. 5) C. With recorded in 453 spinal punctures on syphilitics 130 headaches, 28 per cent.

*Read at the annual meeting of the American Therapeutic Society, held in Philadelphia, May 7 and 8, 1920.

Point No. 6 is answered by the fact that all my spinal punctures were ambulatory cases, ordered to lie flat on back for 24 hours after their hasty return home; that in spite of this the percentage of headaches following was not larger than in Dana's hospital cases, to wit: out of 94 cases, 47 developed headaches (50 per cent).

As to Point No. 7, many authors—among them Peters—have tried to prevent these headaches by replacing the fluid withdrawn by autogenous serum without finding, however, any lessening in their spinal puncture headaches. One point, not found in the literature on spinal puncture headaches, so far as known to me, seems noteworthy; the influence, which blood oozing into the spinal canal, may have on the production of spinal puncture headaches. Out of eighteen cases in which I collected a bloody fluid, thirteen developed headaches of two to nineteen days duration; this means 72 *per cent of the bloody punctures* showed headache; inasmuch as five of these thirteen cases were syphilitics the fact seemed rather conspicuous in view of the less frequent spinal puncture headaches in syphilitics; as observed above, of the five remaining bloody spinal punctures which did not develop headaches, three were syphilitics. From these data I conclude that blood oozing into the spinal canal may have some influence on the production of headaches.

The one feasible explanation for these headaches, seems to be Sicard's (Paris) view, who found that the rigid dura does not close under thirty hours and generally requires from thirty-four to thirty-six hours; MacRobert (*Journal American Medical Association*, May 11, 1918) became "convinced that closure of the puncture hole usually takes place in the following way: the arachnoid tissue, as it drops from the point of the departing needle, is swept snugly against the dura mater, by the pressure of fluid within. In this way the dural hole is blocked by an intact area of the arachnoid membrane, as the puncture holes, being small, are unlikely to approximate. If the puncture hole is not blocked, it is because the delicate arachnoid tissue clings around the departing needle, and its hole is pulled into and through the hole in the dura. There it impinges, and this invagination forms a spout or wick for the easy drainage of the whole cerebrospinal sac, and also prevents the rapid healing, which would otherwise occur, of so small a dural opening. *It is the continuous epidural leakage of cerebrospinal fluid through a patent puncture hole, that takes away the water pad of the brain,* so that the brain rests unprotected on the irregular bony surface of the base of the skull, causing an irritation of the dural fibers of the fifth and occipital nerves. The fact of the instant relief caused by the horizontal position supports this view.

In the course of treating my neurosyphilis cases I made it a routine practise to tap their spinal canal for reasons of prognosis. I noticed that the cases in which I tapped more frequently made better clinical and laboratory showing, so I concluded, that perhaps the systematic tapping of the cerebrospinal canal, immediately before injecting the salvarsan (which I always used in dilutions of at least 0.1:40) might be beneficial to these patients, by quasi drawing the salvarsan from the blood stream into the spinal canal. While Mehrtens (*Archives Neurology and Psychiatry*, October, 1919) did not find arsenic in the spinal fluid following this method in five cases, my clinical findings, the Wassermann, cell count, etc., in the spinal fluid, after such procedure, encouraged me to continue this line of treatment. It simultaneously became very apparent to me, that a large majority of the cases thus treated, only rarely developed spinal puncture headaches, most of them following their usual occupation next day. This fact suggested to me, to follow up *every* spinal puncture immediately with intravenous salt solution, if not giving simultaneously salvarsan. The results were rather conspicuous:

Number of *headaches without salt solution*:
93 cases; 51 headaches.....55 per cent
(Non-syphilitics, 66 cases, 44 headaches .....66 per cent)
(Syphilitics, 27 cases, 7 headaches .....26 per cent)
Number of *headaches with salt solution*:
50 spinal punctures (17 cases) 3 headaches .....6 per cent
(Non-syphilitics, 7 cases, 1 headache .....14 per cent)
(Syphilitics, 43 spinal punctures (10 cases), 2 headaches ..... 5 per cent)

An entire change as to spinal puncture headaches! The prophylactic value of these intravenous injections of 0.5 per cent NaCl 500 to 750 c.c., may also be gleaned from the fact, that cases 6, 25, 66, 105 when spinal puncture was done without being followed by 0.5 per cent NaCl, suffered from headaches for two to sixty days, while *if followed immediately by the salt solution these same cases* developed *no headaches*.

The objection may be raised, that the mentioned cases probably might not have developed headaches anyway, being syphilitics. These skeptics I would direct to the above figures on non-syphilitic spinal puncture headaches following prophylactic injection of 0.5 per cent NaCl solution. Out of seven spinal punctures on non-syphilitics (Cases 14, 22, 26, 66, 78, 108, 109) only one developed headache; that is 14 per cent—not 66 per cent as was my previous experience in many hundreds of non-syphilitic cases.

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THE UNCONSCIOUS.

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By unconscious I mean any one of the innumerable motions of and in the body, of which we are generally unconscious, including those of which we sometimes do become aware, the typical instance of which, within the body, is the circulation of the blood. From time to time we do become conscious of the heartbeat and we know how certain kinds of thoughts will cause it to become more rapid. It is also conceivable how certain kinds of thoughts would cause the calibre of the blood vessels to change in different parts of the body, thus lessening or increasing the amount of blood delivered there, and how in the same way other fluids closely connected with the most fundamental physiological

processes might be affected. Conscious action includes voluntary action and involuntary movements of which we get a sensational report through the afferent nerves. The causes of voluntary action may be supposed to be the thoughts which precede and accompany it. The causes of involuntary movements have hitherto been presumed to be movements and not thoughts, that is, movements in the tissues of the body. But it seems quite certain that when movements become small enough they are indistinguishable conceptually from thoughts, which we must therefore include as among the causes of the involuntary muscular movements, as well as of the movements involved in the various physiological functions. So that we can see here the possibility of the involuntary movements being caused by unconscious thoughts, and we get an idea of how logically necessary is the concept of an unconscious thought, and what may be the nature of an unconscious thought, namely, a movement which is so slight that it has not the force to penetrate into consciousness, or, figuratively speaking, the position whence it could pass over into or be read off as conscious thought. And we see, finally, that the only difference between a conscious thought and an unconscious thought is just this fact of its being in consciousness, its being cognized, our being aware of it. There is no other difference whatever.

The distinction between the unconscious and the foreconscious is that the former contains all the memories which cannot come to consciousness, and there are a great many of them, while the foreconscious contains the memories of all kinds which can be voluntarily evoked from time to time. Between this freely coming and going group of ideas which, like familiar names, dates, telephone numbers, scraps of poetry, music, etc., and the vast body of totally unconscious memories, accumulated certainly during the lifetime of the individual and possibly during the life of the race, there is a barrier over which the truly unconscious mental activities are absolutely unable to pass. We know of their existence by inference only, but by an inference which is so logical and free from fallacy that it is impossible for those to doubt it who have taken the trouble to sift the evidence. Not only of the existence of this unconscious, the thoughts of our minds, irrecoverable, without the special technique of psychoanalysis but of its nature we have some reliable information. It exists as a blind wish, an amorphous craving which can best be described as an unreasoning urge to life and love. The illimitable power of this desire, expressing itself, among other ways, in minute muscular contractions in all parts of the body, is normally able to transcend the barrier above mentioned only in the form of actions which are approved by society. Certain disguises are adopted by the utterly unconscious wish, which convert it into specific foreconscious wishes with a definite form, and, bearing these disguises, it comes now and then into full consciousness. The group of disguises, much like the costumes of the actors in a play, and like the words, intonations, and movements which are prescribed by the author and the stage manager, are ready in the wings of the foreconscious to appear in the drama of consciousness. And as the author will not write, or the stage manager produce, what will not appeal to the public, so the guardian called the "Censor" at the barrier above mentioned will not allow any unconscious wish to appear, except those disguised so as to be acceptable to society.

Thus is to be represented the condition of thoughts which exist in the permanently unconscious and in the temporarily unconscious state called the foreconscious. I regard as unconscious acts both those of which we never become aware, such as the movement of muscles and fluids accompanying the physiological functions which never enter consciousness as such, and the movements of the parts of the body of which we only sometimes become conscious. Some of these are called symptomatic acts from their analogy with the symptoms of certain nervous diseases, although, as they occur in all persons, well or ill, there is no present implication of abnormality in them. They are all blunders, errors, slips of the tongue or pen, mannerisms, and even some forms of so-called neuralgia, twitching of the face, etc.

As the development of human society has been such as to give in all ages and places a greater value to the performance of other acts than the instinctive act of procreation, there has sprung up universally a resistance against mere reproducing and eating. It has been universally felt that a race devoted to those two aims solely is not different from animals of lower orders in whom there is no other activity worthy of the name. But wherever the resistance against the mere following of the passions called animal has come from, it exists and has been the cause of all the strictly human phases of human life. We are not concerned here with the origin of this difference between animals and man. Here we have to do only with the fact of it and the way it is accomplished by the conscious mind. There are not plenty of conscious resistances against crass sexuality. In fact, the resistances against a purely animal life are those of consciousness primarily. The barrier set against purely animal thoughts, which continually strive to come into consciousness both in thoughts and in acts without thoughts, has been fitly compared to a Censor who examines communications between people and deletes matter which is considered unsuitable for communication. So it is customary to say that the thoughts-wishes of the unconscious which are solely concerned with material sustenance are censored. And in order to pass the Censor they are disguised or cloaked.

Identification.—The mechanism called Identification, based on similarity, is an unconscious mental process which underlies a great deal of conscious thinking and acting. One identifies oneself with other persons and things in such a way that those persons or things are regarded as a part of oneself. Indeed it is, when we consider it closely, a difficult problem to decide where the average person conceives his ego to end and the external world to begin. Physically our digestion identifies our food with our bodies literally. Mentally we regard certain parts of ourselves as more intimately ourselves than other parts. For example, the attached parts of our finger nails are more closely a part of us than are the unattached parts which we cut off from time to time, and our hair is not so

intimately a part of ourselves as our eyelashes. Furthermore, some of our passions we identify with ourselves much more than we do others. From our earliest years we identify ourselves with persons. In our desires, both conscious and unconscious, we identify ourselves on the one hand with our fathers and on the other with our mothers. Later there is a perfectly normal identification in the love we feel toward our life partners. A curious and important fact not generally known is that when at a later date we have ceased to identify ourselves with our parents as they are at present, we still retain in the Unconscious the original identification which we formed at an early date with the parent as he or she then was.

The Unconscious Wish.—The aspect of the Unconscious which influences the physical health of the individual, as well as his mental health, is the Unconscious wish. It has been shown by the newer psychology that the Unconscious wish is a tension which is expressed only through the muscles, not only the larger and more familiar ones but also the very small ones of which we are never conscious. These small ones contract and expand with the result of enlarging and diminishing the calibre of the passages in the body through which go air, food, blood, and various other fluids, and therefore govern the development of those parts of the physical organism which are supplied by the various chemical products of food, air, and water.

These wishes or tensions or infinitesimal inceptive movements of the muscles are at once too small to enter our conscious life and yet so numerous and so powerful as to influence it greatly, though in ways that appear to be extremely indirect. They are, in their gross effects, distantly comparable with the rising or falling of the tide in a river which lifts a vessel alongside of a wharf, imperceptible to the eye while the eye has the patience to keep looking, and yet causing a change which is noticeable from time to time as one observes the height of the vessel against the wharf.

The wishes or tensions which exist unconsciously in the mind of every person when confronted with a hard task of any nature whatsoever correspond, in this comparison, to the limitless force of the uplift of the water on the hull of the vessel, and the conscious attitude of the individual corresponds to the physical effort which a boy or a girl might exert to oppose or assist in the upward movement of the boat on a rising tide. The effect on the boat is virtually nothing, while the effect on the boy or girl is directly in proportion to the effort put forth. Very wise are they if they cease exerting themselves as soon as they have stirred up a vigorous circulation.

The Unconscious is one continued wish or tension or bundle of tensions. These tensions are relaxed or resolved naturally from time to time in the act of creating or the act of eating. I use the word creating instead of reproduction, for the reason that the two main forms of the desire perpetuation are the perpetuation of self, and, as a variety of self-perpetuation, that of the race. Now, the race-perpetuation instinct, like all instincts springing from it, is transmutable. It may be transmuted from one kind of creation to another. This transformation of the creative instinct from physical reproduction of species to production or creation of other things which has always been spoken of as higher, is called by the aspiring name of Sublimation. And it is really higher from the point of view of personal power and accomplishment. For the difficulties overcome in accomplishing it, which measure the value of it as a conscious production, are much greater than in the reproduction of kind, in which one acts spontaneously, without resistance, and without sense of personal achievement or with only an illusory one. What nature causes and completes is so separate from the Ego, that opposes and overcomes that nature in us, that our overcoming it seems much more our own doing than anything in which nature wholly concurs. Thus it is evident that the accomplishment most gratifying to the individual consciousness is that which most overcomes, masters, or controls the instinctive and unconscious tendencies. In yielding to and falling in with the instincts, which are absolutely common and universal, we are not developing that power which most typifies our existence as individuals. In doing the most common things we are surrendering our separateness as individuals and sinking ourselves into a larger organism—the race.

Fear is unconsciously determined. Fear is really at bottom unconscious desire. A conscious fear of being unable to do a certain act is really an unconscious desire to do it, and a state of mind in which fear is specially predominant, such as a phobia is one where there is a strong desire (in the phobia fundamentally sexual) which is being unsatisfied.

The unconscious tensions or wishes of the human individual are from minute to minute relaxed and tensed. This rhythm of tension or wish and relaxation or gratification goes on from moment to moment in the mental life of each one of us. It is going on with the regularity, if not with the rapidity, of the heartbeat. If every human wish is fulfilled in some way it is quite evident that if it is not consciously fulfilled it must be unconsciously. The unconscious of each and every individual is an unlimited store of material for wish fulfillment. The very act of relaxation, even that coming through fatigue, is a fulfillment of a wish in so far as it is the relaxation of a tension. And as the tension will relax, even though the intended gratification is not actually secured, we find ourselves, possessed as we are with a faculty of mental reproduction of sensations, deriving our satisfactions from ideal, imaginary internal sources, instead of the external ones which have disappointed us. The unconscious craving always tends outward, but its natural extraversion is for the purpose of getting its own internal satisfactions. It may be said that a noticeably strong conscious tendency in any direction is likely to indicate the presence of an opposite tendency in the unconscious, much as a convexity on one side of a thin metal plate corresponds to a concavity on the other side. And in each case it is really the same force which produces the unevenness. Any unevenness in character or idiosyncrasy or eccentricity is thus seen to be the work of unconscious forces, the conscious form in which they are displayed almost invariably being a displacement of some sort.

A compensation is a conscious effect of an unconscious cause. Only one member of the analogy

enters consciousness while ambivalence keeps both members of the equation, both sides of the balance, so to speak, below the threshold of consciousness. It is only in the mechanism of compensation that one of the pair of activities appears in consciousness. A person will compensate with conscious actions for an unconscious desire, just as he will balance two conscious desires and throw more impetus into the one because it is a socially approved one, for the reason that he has already thrown more than he thinks he ought into the other, and he wishes to keep a certain balance between what he instinctively wants to do and what, from his experience of society, he thinks it wants him to do. By keeping an even balance in this way he satisfies his conscience and does not worry. A corollary of this compensating for an unconscious desire by means of a conscious one is that we have no conscious desires that are not compensations. It is quite evident that as the unconscious desires are the pressure of the animal instincts, against which society has set up numerous barriers, we should, if we followed these all the time, do practically nothing of all the complicated web of human activities which now we are weaving.

Subconscious and Unconscious Ideas.—There is a school which regards the subconscious as formed of "suppressed mental complexes." The views of this school are not psychologically clear. It seems, however, that the subconscious is viewed in the light of "unconscious ideas." The German school, with Wundt at its head, at first started out on similar lines, but they could not make any use of the subconscious, and their speculations ran wild in the fancies of Hartmann. The reason of this failure is due to the fact that the concept of the subconscious as conceived by the German school was extremely vague, and had rather the character of a mechanical than that of a psychical process. An unconscious consciousness—that was their concept of the subconscious. In such a form as this the subconscious was certainly meaningless—mere nonsense—and had to be given up. The German psychological investigations are now confined to the content of consciousness in so far as the individual is immediately conscious of it. But as this form of consciousness is extremely narrow and circumscribed, the results arrived at, though remarkable for their thoroughness, are, after all, of a rather trivial nature. It is what James aptly characterizes as "the elaboration of the obvious."

This criticism applies well to Freud and his adherents. "Das Unbewusste" is conceived as "Suppressed unconscious idea-complexes." Of course, the claims of that school to originality and to the apparent unveiling of the causation of psychoneurosis are entirely unjustified. A "suppressed complex" is but another term for a dissociated system, commonly accepted in psychopathology. The special theories developed by that school in regard to desire, to sexuality, and to voluntary suppression of unpleasant or painful ideas are entirely gratuitous and false in the light of modern psychology and clinical experience.

This psychoanalytic school has unfortunately fallen back on the Herbartian psychology with its metaphysical Reals or ideas which by their mutual tension keep suppressing one another, thus determining the display of the contents of consciousness. As Herbart tells us: "Concepts become forces when they resist one another. This resistance occurs when two or more opposed concepts encounter one another." This proposition or principle proclaimed by Herbart is at the basis of Freud's mythical speculations. "A concept is in consciousness in so far as it is not suppressed," Herbart tells us, "but is in actual representation. When it rises out of complete suppression, it enters into consciousness." According to Herbart and his modern followers, suppressed ideas become forces and impulses. Concepts which are not opposed or contrasted with one another, so far as they meet unhindered, form a "complex," a favorite term used by the psychoanalytic school and its followers.

It may possibly be of interest to remark that Herbart is closely followed by the psychoanalytic school in regard to the doctrine of desire. Desire with Herbart is fundamental: "The faculty of desire must include wishes, instincts, and every species of longing." "The expression 'desire' must not be so limited as to exclude those wishes which remain, though they may be vain, or so-called pious wishes, and which, for the very reason that they do remain, constantly incite men to new efforts, because through them the thought of a possibility is ever anew suggested, in spite of all reasons which appear to prove the impossibility of attainment. It is very important to give the concept of the unattainability of the wished-for object, strength enough so that a peaceful renunciation may take place of the desire. A man dreams of a desirable future for himself, even when he knows it will never come." These Herbartian doctrines, long ago abandoned by psychology, are now being revived by the marvellous "scientific" psychoanalytic technique as a new discovery in the science of normal and abnormal psychology. No better criticism can be passed on this revival of Herbartian psychology in the domain of psychopathology than the one made by James: "I must confess that to my mind there is something almost hideous in the glib Herbartian jargon about Vorstellungmassen and their Hemmungen (suppressions) and sinken and erheben and schweben and Vershmelzungen and Complexionen (complexes)."

It is claimed by some of Freud's younger adherents that the mechanism of "unconscious ideas," though a contradiction, is nevertheless justified, because of its being a conceptual construct, as Karl Pearson puts it, in order to aid the explanation of mental phenomena. This is a new epistemological argument in defence of a tottering system. It is truly amazing that science has nowadays become so philosophical that when a theory is unstable, it is unhesitatingly supported by epistemological considerations.

Perhaps it may be well to point out that self-contradictory hypotheses are not quite acceptable in science. In other words, the hypothetical causative agency must be conceived in terms of experience.

The hypothetical agency must either be a fact directly observed in nature, or a fact which can be verified later on. Thus the theory of gravitation is based on the facts of falling bodies; the theory of natural selection is based on the facts of the struggle for existence observed in the organic world. In

short, a good scientific hypothesis must take as its causative agency a *vera causa*, a fact observable in experience, or a fact which can be verified by further experience. Atoms, electrons, ether, are not haphazard constructs; they are not regarded by the physicist as unreal fancies, unreal abstract notions to explain the real facts; but each of these hypothetical agents is regarded as real, as a *vera causa*. We cannot help agreeing with J. S. Mill on the subject of hypothesis related to causation, that the supposed cause should not only be a real phenomenon, something actually existing in nature, but should be already known to exercise, or at least to be capable of exercising, an influence of some sort over the effect. In any other case it is no sufficient evidence of the truth of the hypothesis that we are able to deduce the real phenomenon from it. Again, What is true in (Newton's) maxim is that the cause, though not known previously, should be capable of being known thereafter; that its existence should be capable of being detected, and its connection with the effect ascribed to it should be susceptible of being proved by independent evidence.

If we apply this very simple rule of logic to the theory of "unconscious ideas," we at once realize the illegitimate character of such an hypothesis. An idea is essentially of a conscious nature. To speak, therefore, of unconscious ideas, is to introduce into psychology the self-contradictory, impossible concept of unconscious conscious ideas. This is equivalent to the assumption of an unconscious consciousness. An unconscious idea is neither a *vera causa* nor a fact ultimately to be verified. The conception of an unconscious idea is like the conception of a round square.

Moreover, it is not true, psychologically, that ideas can be "suppressed" so that they become dissociated or "unconscious." It is not true that we suppress painful ideas into the "Unconscious." We do not forget our painful ideas. On the contrary, painful ideas stand out all the more prominent in our consciousness. Pain hammers experience into the mind. In fact, we may say with more right that it is the pleasurable ideas that are forgotten, while the painful ideas are remembered. An experience associated with pain is never forgotten. Like a splinter in the flesh, it remains in consciousness. It is due to other causes that a painful experience becomes subconscious.

Teleologically, we can well see the importance of this fact. It would have been suicidal to the individual and ultimately to the species, if painful experiences were forgotten. The individual must learn to avoid harmful objects and hurtful stimuli. This can only be accomplished by actually remembering painful experiences. That individual would survive who remembered best his painful experiences. Were it otherwise, the individual would be very much in the condition of the proverbial silly bird that hides its head at the sight of the hunter. The subjective painful experiences must be remembered; a painful experience fixes the attention.

On this fact of strengthening memory by pain was based the once universally recognized method of training and education. What is fixed by pain is never forgotten. What may bring about forgetfulness is either a constitutionally bad memory, or a state of indifference, or an intense, paralyzing emotion of fear, especially in early childhood. The whole theory of "suppression" of painful "complexes" is based on false clinical and psychological assumptions. Neither is there such a process as "suppression of complexes," nor is there such a mental state as an "unconscious idea."

Bergson, who as usual has his hand everywhere, takes up cudgels in defense of the unconscious. In his work "Matter and Memory" he argues that common sense assumes the presence of external objects, although it may not be directly cognizant of them. Being an idealist and pan-psychist, Bergson regards the nature of things as made up of images. If, then, he reasons, common sense believes in the existence of objects "passed out of sight and sense," if it affirms unhesitatingly the actual existence of not directly experienced objective images, there should be no difficulty in assuming the existence of subjective images, or of psychic states of which there is no consciousness. The argument is essentially metaphysical and will hardly have any weight with the psychologist or psychopathologist.

Bergson's psychology is unfortunately so much saturated with metaphysics that many a valuable suggestion becomes lost in the haze and tangle of his speculations. The psychologist has nothing to do with the constitution of matter as it is in itself. This belongs to metaphysical ontology. The psychologist assumes matter as an external existence, and separates it from his own subject matter,—psychic states, mental processes, their elements and relations. A psychic state made up of "images" after the fashion of "material images" with no consciousness to them ceases to be psychic in the psychological sense. From a psychological standpoint the term psychic can only mean some form of consciousness, however vague and marginal. Bergson's view would have probably been nearer the truth if he had assumed the existence of a subconscious consciousness.

An "unconscious idea," in the sense that the idea has no consciousness, can have no meaning. If, however, by an "unconscious idea" is understood a consciousness of which the individual or personal self is not conscious, then we come around to a subconscious consciousness, as developed by me in my various works. A quotation from Höffding may bring out my point in a clearer and stronger light: "The question before us is, whether the unconscious can be other than a purely negative concept. In daily speech we use such expressions as unconscious sensations, unconscious ideas, unconscious feeling. As, however, sensations, ideas, and feelings are conscious elements, the expression is in reality absurd. If by an unconscious idea is meant the idea which I have, then the predicate "unconscious" signifies only that I do not think of or pay heed to the fact that I have it. This use of the word unconsciousness is connected with a twofold use of the word consciousness. It is used to denote not only the inner presentation of our sensations, ideas, and feelings, but also self-consciousness, the attention especially directed to our sensations, ideas, and feelings. We have, of course, many sensations and ideas without being conscious that we have them, that is, without self-consciousness; many feelings and impulses stir within us, without our clearly appre-

hending their nature and direction. In this sense we speak, for example, of unconscious love. A man who has this feeling does not know what is astir in him; perhaps others see it, or he himself gradually discovers it; but he has the feeling, his conscious life is determined in a particular way."

In other words, what Höffding practically claims here is that there is no such mental state, no idea that is "unconscious," but that there are mental states, ideas, feelings, which, though conscious, do not reach self-consciousness. In other words, there are in us mental processes which have consciousness, but no self-consciousness. This is precisely what I mean by the subconscious—mental states which have consciousness, but do not reach the personal consciousness. In short, the only possible psychological assumption is a subconscious conciousness.

The Subconscious, Conscious, and Unconscious.—Those who accept the division of the subconscious into coexisting consciousness, or the co-conscious and the unconscious really assume the doctrine of the subconscious. They claim that it would be better and more precise to indicate, whenever possible, the conscious or unconscious, that is, the strictly physiological character of the observed manifestations. This, however, is more easily said than done. We know next to nothing of the physiological brain processes which are mainly hypothetical, and we do not know the limits of the subconscious consciousness. In many cases it is not easy to determine what the exact character of the subconscious manifestation is, how far it is conscious, dimly conscious, how far it has gone toward the development of an independent personality, and how far it shades in the direction of the purely physiological. In the absence of any exact determination, the term subconscious indicates the character of the mental state without any definite committal to any of the possible hypotheses.

The term "unconscious" is all the more objectionable, as Höffding has already pointed out, it is essentially an ambiguous, negative concept. The "unconscious" may mean absence of self-consciousness, or lack of consciousness, that is, purely physiological processes with no conscious concomitant. He who uses the term "unconscious" must in each case indicate in what sense he uses the term. Is the manifestation entirely physiological, or is it conscious in the sense of consciousness with no self-consciousness? The two meanings are diametrically opposed to each other. The unconscious in the sense of the purely physiological assumes the theory of unconscious cerebration; the other use of the unconscious in the sense of mere consciousness with no self-consciousness recognizes the view of the subconsciousness as advanced elsewhere.

It is claimed again that in many cases of psychopathic maladies there is no need to have recourse to subconscious systems. It is quite probable that the association between the stimulus and the emotion called forth is a direct one. The patient who is afraid of dogs has the fear called forth by the sight of a dog. There is no need to assume that there are here any intermediate links in the chain of association. Even physiological links may be totally absent here. It may be that by investigation it can be shown that this association has a history based on some former experience. There is no reason to assume that the experience is functioning subconsciously, whether consciously or "unconsciously," that is, physiologically. The dog and the fear have formed an indissoluble association, so that, as soon as the dog is perceived the fear is awakened.

This, however, is rather a debatable subject, since it is impossible to tell in the case of purely physiological links whether such are present or not. Thus, Höffding says, "Not only may conscious results come from unconscious working up, but there may also be unconscious intermediate links in the midst of conscious work. Supposing the idea *a* to be linked with the idea *b*, and *b* again with *c*, then *a* will finally produce *c* directly without the intervention of *b*. The intermediate links are often so numerous that they cannot be recovered at all or with great difficulty. Many psychological paradoxes and sudden suggestions have their explanation in this unconscious determining of conscious ideas."

Wundt seems to maintain the same view: "The memory process is especially predominant in those cases where the element of the new impression that gave rise to the assimilation is entirely suppressed by the other components of the image, so that the associative relation between the memory-idea and the impression may remain completely unnoticed. Such cases have been spoken of as 'mediate memories' or 'mediate associations.' Still, just as with 'mediate recognitions,' we are here, too, dealing with processes that are fundamentally the same as ordinary associations. Take, for example, the case of a person who, sitting in his room at evening, suddenly remembers, without any apparent reason, a landscape that he passed through many years before; examination shows that there happened to be in the room a fragrant flower which he saw for the first time in the landscape. The difference between this and an ordinary memory-process in which the connection of the new impression with an earlier experience is clearly recognized, obviously consisted in the fact that here the elements which recall the idea are pushed into the obscure background of consciousness. The not infrequent experience, commonly known as the 'spontaneous rise' of ideas, in which a memory-image suddenly appears in our mind without any assignable cause, is in all probability reducible in every case to such latent association." It appears, then, that both Höffding and Wundt acknowledge the presence of intermediate links in what appears to be a case of purely "immediate" association.

In cases where the intermediate links are "unconscious," in the sense of a purely physiological process, there is no criterion to prove the presence of such intermediate physiological links, and one may as well, from a purely psychological introspective standpoint, deny their very existence. On the other hand, if with Wundt, Höffding, and others we assume the presence of intermediate psychic links, there is no way of disproving them. It is quite probable that such intermediate links are present in every single case. The very fact that "unconscious" systems can be revived as memories or hallucinatory hypnoidic states would indicate their functioning when one of their components becomes awakened to activity.

As an objection to the presence of intermediate psychic links Pavlov's experiments are brought forward to show that associations can be formed between remote stimuli and glandular secretions, for instance. Thus, a dog with a fistula in the parotid gland can be made to react with secretions to light or sound stimuli.

This objection may be easily obviated by the consideration that we do not know whether there are or are not intermediate mental links between the artificial stimuli and the discharge of the glandular secretion. This consideration is all the more cogent as the remote stimuli can give results only if persistently associated with food stimuli. If such association with food stimuli is absent, and new stimuli are associated with remote stimuli which give reactions through their associations with food stimuli, the result of inhibition of secretion. In other words, each new stimulus must be directly associated with the original food stimulus.

To quote from Savadsky's work carried out in Pavlov's laboratory: Wasiliev and Mishtoot were the first to investigate conditions of inhibitions. At first the authors had in mind to develop conditional reflexes, not on the basis of another conditional reflex (such as a sound or light stimulus giving secretion). Their experiments were as follows: "From time to time they associated with the usual conditional stimulus another stimulus which had no relation whatever to salivary secretion, and this combination was not accompanied by the presence of the unconditional stimulus (food). By means of a great number of repetitions of such a combination, it was supposed to associate with the quality of the extraneous stimulus the quality of bringing about salivary secretion. It turned out, however, that such an arrangement of experimentation could by no means transform the extraneous agent into a conditional stimulus. In that way it became clear that the conditional stimulus, contrary to the unconditional, is not capable of communicating its property of bringing about salivary secretion. The fact is that the associative external stimulus, when accompanied by the unconditional stimulus alone, becomes after a few repetitions a powerful inhibiting agent."

This clearly shows that the conditional reflex in the dog can bring about salivary secretions only when associated with the unconditional reflex. What it means is, that the dog on seeing a *light* or hearing the *sound* expects food, and hence the psychic stimulation of his salivary glands resulting in secretion. Pavlov's experiments and also the experiments carried under his direction by his pupils clearly prove that there is no direct association between secretion and an external stimulus such as light or sound, but that the secretion is brought about by an intermediate psychic link, namely, the expectation of food. Thus we find that the work of Pavlov and his pupils, far from showing the possibility of formation of direct associations, really goes to substantiate the view of the presence of intermediate mental links in cases of apparently immediate associations.

As a matter of fact, there is no need for us to establish hypothetical, intermediate, unconscious, or physiological links. The "unconscious" brain-processes are problematic entities and there is no way of getting at them. What we need to discover in cases of mediate association, and especially in cases of psychopathic diseases, is whether the intermediate links, or the state of dissociation is present, consciously, or subconsciously, or co-consciously. This is possible to test by hypnosis or by means of the hypnoidal state. In many such cases we actually find that the patient lives through the original experience either consciously in a hypnoidal state, or in a hypnoidic state, thus undergoing a mental experience which is more commonly the case, the patient lives through the original experience subconsciously. But, whether conscious or subconscious, the mental state is not "unconscious," but is essentially of a conscious character. In short, we deal here either with the personal consciousness or with the subconscious consciousness. Thus, all the facts of mental life, normal or abnormal, substantiate the presence of a subconscious consciousness.

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ETIOLOGICAL CLASSIFICATION OF HEART DISEASE.*

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THERE are few rules in medicine that are not subject to more or less elasticity of interpretation and still fewer classifications of diseases that meet all requirements. In diseases of the heart it is necessary, as the groundwork, that every student have a thorough knowledge of the location and pathology of the various lesions. In the treatment, the symptoms and the history must be seriously considered for effective results, else the knowledge of the location may go for little practical importance, since the application for a similar point in one patient may vary greatly from another. The variance may be just as great in the pathology.

The heart has so many close associations that disease in any other organ may markedly interfere with the cardiac function. Under such circumstances, it is often well-nigh impossible from a practical standpoint to separate the primary offender. For instance, in cardiorenal disease, it is very difficult in the majority of instances to make this distinction. However, in all heart affections, whatever the cause, the association of a coexisting renal disease is so common, both in the early and especially in the later periods, that it is customary to think of them conjointly. Treatment is therefore instituted along similar lines with a formulated opinion but often without positive knowledge of the primary affection.

Since the advent of focal infections internists have become students of the origin of many diseases that previously were considered only from a geographical or picturesque standpoint, consequently our therapeutic efficiency has grown with much

*Read before the Annual Meeting of the Chattahoochie Valley Medical Association, July 13, 1920.

vigor. We no longer think of fever and high blood-pressure except in symptomatic terms.

No doubt most of you have selected for your individual selves a method of thought for the classification of heart diseases as well as conditions arising in other organs. Some think of the right heart for one thing and the left for another group, but how little is the importance of really locating the actual valve, from a practical standpoint, unless we consider and know the etiology? Perhaps for the listing of a card index or the signing of a post certificate the old classifications are required. It is taken for granted, however, that everyone should be just as exacting as formerly in his physical examination and history taking, both of which occupy the strongest field in diagnosis.

From the standpoint of relative frequency, importance and limited conciseness, the various forms of pericardial, myocardial, and endocardial, including cardiac neurosis, may be classed under five main groups. Many other heart affections not minutely mentioned in this paper may be made to fit into one of these heads. It is taken for granted that all cardiac diseases, excepting congenital, begin as acute conditions and later become chronic in the gross meaning of the word, unless interrupted in one or another stage. Some, of course, are primary, others secondary, when considered with relationship to other organs.

Group No. 1. *Acute infectious heart disease, later becoming chronic.*—Under this heading have been placed the various muscular and valvular inflammations arising during the course and following such diseases as rheumatism, tonsillitis, chorea, influenza, scarlet fever, typhoid, pneumonia, diphtheria and focal infections. The chief offender in this type is the streptococcus, which represents by far the majority of cardiac affections. The preliminary history is readily obtainable and the physical signs vary with the location whether it be in the pericardium as an adhesive percarditis or in the valve as a murmur. This form often is associated with a fever, usually of a mild degree, malaise, myalgias and arthralgias, rigors and anorexia. It is the most common of the heart diseases of children and youths and the largest contributing cause of chronic lesions.

Group No. 2. *Syphilitic Heart Disease.*—This, perhaps, should be accorded second place in frequency, especially when considered in relationship to middle life, and anatomically, to the aortic valve. Pathologic findings are most common in the muscular wall and the valve mentioned. The nervous manifestations of this type without physical findings will also be mentioned in another group. The presence of an aneurysm, the history and a positive Wassermann from the blood or spinal fluid, give the evidence necessary for the classification. The symptoms are in accord with the degree of damage done or being done.

Group No. 3. *Renal-Arteriosclerotic Type of Heart Disease.*—In this group the associated kidney disease is predominant. Senile and premature sclerosis of the blood vessels and heart proper are found. As previously stated, the definite separation of the heart and kidney from a causative reasoning is often impossible. The symptoms of this large class of cases vary. Continuous or paroxysmal dyspnea, pallor, headaches, dizziness, precordial pain, disturbances in the quantity of urine, edema and effusions, gastrointestinal disturbances, languor, coma, cerebral symptoms and hypertension are those chiefly encountered. The physical findings are distributed to all parts of the body. There may be murmurs with changes in the heart boundaries and accentuations of sound. There are urinary findings always of importance. Changes in the eye-grounds and in the functionary kidney tests are noteworthy. This type affords the end-process of many lives, and a thorough study of each case separately will clarify the numerous lines for therapeutic procedure.

Group No. 4. *Neuro-Toxic Heart Diseases.*—The etiological consideration of the factors arising in this group includes the glandular affections such as goitre and menopause, and concomitant causes such as uterine fibroids; neurasthenia and the poisons, as alcohol, tobacco, and opium. Syphilis without physical findings is responsible for many of these conditions, which are brought about by its effect on the nervous system directly or indirectly, caused by the spirochete; by the treatment given for the disease, or by a type of neurosis caused in sensitive patients. Gout, diabetes, tuberculosis, malnutrition, and gastrointestinal conditions, either through pressure from flatulence or toxicity through malabsorption, are responsible for a large share. Neurotic conditions in young girls and boys, and shock in war give rise to many other of the nervous types of heart disease. The symptomatology of these cases is often lacking, but the symptoms are related chiefly to the hypotension type, to bradycardia and tachycardia, and arrhythmias, and a great variety of symptoms are found in the various forms.

Group No. 5. *Congenital and Anatomical Heart Disease.*—Finally, a small number of heart conditions may be seen under the title of congenital and anatomical heart disease. This will include a patulous foramen ovale, valvular defects, anomalies in size of the different cavities, and deformities of the chest and spine. Increased adiposity or obesity of the heart are also included. The pathology and symptoms are very variable, depending upon the condition present. The large majority of this group occur in infants and children whose survival is determined by a short number of years. The adipose variety have symptoms from the mildest to the most grave, but, without concurrent disease, appear to live an uncomfortable but shortened existence.

It is understood that the hypertrophies, dilatations and effusions are largely mechanical, and their results may be noted in any of the above groups, but they are always secondary in nature.

With this classification it would appear much easier to think of and study heart diseases, and certainly our practical therapeusis and prognosis will grow less and less difficult as our knowledge of the underlying causes increases.

525 Woodward Building.

A New Treatment of Metasyphilis.—The idea of treating paresis with cultures of protozoa and spirilla, with infected blood, etc., is being tested in Germany. The spirochete of recurrent fever and one recovered from a species of African rat are specifically named, as is virulent malarial blood. No permanent benefit seems to have been reached.—*El Siglo Medico.*

PROTEIN SHOCK REACTION IN LEPROSY.

By EMANUEL M. JOSEPHSON, M.D.,

NEW YORK.

I HAVE had occasion to observe a protein shock reaction in a leper, and deem the observation of sufficient interest to report it. An unknown amount of a vaccine was accidentally administered with an intravenous dose of sodium gynocardate to a patient suffering from a quiescent but well advanced leprosy. A typical protein shock reaction followed shortly after the injection. For several days following the recovery from the shock the patient stated that he felt an improvement, notably in several anesthetic areas. Within a week, however, there supervened a marked exacerbation of the disease. A crop of maĉules rapidly appeared, more markedly over the parts previously more extensively involved, the face and the arms; a chronic ulnar neuritis lighted up and once again became hyperacute, and the patient ran a low fever as compared with his previously subnormal temperature. When I last saw the patient two months later, the exacerbation had not yet subsided.

This case indicates that the protein shock reaction has some possibilities in the diagnosis of latent leprosy. The reaction, however, bears the very unpleasant feature of creating an exacerbation of the disease. But where there are no other methods of diagnosis and when the importance of diagnosis outweighs the risk to the individual the reaction might be put to the test. Experimentally its use is certainly pardonable in checking up cases of suspected cures where release of the patient from the leprosarium is advocated, and in preventing spread of the disease by immigration from the endemic zones.

It is a known fact that the course of leprosy is hastened by intercurrent infections even of a very mild nature. A scant experience with the disease has led me to believe that the same result may follow on reactions to vaccine subcutaneously administered and on anaphylactic reactions. Hesitation to put this theory to a test, does not permit me to state the latter with any degree of positiveness.

2132 DALY AVENUE.

Medicolegal Notes.

Admissibility in Evidence and Authentication of X-Ray Plates and Prints.—In an action for personal injuries to the plaintiff's jaw, sustained in a collision, the jaw being in such a condition that the plaintiff could not open his mouth to any extent and his teeth did not track, it was urged that the testimony of two witnesses for the plaintiff, Drs. Lange and A. R. Johns, with reference to *x*-ray plates and prints showing the condition of the plaintiff's jaw, should have been excluded, because there was no certainty that the prints made by Johns were from the *x*-ray plates made by Lange, and the accuracy of the plates was not sufficiently established to make the evidence competent. Dr. Lange qualified as a specialist in *x*-ray work. He testified in substance that he made the plates, and that each was an accurate representation of what it purported to represent. While he did not know whether he made the prints or not, he stated that the prints were accurate reproductions of the plates. The plates and prints were marked and filed as exhibits with Dr. Lange's deposition, and were afterward delivered to the clerk of the trial court. At the trial Johns gave his testimony in person. He stated that he got the plates from the plaintiff and made the prints from these, and that the prints were a correct reproduction of the plates. Since the plates were identified by Dr. Lange and were marked by the notary, and Johns testified that he made the prints from those plates, there could be no doubt that the prints were made from the plates made by Dr. Lange, and, since the accuracy of both the plates and the prints was testified to by Dr. Lange, and the accuracy of the prints was testified to by Johns, it was held, not only that their evidence was admissible, but that the plates and prints were also admissible.

Practising Medicine Without License—Separate Offenses—Insufficiency of Verdict—Employment by Another Physician.—In proceedings for practising medicine without a license from the Missouri State Board of Health, the defendant appealed from a conviction. The Missouri statute provides for three separate and distinct offenses, practising medicine, attempting to practice medicine, and advertising as a physician without a license, and it was held that the defendant being charged with all three of the offenses, the verdict should have been specific as to whether he was guilty of one or other or of all of them. As the matter was submitted to the jury, some of the jury may have believed him guilty of one of the offenses and some of the other. The defendant was entitled to have twelve men believe him guilty of either one or all of the stated violations of the statute. The defendant was given the minimum punishment, a fine of $50, and it was plain that the jury only intended to convict him of one offense, but which one the jury did not say. The information in the case should also have been in three counts, one for each separate offense. The defendant admitted that he was a chiropractor. Under the law of Missouri one engaged in chiropractic is practising medicine. The defendant contended that he was engaged as an assistant to a regularly licensed physician, and offered evidence to this effect, which the trial court excluded. This was held not error, as the defendant could not escape the effect of the statute by showing that in practising his profession he was employed by another and acted under another's direction. The judgment of conviction was reversed and the cause remanded.—State v. Young (Mo.), 215 S. W. 499.

Practising Medicine Without Certificate.—In a prosecution for practising medicine without a certificate from the Virginia State Board of Medical Examiners it appeared that the accused for a number of years had been engaged in the business of selling, through a drug store, certain proprietary medicines of his own manufacture. He maintained an office in the city, where his patrons would resort to consult him, and he would advise them which of his remedies, if any, was suited to their case, and direct them to the drug store where it could be bought. Subsequently he had his business incorporated and sold his medicines direct to the trade without the intervention of a druggist. He described his general course of business substantially as follows: When a customer would call for a particular medicine, he would sell the remedy wanted, while others would describe their symptoms, and he would prescribe which of his medicines would suit the case. In such instance he stated that he made no charge for advice and only received the price of the medicine. The trial court granted an instruction to the jury requested by the prosecution that if the defendant announced in any way to the public that he was ready to examine human beings physically, to diagnose their ailments, and furnish for compensation a remedy which would relieve the same, or did engage in the business of examining human beings physically, diagnosing their ailments, and furnishing medicine which he claimed would relieve them and receive pay for the same, then he was guilty as charged. It was held that the instruction was practically in the language of the statute and that the jury's verdict of guilty was fully sustained by the evidence.—Pickard v. Commonwealth, Virginia Supreme Court of Appeals, 100 S. E. 821.

Statute of Limitations Governing Time of Actions.—The Ohio Supreme Court holds that in an action for a breach of the contract between a surgeon and patient, the statute of limitations does not begin to run until the contract relation is terminated.—Bowers v. Santee, Ohio Supreme Court, 124 N. E. 238.

MEDICAL RECORD.

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A CASE OF BERIBERI (?) IN SPAIN.

MARTINEZ, Director of the Institute for Tropical Medicine at Grenada reports this case at length in the *Archives médicales Belges* for April, 1920, lxxiii, 4, just received. The same author had previously reported the first cases in Spain of amebic dysentery, infantile kala azar, and cutaneous leishmaniosis (Oriental boil.) Beriberi was found on the littoral of the Province of Grenada. The sole patient was a man of 52, a fisherman, who also worked as a day laborer and shepherd. He was married and the father of two healthy children. He worked during the same year in semitropical and cold mountain temperatures, going without transition from seashore to mountain. There was no evidence of any social disease, either alcoholism or syphilis. As to diet he ate but little meat; pork occasionally on festivals or goat meat, the latter mostly of goats which had slipped and fallen from mountain heights. He ate freely, when on the shore, of fried fish, potatoes, rice, peppers, and tomatoes. There was plenty of oil used in cooking and serving. He ate also of chick peas, maize and rye. In general his diet seems to have been adequate while fishing. From fishing in July he passed without transition to sheep herding in the mountains at an altitude of 7,000 or 8,000 feet. There was naturally a sharp transition in his diet. Most of the year he led a life of solitude—the ordinary life of a shepherd; and it is here during this period that we have to look for dietetic shortcomings. Once a week he laid in both bread and oil and was clad throughout in sheepskins like a cave man. Naturally he was much exposed to cold.

Early in January, 1916, he exhibited prostration, malaise, colic, saburral tongue, and constipation. He improved not at all under purgative regimen and in addition began to have headache and other painful symptoms. Salicylic acid and warm baths were of no avail, and to increasing pains, often shooting in type, were added symptoms of motor paresis and abolished reflexes. The diagnosis of polyneuritis was readily made. The patient was removed to the local hospital, when, on account of extreme debility and semicachexia, he had to keep to his bed. The muscular masses of the body were seen to have shrunken notably and there was edema of the ankles. The author continues the results of the neurological examination in great detail and shows that various spinal diseases could be excluded and that the paraplegia must have been due to neuritis. Further, with the diagnosis of polyneuritis not in doubt, all of the etiological types of this affection could be excluded, save only beriberi. Edema is one of the symptoms of this affection. But the best argument perhaps in favor of his diagnosis was the response to nourishing diet rich in vitamines. Recovery was tedious and the patient had the full benefit of arsenic, phosphorus (phosphates), strychnine, massage, etc.

While the author is very certain of his diagnosis it is incomprehensible that a Spanish physician should not even mention lathyrism under differential diagnosis. According to Bass differentiation in border line cases is all but impossible. The usual test is absence of edema in lathyrism, but the edema in this case seems to have been very slight. This subject had flaccid paraplegia while in lathyrism paraplegia is more of the spastic type. In regard to the consumption of vetches, etc., it is not certain that chick peas are among those accused of causing lathyrism, and the patient seems to have eaten them only in the form of soup. Unless other cases like the one reported come to light the diagnosis of beriberi will probably be disputed.

IS LETHARGIC ENCEPHALITIS A FORM OF RABIES?

DELAUNAY, director of the School of Medicine and Pharmacy of Poitiers, advancing this hypothesis in the *Gazette hebdomadaire des Sciénces Médicales de Bordeaux* for Aug. 8, 1920, xli, 32, does not, of course, mean that lethargic encephalitis is communicated necessarily by inoculation, but believes that it may be due to the exciting cause of rabies. Careful comparison of the two diseases shows a surprising concordance. Both are polymorphous and the polymorphism depends largely on the region attacked. But it is well to admit at the outset that the Negri bodies have not yet been found in encephalitis, while certain histological changes characteristic of encephalitis have barely been seen in rabies, lymphocytic infiltration of the vascular sheaths, micro-hemorrhages, etc.

The evidence to connect the two maladies must necessarily be very strong to offset these discrepancies. Both are due to some unknown agency which passes through the tightest filter and which is neurotropic in a high degree; in both affections the cause can persist in the nervous system a long time in a state of latency. In animal experiment the rabbit inoculated with the virus of encephalitis behaves in all respects as when inoculated by rabies. Strangest of all, in both affections the microorganism leaves the body by the saliva, this fact having only recently been shown for encephalitis by the Americans Strauss, Hirschfeld, and Loewe. The good results from pilocarpine are explained in this fashion.

The war caused a let-up in the supervision of mad dogs, and rabies in man showed a sudden increase, even reappearing in England after years of absence, while in France it was prevalent on a scale long unheard of. It is conceded that the great majority of encephalitis victims have not been bitten by dogs, cats, or other animals, but the author as far back as 1902 advocated the view that rabies is transmissible without the causation of a wound, the germ being present in the saliva. More cases of encephalitis occur in rural than in urban districts, and in the former the risk of contamination from dogs is greater. Roux and Nocard proved that the saliva of dogs may be infected several days before rabies appears—four days and even much longer in the exceptional case. In regard to alimentary communication Decroix was heroic enough to ingest the saliva of a mad dog and escaped infection, but alimentary transmission has been established, so Delaunay asserts, by the experience of Gohier, Fernel, Schenkins, Sanzoni, and Alfadi. The milk of hydrophobic cows and other rabid animals has been shown to be infectious to animals, and even the milk of women victims of rabies has been found infectious by four of the authors above enumerated. It is therefore not impossible that infected butchers' meat, milk, etc., have been responsible for transmitting the virus to mankind and that rabies thus contracted might run a milder course. It is of course conceded that many recover from encephalitis, and that rabies is 100 per cent. fatal is the general belief. But the latter conclusion is not correct, for the death rate is not 100 per cent., but 99 and some fraction, since recovery from rabies has been attested by Chantemesse, Laveran, J. Roux, Lebell and Veresco, and Courmont and Lesieur. In the case of Lebell and Veresco the recovered case was in an infant bitten in the face. The author might have added that the malady of Dubini, believed to have been encephalitis lethargica, had an extremely high mortality. He concludes with the hope that the subject will be threshed out in the Pasteur Institute. It is possible that influenza may have sensitized patients to this form of rabies.

THE CAUSE OF DENTAL CARIES.

A GREAT deal has been written in recent years concerning dental disease and very many exaggerated statements have been made. It is undoubtedly an extremely serious problem in all civilized countries, for it is only when primitive people receive the perhaps doubtful blessings of civilization that dental caries is introduced. Whether pyorrhea alveolaris is such a grave condition as to warrant the extraction of every suspected tooth is a matter at least open to argument. Medical opinion is now generally against the wholesale extraction of teeth. However, one point does not admit of argument and that is that the prevention of dental caries or any other form of tooth or gum affection, is better by far than the most efficient or radical treatment. What then is the underlying cause of the condition? It seems that there are those who affirm that the fundamental causes are unknown and that therefore it is useless to lay down definite rules for prevention. According to an annotation in the *Lancet* of Aug. 21, Dr. R. A. Lyster, at the recent meeting of the British Dental Association, is reported to have made remarks of this tenor. As is pointed out, if this statement is allowed to gain currency it will tend to undermine belief in the excellent work that has been done on the etiology of dental disease and on which the present rules for prevention of the condition are based. It is held by many that dental caries is due largely to our excessive carbohydrate diet and the enormous consumption of sugars, especially those of the monosaccharide group. Certainly in the case of periodontal disease it is obvious that the lodgment of food in the interdental spaces is a prominent, if not the most prominent factor in the causation. Dr. Harry Campbell of London is one of the chief and most persistent exponents of the harmfulness of jamming easily fermentable saccharine material into the crevices between the teeth and he holds that this is one of the readiest means at our command to promote their decay. Surely then if certain articles of diet and those of the monosaccharide group in particular are believed to be potent factors in the causation of teeth decay and of other forms of dental disease, steps might be taken, particularly of an educational character to prevent the most prevalent and in many ways, the most unpleasant disease of the human race.

In a letter contributed to the Sept. 11 issue of the *Lancet* the statement was attributed to Prof. J. G. Adami that the teeth of the American citizen were far better than those of the inhabitants of the British Isles. The writer of the letter, however, doubts the validity of the statement and prophesies that now American has gone "dry," and in consequence more candy is being consumed, the dental surgeons and doctors will be still more busy. The truth is that Americans of all classes have always been careful of their teeth, not by dietetic preventive measures at all, as we are the largest eaters of candy in the world, but it is a national characteristic to go to the dentist as soon as any signs of dental decay present themselves. From childhood on, dental care of the teeth is meticulously followed and it is considered somewhat of a stigma not to have even and white teeth, and where nature fails art steps in. On the other hand, the mass of the British people have been notoriously neglectful of their own teeth and of the teeth of their children and it is only within recent years, since the war in fact, that attention has been drawn to the bad condition of the teeth.

SOME VITAL STATISTICS.

THE quarterly return of marriages, births and deaths in England and Wales, issued on Aug. 14 of this year by the Registrar-General, contains much that is interesting. The figures given are of course subject to those variations that are seasonal as well as annual, to what may be called accident as well as to definite causation. They must

be controlled over a period of years, corrected for differences in the mode of collection, and subjected to expert examination, before it is safe to make them the basis of general inferences. Superficially looked at, they would appear to be satisfactory. The population seems to be in process of recovery from the war, and the excess of births over deaths is approximately three times the average for the corresponding quarter in the years 1917, 1918 and 1919. There was no great epidemic, although influenza was stated to be the primary or contributory cause of death in over four thousand cases.

Illegitimate births increased twenty-two hundred, but not in proportion to the total increase, being in round figures one in every twenty births this year as compared with one in every fifteen in 1919. The increase was quite evenly distributed over the counties, the exceptions, in which there was an actual decrease in illegitimate births, being in some of the less populous and preponderatingly agricultural counties, such as Oxford, Wilts, Devon, Dorset and Hereford. Male births exceeded female in the proportion of 1,048 to 1,000, a slight increase over the proportions for the last few years, but well within the range of what may be called normal variation, and insufficient to support the popular belief in the effect of war on the determination of sex.

An interesting comparative table of the birth and death rates of certain European cities for the second quarter of the year seems to show that economic conditions are not hitting Germany to any marked degree. The death rate for London was 12.5 per 1000 of the population—calculated as for the entire year; for Antwerp 9.3, Amsterdam 9.7, Stockholm 12.5, Christiania 11.6, Berlin 13.2, Hamburg 12.6, Leipzig and Dresden 12.3, Cologne 14 and Frankfort 10.4. The London birth rate, similarly reduced to an annual rate was 28.3, that for Antwerp 21.9, Amsterdam 23.9, Stockholm 18.6, Christiania 22.7, Berlin 17.8, Hamburg 22.1, Leipzig 23.1, Dresden 22.2, Cologne 26.9 and Frankfort 20.4. On the other hand, the figures reported from Vienna and Prague show lower birth rates and higher death rates.

VACCINES IN THE TREATMENT OF CHILBLAINS.

VACCINE treatment may be said to be in the stage of evolution. It is developing slowly and knowledge concerning it is accumulating somewhat slowly, but on the whole progress is being made. There are certain complaints which appear to lend themselves obviously to this form of treatment, some skin diseases for example, and in many cases confidence in vaccine treatment has been amply justified by the results. Chilblain, which hardly falls under the head of skin affection, is a minor ailment which has been treated successfully by vaccine. Robert Robertson writing in the *Prescriber* for August, 1920, states that for the last five years he has treated a large number of cases with a great measure of success. This treatment was devised on the following grounds: It seemed to Roberston that the chilblain was the first stage in Raynaud's disease, being dependent on a paresis of the venules, so that, while the blood got into the extremities the venules were incapable of allowing it to drain off. He points out that a further and a very common stage of the disease is a paresis of the arterioles which prevents the blood from even entering the fingers or toes, producing either Raynaud's disease or that common condition where the fingers become waxy and devoid of blood. His view is that the paresis of the venules is caused either by some toxin generated in the intestinal canal, or by the direct transference of bacteria from the intestinal canal into the blood, thus acting on the peripheral blood vessels. The paresis devitalizes the tissues of the extremities and renders them subject to attack by surface organisms.

Basing his action on this theory of the pathogenesis, Robertson used a combined vaccine of *Bacillus coli*, a pneumococcus obtained from the bowel, and *Staphylococcus pyogenes*, the first two organisms being directed to the bowel condition, and the staphylococcus used for the most prevalent cause of local suppurative conditions; also he found it is sometimes an advantage to add the ordinary *Streptococcus pyogenes* to this combination. The dose of the *Bacillus coli* must be kept low, otherwise a serious reaction with feeling of depression is caused. It is stated that, as a rule, three or four inoculations are quite sufficient to overcome very severe chilblains. The effect seems to last for three or four months, but has usually to be repeated once again during the winter. Patients applying for protective inoculation have two inoculations given them early in October, the interval between being ten days. If the patient keeps free it should be repeated in February. Robertson thinks that *Bacillus coli* is the key germ and that with its disappearance from the body one gets a cessation of the serious effects set up by other organisms which can work only in conjunction with it.

CONSERVATIVE TREATMENT OF BONE SARCOMA.

LARGELY under the influence of the Lyons School of surgeons, recent years have seen systematic efforts at a conservative surgery of sarcoma of the long bones. In an article which appeared originally in the *Revue d'Orthopédie* and is found in abstract in *La Presse Médicale* for June 30, xxviii, 44, Estor and Aimes report upon 147 so-called economical operations for this condition. It is to be noted that a prognosis based on the histological finds alone often is reversed by the outcome of the case; that encapsulation is a factor to be reckoned with in prognosis, especially early in the case; that lymphnodes are rarely implicated; that the subject himself often refuses mutilating interventions; that economic operations when successful give excellent functional results; and finally that radical operations may fail in cases with inherently bad prognosis, often because of overlooked latent metastases. Three sorts of conservative operations have been tried out—ablation of the tumor alone, ablation

plus excochleation of the focus, and resection. As the first two can seldom be justified the question is narrowed to the alternative of resection or amputation. The late Kocher claimed that a conservative operation should always be tried first and several successive ones are sometimes practicable. In the upper extremity it is always wise to endeavor to conserve the hand, and a comparison of resections and amputations has shown that the former are as good if not better than the latter in the final outcome. In the lower extremity salvage of the foot is not so essential, but the amputation should be as low in the continuity of the bones as is compatible with firm support. Amputation or disarticulation is indicated in round-cell tumors, rapidly growing tumors, ulcerated or infected tumors, and those which have notably involved the soft parts. At the other extreme are encapsulated giant-cell and spindle-cell sarcomas and those of slow evolution, beginning growths, etc.

Rare Earths in Medicine.

THE original member of this group was cerium oxide, according to an article by Professor Denigès of Bordeaux in the *Gazette hêbdomadaire des sciences médicales de Bordeaux* of June 27, 1920, xli, 26. Although he does not allude to it, cerium oxalate came into medical use as a succedaneum for the insoluble bismuth salts. Yttrium and lanthanum developed no medical status. The original use of didymium in the construction of Welsbach mantles is of indirect medical significance. The number of alleged metals of the cerium group now amounts by actual count to thirteen, some of which are doubtless mixtures. Some of the less known are dysprosum, neoholmium, terbium, eropium, neoerbium, and lutecium. The cerium group in the narrower sense comprises cerium, lanthanum, praseodymium, neodymium, and samarium. Cerium is now known as a remarkable oxidizing catalyser which can increase the power of radiation of incandescent thorium in the proportion of 1 to 100. Rare earths come from but few ores—cerite, gadolinite, samarskite, etc. The thorium industry has wrought a great change in the status of these earths. Thorium, while not of the cerium group, is obtained almost entirely from monazite, an ore which with a phosphatic base contains numerous rare earths. Thorium has now supplanted the cerium minerals in the construction of incandescent mantles. As a result there are many oxides of rare earths available for study as by-products.

Sequelæ of Appendectomy.

THIS subject is discussed by Enriquez in the *Journal de médecine et de chirurgie pratiques* for June 10, 1920, xci, 11. The author refers to the operation when performed for chronic appendicitis. It is here that the indications for intervention are debatable, for many subjects are actually worse after operation. The percentage of 25 is rather low in the author's opinion, although he is a surgeon writing from the surgical viewpoint. The operation is far from simple, whether the chronic condition follows acute attacks or occurs *de novo*. Various complicating or secondary conditions are not necessarily affected by the intervention and persist after the latter. If in these complicated cases we simply isolate and tie off the appendix, there remains a "syndrome of the right iliac fossa" due to the presence of one or a number of conditions, as pericolitis, epiploitis, Lane's kink, cecum mobile, etc. The syndrome may be sufficiently like that present before intervention, with special reference to gastroenteric manifestations. Two new symptoms often appear—increased degree of constipation and abdominal crises. The latter are apt to appear during attempts at defecation. Anemia and evening fever may be present, and in general there is often the suggestion of tuberculous peritonitis. The author goes extensively into the symptomatology of two main types of appendectomized patients as outlined by clinical and *x*-ray finds. In one the condition is termed predominantly inflammatory, while in the other it is predominantly mechanical. In order to throw light on the preexistent and postoperative components the patients should be carefully *x*-rayed under proper control before operation to determine the amount of mechanical interference. In regard to intervention the author would abandon simple appendectomy through a small incision in favor of a more radical procedure.

Saint Anthony's Fire.

THIS mysterious medieval malady, which is best visualized as a very painful and mutilating gangrene of the extremities which occurred in mass incidence and has been variously identified as erysipelas, malignant carbuncle, ergotism, etc., is considered at length by Durodié in the *Gazette hêbdomadaire des sciences médicales de Bordeaux* for June 13, 1920, xli, 24. The word "fire" which occurs in several of the common names of the affection naturally suggests erysipelas, but otherwise the resemblance is not striking. The deaths sometimes reached high figures, as 40,000 for the South of France in 1020 A. D. Clearly we know of no malady of this description which could cause such mortality in our own day. The word "acro-ignis," used by one author, suggests pellagra, but the two affections have never been confounded. Durodié writes at great length with many unfamiliar citations of much interest. In a dictionary of the ancient French language he finds *ignis sacer* defined simply as gangrenous erysipelas. One ancient chronicle makes *ignis sacer* the medieval plague. The hemorrhagic intestinal disorder which destroyed Henry V of England was termed by two chroniclers St. Anthony's fire, although evidently of internal in place of external location. Facts like these may suggest that death was due to the intestinal form of malignant pustule. The identity of the latter affection with St. Anthony's fire has recently been claimed by a German historian whose name escapes us—the paper to this effect was read shortly before the war at a session of a new society devoted to the history of medicine and the opinion was noted at the time in the MEDICAL RECORD. But Durodié comes out firmly for ergotism as the actual disease. It is beyond doubt that the latest recorded epidemics were of this nature, but the type of gangrene has apparently undergone some change during the centuries.

Anthrax Cured with Horse Serum.

According to de Rezende in the *Brazil-Medico* for May 29, xxxiv, 22, carbuncle is very rare in Brazil. On April 16 in one of the clinics at Guaratingueta a white man presented himself with a lesion on the back of his right hand. The member was much swollen and inflamed and there was a marked systemic reaction of headache and fever. The pain was atrocious and an erysipelatous redness extended up the arm and on the trunk. The history pointed to a possible inoculation, the surface of the hand presenting numerous abrasions which might serve as ports of entry. The infection appeared to start from the first phalanx of the thumb, the first lesion showing a little pus, and quickly extended over the entire dorsum manus. The parts were in a state of hard edema, and incisions seem to have been made only to relieve tension and pain. On the opposite hand there was a single pustule over the head of the fifth metacarpal bone. The description of the lesion does not at all agree with that of ordinary or simple carbuncle, and the history of exposure to a victim who had "died of carbuncle" makes it certain that the author refers to "malignant pustule," although nothing is said which points with absolute certainty to that affection We know, of course, the two kinds of "carbuncle" are continually confounded in literature, and the writer was once present at a discussion in which some of the members were speaking of anthrax and others of simple carbuncle, without seeming to be at all aware of the confusion in terms. Since Langone of Montevideo had obtained good results in "carbuncle" from horse serum, the author began its use and continued to inject it under the skin of the abdomen over a period of two weeks or until the subject was out of all danger. The entire back of the hand and wrist sloughed with an enormous loss of substance.

News of the Week.

"Livable Fees" Demanded by Vienna Physicians—News comes from Vienna, via Berlin, that the doctors of the Austrian city have struck for "livable fees." The physicians connected with the Kranken-Kaase or State Sick Relief Fund, demand 48 to 110 kronen a day. Under the present system they receive 24 to 55 kronen (approximately 35 to 75 cents) per day.

Twenty Millions Needed for Starving Children in Europe.—Checks aggregating $605,194 were despatched last week by the American Relief Administration to the food administrators of central and eastern European governments, this amount representing the difference between operating costs and money received under the Hoover food-draft plan. The sum will be used for food for destitute children, of whom there are said to be 2,500,000. Of this number the amount forwarded will provide one meal a day for one month. To provide in the same way for the entire number of children, it is estimated, would require $20,000,000.

American Hospital Presented to Italy.—The Committee on the American Tribute to Italy, through Mrs. John Adams Drake, has offered a children's hospital to Italy. It has been decided to call the institution "International Child Welfare At Rome."

Near East Hospital Destroyed by Fire.—A cablegram from Constantinople announces the destruction by fire of the Near East Relief Hospital at Talas, Anatolia. There was no loss of life, and a third of the provisions and instruments were saved.

Government Makes No More Anthrax Serum.—Answering complaints regarding the discontinuance by the Government to produce anthrax serum, Dr. John Mehler, Chief of the Federal Bureau of Animal Industry, is quoted as saying the bureau discontinued the preparation of the serum because Congress cut off its appropriation for that work on July 1 last and because the horse which had been used by the bureau for the production of the serum died six or eight weeks ago and there was no other horse for the purpose.

Smallpox on Liner "Mobile."—A Czecho-Slovak steerage passenger on the White Star liner *Mobile* from Liverpool developed smallpox on the voyage across the Atlantic, whereupon all passengers, both cabin and steerage, and all members of the crew, with one exception, were vaccinated before the ship was allowed to land. A steward, who said he had been in a bubonic plague epidemic, had seen the devastation of Asiatic cholera, beriberi, and yellow fever, and had never been inoculated, drew the line on undergoing this formality for smallpox. He was placed in isolation until the ship sails again. The smallpox patient was sent to Swinburne Island.

Coffee Drinking Increases.—According to figures compiled by the Bureau of Foreign and Domestic Commerce of the Department of Commerce more coffee was consumed in the United States during the year ended June 30 than in any previous year on record. The total coffee consumption in continental United States for that period was 1,358,000,000 pounds and the per capita consumption 12.7 pounds. This is a total increase of 399,000,000, and a per capita increase of 3.71 pounds over the preceding twelve months. It is estimated, on a basis of forty cups to the pound, that this increase is equivalent to sixteen billions of cups of coffee.

Birth Rate Increase in United States.—The birth rate for 1919 in this country is estimated at 2,500,000, based on statistics representing a population of 31,000,000. The figures covered 269 cities, in which 680,000 babies were born during the year.

Drunkenness Increasing.—Chief Magistrate McAdoo finds the law of adaptation effective in New York City in one respect, at least,—"the people are adapting themselves to the situation and finding means of getting intoxicants." Figures for the first six months of this year show that as national prohibition continues drunkenness, temporarily checked, is increasing to figures that prevailed before prohibition laws went into effect.

Warning Against "Fake" Orange Beverages.—The Bureau of Chemistry, United States Department of Agriculture, under the Pure Food and Drug Act, has instituted prosecutions against the misbranding of orange beverages. Cases are now in the Federal courts and, pending decision, the food officials charge that some firms are still using deceptive labels. It is alleged that mothers, in some

instances, misled by the labels and other advertisements, are giving "fake" orange beverages to their children under the impression that they are following the orders of the physician. The Bureau of Chemistry has found that in most instances these beverages contain no orange juice, but are sweetened carbonated water, flavored with a little oil from the peel of the orange and artificially colored, and that they are lacking, therefore, in the organic acids and the vitamines which give medicinal value to the genuine orange juice.

Federal Agents Seize Drugs.—Agents of the narcotic squad of the Internal Revenue Department recently seized cocaine and morphine which they valued at $250,000, most of it being taken as it was about to be delivered to a downtown chemical concern.

Increase in Chemical Exports.—According to statistics published by the American Chemical Society, the total value of exports of all chemical and allied products for 1920 is roughly estimated at a billion and a quarter dollars,—a slight increase over 1918, and about four times the figure for 1914. Exports of medicinal and pharmaceutical preparations alone were valued at $20,000,000 in 1920, or twice the total for 1918, and about three times the total for 1914.

Typhoid Carriers in Massachusetts.—The Massachusetts State Department of Health possesses a list of fifty-one known carriers of the typhoid bacillus who are thought to be responsible for 493 cases of typhoid fever. Twenty-one of these individuals transmitted the infection through milk, and eighteen through their occupation as food handlers. The remaining twelve could have transmitted the infection either through food or by direct contact.

New York Community Trust.—This organization, which is composed of men prominent in the business and professional affairs of the city, has for its object the encouragement and promotion of gifts for charitable, benevolent, and educational purposes. The disbursements are controlled by a Distribution Committee. Frank J. Parsons, Vice-President of the United States Mortgage and Trust Company, is Acting Director of the trust.

Dr. Louis Fischer has removed his office to 33 West Seventy-third Street, New York City.

The International Congress on the Classification of the Causes of Death, which will meet in Paris at an early date, will be attended by Dr. Haven Emerson former Health Commissioner of New York City, representing the Public Health Association; Dr. F. J. Monaghan, Assistant Health Commissioner, and Dr. W. H. Guilfoy, Director of the Bureau of Vital Statistics of the Health Department, representing New York City; Dr. Otto Eichel of the Bureau of Vital Statistics of the State Department of Health; Dr. W. H. Davis, of the United States Bureau of Census, and George H. Van Buren, Statistician of the Metropolitan Life Insurance Company.

The American Child Hygiene Association will hold its eleventh annual meeting at St. Louis during the week of October 11-18.

Charitable Bequests.—By the will of the late Max J. Breitenbach, the following bequests are made: $25,000 to the New York College of Pharmacy, connected with New York University; $5,000 to each of the following: Sanitarium for Hebrew Children of the City of New York, Montefiore Home, Hebrew Infant Asylum, Home for Aged and Infirm Hebrews, Hebrew Benevolent and Orphan Asylum, Beth Israel Hospital, Hebrew Sheltering Guardian Society, Widowed Mothers' Fund, Lebanon Hospital, Jewish Maternity Hospital, United Hebrew Charities, and the Crippled Children's East Side Free School; $3,000 to Mt. Sinai Hospital; $2,000 each to the Jewish Protectory and Aid Society, the Educational Alliance, Young Men's Hebrew Association, and the Young Women's Hebrew Association. A gift of $1,000 is made to the Hospital at Albany, Ga.

Memorials to Carlos Finlay.—As a culmination of long sustained efforts, memorials to Finlay as discovery of the agent of transmission of yellow fever will be erected in both Cuba and Spain. The monument of marble or bronze to be erected in Cuba is in charge of Mateu, who also had charge of similar memorials to General Maceo and the martyr poet Zenea.

Obituary Notes.—DR. JOHN D. COLE of New York City died at Alexandria Bay, N. Y., September 25, in his sixty-fourth year. He was graduated from Hahnemann Medical College and Hospital, Chicago, in 1882. He was a member of the Homeopathic Medical Society of New York.

DR. CHARLES F. ROBERTS of New York City died September 27 at the age of seventy-eight. He was graduated from Bellevue Hospital Medical College in 1867. He served as an apothecary during the Civil War, and was Sanitary Superintendent of the Health Department, New York City, from 1893 to 1907.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, September 10, 1920.

War Asylums.—A good deal of criticism has been leveled at the treatment accorded in the asylum war hospitals to soldiers rendered temporarily insane by shell shock. This adverse comment has been analyzed and officially answered in a report on the work of these hospitals by Sir Marriott Cooke and Dr. C. Hubert Bond, Commissioners of the Board of Control, which has just been issued as a White Paper. This report completely exonerates those responsible for the management of these institutions and their medical and nursing staffs. The board is confident that the supervision in all these war hospitals and institutions has been so strict, and that the patients have had such opportunities of daily access to the medical officers and others of the higher officials that systematic ill-treatment has been and is impossible without its speedily becoming known and being severely dealt with.

The scheme when fully developed, supplied twenty-four hospitals, which, it is stated, without exception, were acknowledged by all the many expert authorities who inspected them to have afforded facilities for surgical and medical treatment in all respects equivalent to those available

at the best military and civil hospitals in the country. These twenty-four hospitals provided, with some hutments, as many as 27,778 permanent beds, and with extensions could accommodate 31,000 patients. The number of patients treated in them up to May 15 this year had been 482,949, approximately equivalent to more than one-sixth of the total number of sick and wounded men from all fronts during the war. The scheme started with nine asylums, which had to be cleared of their insane patients. This rapid transference of some 12,000 patients, including many dangerous and violent cases and many who were aged and feeble, was effected without any untoward event.

Of the total number of all classes of patients that were treated the number that died, 3,258, was equivalent to only 0.67 per cent. In addition to the physically sick and wounded men, the large total of 38,440 patients suffering from mental breakdown or nervous diseases had up to May 1, 1920, contrary to the original intention of the scheme, been treated either in a section of one or other of the war hospitals, or in the seven smaller hospitals devoted exclusively to the treatment of soldiers suffering from mental or nervous complaints. The hospitals have been referred to in gratifying terms by the Army Council, and many eulogistic comments have been made by patients, their friends, and others who had visited the hospitals.

Scarcity of Nurses.—A great lack of nurses is being experienced in all parts of Great Britain, and, of course, is a serious question. While large city hospitals are suffering from this dearth of nurses, the smaller institutions are said to be feeling the situation even more acutely. Nursing as a vocation seems to have become unpopular as girls are chary of coming forward for training. Neither does there appear to be any likelihood of a change for the better. Many reasons are given for the existing state of affairs and naturally these vary considerably. However, there is agreement on some points. All are agreed that the age at which a would be nurse is allowed to begin training is too high. A woman must be 23 ere some of the largest hospitals will accept her. She can go to other institutions before she reaches this age, but the time she spends in them does not count when she commences training in one of the big hospitals. The result is that if a woman makes up her mind to embark on the career of a nurse, she must either go to an unrecognized institution at the age when she is adaptable and likely to learn and possesses the most enthusiasm or she must wait until she is 23. Her friends will probably be earning money and comparatively independent during this time of waiting. The outcome is that when they have attained to the age required they are already engaged in a remunerative employment and are not disposed to change it for the hard work, small degree of comfort, and miserable pay of a probationer. The hospitals in this respect seem to have made a mistake. Girls considerably under the age of 23 performed excellent nursing service during the war and why they should do less effective work in time of peace is hard to say.

Naval Medical Officers' Rank.—The British Admiralty have decided that in future medical officers who entered the service on or after August 4, 1914, will not have to pass a qualifying examination for the rank of surgeon lieutenant-commander. These officers, however, when they have obtained, between two and six years' seniority in that rank and after a preliminary course of study will have to qualify by examination for promotion to a higher grade. Surgeon lieutenant-commanders will be eligible for accelerated promotion according to the class of certificate obtained in the qualifying examination. For a special certificate the advantage may be 18 months, and for a first class certificate 12 months. In order, however, to obtain accelerated promotion, the officer must also have been recommended for advancement. Two attempts to pass the examination will be allowed, but surgeon lieutenant-commanders who fail to pass at a second trial will be compulsorily retired with a gratuity which shall not exceed £100 for each complete year's full pay service nor be above a maximum of £1,000. Officers who entered the service before August 4, 1914, may voluntarily take the course and sit for the examination, and should they receive the requisite number of marks the advantages described above will also be open to them.

Street Accidents in London.—In a previous letter I mentioned the fact that since the war street accidents had increased largely in London and the report thereon published recently by the Commissioner of Police affords full confirmation of this statement. Within the London Metropolitan Police area during 1919, 688 persons were killed by traffic. During the same period 19,685 people received injuries in the streets, most of which would not have come to the knowledge of the police had they not been serious. The toll is heavy and promises to be more heavy in the years to come. In 1919 the accidents were more than in 1918 and in 1913 the year before the war the deaths in the streets by accidents numbered less than 600. The underlying cause for the increase is obviously the fact that mechanical transport is almost wholly employed nowadays and just as obviously London built on haphazard principles and with many narrow and tortuous streets is not able to cope with the flood of swift and heavy traffic which has been poured into it. The question is, what can be done to alleviate the situation short of reconstruction, which, if possible, would take time. The control of traffic by the police is practically perfect. It has been suggested that there is a good deal of careless driving or perhaps reckless or incompetent driving and it has been further suggested that every applicant for a driving license should be required to pass a test of efficiency. In London this would be a stupendous task and the only remedy appears to be the carrying out of the maximum safety first. It would be interesting to compare the statistics of street accidents in Greater New York and London, which more nearly approach each other in population among the big cities of the world. New York is more modern and its streets are wider and straighter, but, on the whole, perhaps the conditions do not differ very widely.

Municipal Hospitals.—The proposal of the

Ministry of Health in a bill recently introduced by the Minister, Dr. Addison, to give local authorities the power to maintain hospitals or to subscribe to voluntary hospitals in their area, is meeting with strong opposition. It is argued that the proposal practically amounts to throwing the voluntary hospitals on the rates and compelling or asking the already overburdened rate payers who consist most largely of the lower middle class, to maintain hospitals used mainly by the now comparatively rich working class. Moreover, hospitals are obviously mostly needed in populous areas, in manufacturing areas, and near congested thoroughfares and dwelling places. And these are the very areas of which the inhabitants can least afford further additions to rates which already press them cruelly. It is pointed out that the clear result will be that wealthy districts will be able to supply and maintain hospitals which they do not require, while districts which are in urgent need of additional aid for their hospitals will not be in a position to provide that aid. Again, it does not seem reasonable to suppose for one moment that the rate payers of any large cities containing hospitals specially equipped for treatment of various diseases and therefore full of patients from all parts of the country, will tax themselves for the benefit of the inhabitants of other counties. It is allowed on all hands that the voluntary system for hospitals is not now equal to the strain which is being placed upon it, and it is recognized that steps must be taken promptly to relieve the situation. The profession as one man is against state hospitals, and it seems that the ratepayers are against municipal hospitals, so what is to be done? It is curious that, little has been said in discussing the hospital crisis concerning the introduction of the pay or partial pay system, although a beginning has been made in this direction. If such a system were introduced it appears that many of the obstacles now in the way would be removed. The working classes who can well afford, as a rule, to pay for hospital treatment would subscribe their fair share toward the maintenance of these institutions and the middle classes would have the opportunity which has been denied them hitherto of receiving good medical and surgical treatment at a fair cost, treatment which the working classes have had for nothing or comparatively little. The arrangement would be equitable and should be workable.

The Irish Medical System.—It is pointed out in the educational number of the *Medical Press and Circular*, September 8, that the system of medical treatment in Ireland differs from that in England in certain important particulars. In London each clinical hospital has its medical school attached, which educates the students of that hospital and very seldom the students of any other. In Dublin, on the contrary, the hospitals and schools are entirely separate, and a student of any school is free to enter for the whole or any part of the course at any school or hospital he pleases.

Report for 1919 of the Medical Officer of Health for Norwich.—Public health reports provide interesting reading and therefore the report of the medical officer of health for Norwich should afford those concerned with public health matters in America grounds for comparison with cities in their country. Norwich has a population of about 130,000, and an area in statute acres of 7,923. The birth-rate for 1919 was 16.35 per 1,000, which was below that of the other ninety-six great towns of England. The gross recorded death rate was the same as the average of the ninety-six great towns, 13.8 per 1,000. The infantile mortality rate among legitimate children was 75.4, and for the illegitimate 166.7 per 1,000 births, indeed a marked contrast, and one which it is to be hoped that the Bastardy Bill introduced recently into the British House of Commons will do much to alter. Tuberculosis has decreased and Dr. Pattin, the medical officer of health, thinks this improvement is mainly due to the consumption of better food. He says that he has long placed first in importance in the treatment of tuberculous diseases not houses, helpful as good houses are, but nutrition. The boot-making industry, which is the chief industry from the standpoint of the numbers employed therein, contributes a noticeable number of phthisical cases especially among the "clickers" and he attributes this largely to the bad mechanical attitude imposed upon these workers, stooping with arms forward and chest cramped and retracted, and also to the apparent tendency of the less robust to drift into this branch of business. Eleven thousand six hundred and seventy-four children were inspected in the schools. At the dental clinic 4,339 children were attended to, 1,197 damaged permanent teeth were repaired with fillings, and 4,165 teeth were extracted.

OUR LETTER FROM BELGIUM.

LIÉGE, September 10, 1920.

Cattle Plague.—The cattle plague made its appearance in Belgium last July. It was brought in by some infected animals landed at the port of Antwerp—some zebus coming from America. The disease was first discovered in certain centers in the north of Belgium in the provinces of Flanders and of Antwerp, and seems to be increasing. It has been found also in the German territories adjoining Belgium in the neighborhood of Eupen. Energetic measures have been taken by the Belgium government in collaboration with that of France to protect the borders of the latter. The Pasteur Institute of Brussels, under the direction of Professor Jules Bordet, is actively engaged in elaborating a supply of antipest serum, and it will be interesting to learn of the efficacy of this serum, both prophylactic and therapeutic, in an epidemic of this nature which promises to be especially violent.

Monument to Edith Cavell.—A monument to the martyred Nurse Cavell was recently unveiled in Brussels in the presence of the members of the Royal family. The ceremony attracted a great concourse of spectators anxious thus to give evidence of their respect and admiration for this heroic victim of Germany's hate.

A Statue of Van Beneden.—At the Zoological Institute of Liége recently a statue was erected of the great biologist, Edouard Van Beneden. It will be remembered that it is to him that we owe a

description of several of the essential biological phenomena in fecundation—the penetration of the spermatozoon into the ovum, segmentation of the ovum, the fetal adnexa, the placentation of mammals, etc.

Retrogasserian Neurotomy.—At a recent meeting of the Royal Academy of Medicine of Brussels, Dr. De Beule of Louvain read a paper on retrogasserian neurotomy for the relief of rebellious facial neuralgia. This operation, due to the initiation of Krause, who performed gasserectomy, was revived by Spiller of Philadelphia and his colleague Frazier, who contented themselves with division of the sensory root of the ganglion. This operation did not give, however, the hoped-for results. It was the great neurologist of the University of Louvain, Professor Van Gehuchten, who perfected the technique of the operation, which is now practised by his pupil, De Beule. The posterior root of Gasser's ganglion is divided, corresponding to what Van Gehuchten called a "physiological exsection," with excellent results. The mortality of the operation is only 6½ per cent. in all cases, including those of new growths which had indirectly caused the neuralgia. As regards the serious ocular troubles (extensive ulcer of the cornea with leucoma, purulent destruction of the eyeball), they are much less frequent and much less grave than after the operation of gasserectomy, for Gasser's ganglion is preserved and the nourishment of the eye is thereby assured.

Death of Professor Nuel.—The death is announced at Liége of Dr. J. Nuel, formerly professor of ophthalmology and of the physiology of the organs of sense at the University of Liége. He was the author of numerous publications, among others a treatise on physiology in collaboration with Léon Frédéricq, professor of general and special physiology at the University of Liége.

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 23, 1920, clxxxiii, 13.

1. Puerperal Sepsis and Its Treatment. R. S. Titus.
2. Correlation of Data in Cases Seen at the Psychopathic Department of the Foxboro State Hospital. Lawson G. Lowrey.
3. The Frequency of Fractures. A Radiological Analysis of 1,226 Cases. C. R. Scott.
4. Multiple Serositis. William D. Reid.

1. Puerperal Sepsis and Its Treatment.—R. S. Titus, pointing out that there still exists more puerperal sepsis than there should be, and that the treatment of this condition, among many general practitioners, is not improving its mortality, gives the following summary of the subject: Puerperal infection is bacterial infection. Organisms gain entrance, first by vaginal examination; second, by the presence of an abnormal vaginal flora at the time of labor; third, by extension from foci of infection elsewhere in the body. The three types of puerperal infection depending upon the organisms are, first, hemolytic streptococcal infection; second, pyogenic infection; third, saprophytic infection. The treatment of each type depends upon the bacterial reaction and the knowledge of its pathology. By and large, leave it alone. The curette is dangerous. The antiseptic douche is unintelligent. The conservative treatment is rational and harmless. Surgery plays its part only when the infection has produced localized pus, and then the old-time surgical principle of the evacuation of pus obtains. Vaccines and serums have had their try and they have been found wanting. The future holds its hope first in aseptic preparation of the patient, absolute cleanliness of the operator. In this way, to lower the percentage of infection to its lowest possible point. Next, conservative treatment to do no harm rather than to go on the supposition that some good may come from interference and in the specific serum for each individual case based upon the success of the treatment of type four in pneumonia. Theoretically, vaginal smears and cultures of the pregnant woman taken soon before labor may point out those which contain harmful bacteria and in consequence some method of making these harmful bacteria harmless may be evolved.

4. Multiple Serositis.—William D. Reid bases this paper on an analysis of the cases of chronic multiple serositis that came to autopsy at the Massachusetts General Hospital, his object being to learn more of the disease, especially with regard to diagnosis. The cases are not listed as "multiple serositis" in the autopsy records, but he selected all cases in which the anatomical diagnosis contains the group of "chronic pleuritis, adhesive pericarditis, perihepatitis, and perisplenitis." His study was limited to cases in which this complete group is present in the record. There were fifteen such cases in the 3,900 autopsies studied, making the incidence of this disease just under .4 per cent. From this study he concluded that multiple serositis presents considerable diagnostic difficulty, particularly when other diseases coexist. Both history and symptoms may fail to suggest this condition. Presystolic murmurs and thrills may be heard over the cardiac apex in the absence of stenotic change of the mitral valve as disclosed at autopsy. Broadbent's sign and paradoxical pulse may both be absent. Ascites may or may not be present. A history of the recurrence of abdominal effusion over a long period, perhaps of years, should suggest chronic multiple serositis. The condition is probably due to the occurrence of an infection of a virulence sufficiently low to permit the survival of the patient and the healing of the inflammatory lesions by fibrous adhesions. The physiology of absorption from the peritoneal cavity as described by Clark, Buxton, and others offers further light on the development of chronic multiple serositis.

New York Medical Journal.

September 25, 1920, cxii, 13.

1. Persistent Voluntary Mutism. Alfred Gordon.
2. The Nature and Cause of Stammering. Meyer Solomon.
3. National Morale in Relation to Hysteria, Military and Industrial. Tom A. Williams.
4. First Aid in Infant Feeding. Jacob Sobel.
5. Rhythmic Electric Current in the Treatment of Abdominal and Pelvic Relaxation. G. Betton Massey.
6. Disturbances of the Heart and Liver Caused by Low Grades of Astigmatism. E. L. Jones.
7. Medical Men in the American Revolution. (*To be concluded.*) Louis C. Duncan.

2. The Nature and Cause of Stammering.—Meyer Solomon briefly summarizes the nature and cause of stammering as follows: The stammerer suffers from nervous excitability and emotionality; this expresses itself, in the stammerer, in a speech disorder; the speech disorder in the stammerer is produced as the result of a definite series of phenomena, all of which are under the stammerer's control. First, there is the tendency on the stammerer's part to hurry, virtually to rush headlong and precipitately into speech expression of his thought. So great, so intense, so acute is this haste, that the stammerer really thinks faster than he can speak, and he endeavors to say immediately that which he has in mind. As a result of this, he throws his speech apparatus—either the articulative (for consonants) or vocal (for vowels) portion—into sudden, more or less, violent spasm. Respiratory spasm is commonly present in either case. In his blind rush the stammerer tries to pronounce a vowel (laryngeal sound) with his articulative organs—that is, while his speech apparatus is in the position for articulative (consonant) expression; or, he makes efforts to produce articulative sounds with his vocal (laryngeal) organs—that is, while his phonation apparatus is in action. As a consequence the stammerer either maintains a fixed articulative (consonant producing) position and endeavors, while in this position, to pronounce a vowel; or, he keeps his vocal (laryngeal) apparatus in continued action while battling to proceed hurriedly

and stubbornly to the pronunciation of a consonant. Both of these feats are impossibilities for any human being. In his insistence to accomplish this impossible feat the stammerer may bring into play much of his voluntary motor system and assume, during the act of speaking, various accessory or supporting attitudes and postures, spasmodic in nature, just as one would in hard work or fighting or running. The stammerer may become exhausted from his efforts. Finally, in despair or by compulsion, the stammerer gives up the useless struggle, relaxes the portion (articulative or vocal, as the case happens to be) of his speech apparatus which up to that moment has been in spasm, and only then, often to his great surprise, is he able to proceed to the pronunciation of the next sound.

6. Disturbances of the Heart and Liver Caused by Low Grades of Astigmatism.—E. L. Jones emphasizes that any and all astigmatism must be corrected to the finest degree possible as to strength and axis of cylinder, else the small error remaining for the eye to overcome will still permit the continuance of symptoms. This does not mean that the other source of refractive eyestrain, hyperopia, does not play its part and need correction, neither does it mean that myopia, which is not a source of refractive eyestrain, is not to be reckoned with. But associated with myopia and hyperopia of all degrees, and in cases of supposedly noncorrectible irregular refraction, there is usually more or less astigmatism, at times very difficult to establish as to exact amount and axis. He also emphasizes his belief that more people suffer from the eyes than with the eyes, and expresses the hope that the day will come when every patient affected with a persistent vertigo, pain or drawing in the neck or shoulders, unexplainable general fatigue, nervous depression, gas in stomach, cardiac asthenia, or cold, clammy feet, will be referred to the most painstaking oculist available.

Journal of the American Medical Association.

September 25, 1920, lxxv, 13.

1. The Malaria Awakening of the South. L. D. Fricks.
2. Ocular Symptoms in Exophthalmic Goiter. J. H. Claiborne.
3. Three Pertinent Questions on Maternal Feeding. W. A. Mulherin.
4. Frequency of Syphilis with Cancer of the Lips, Tongue and Buccal Mucous Membrane. N. Austin Cary.
5. Radium in the Treatment of Malignant Tumors of the Nose and Throat: Its Use and Possible Abuse. Robert Sonnenschein.
6. Closure of Fistulous Openings Through Alveolar Process Into Antrum of Highmore. Cullen F. Welty.
7. A New Operation for the Relief of Dacryocystitis Through the Nasal Route. Meyer Wiener and William E. Sauer.
8. Observations on Débridement of Wounds. Frederick C. Warnshuis and Ursus V. Portmann.
9. A Second Attack of Meningitis After an Interval of Eighteen Months. William Allan.

2. Ocular Symptoms in Exophthalmic Goiter.—J. H. Claiborne gives as the purpose of this contribution to set forth the signs present in exophthalmic goiter; to give what apears to be a simple, obvious and reasonable explanation of the great majority of them; to remove a certain amount of confusion which exists generally; and to describe what appears to be several signs which have not been heretofore remarked. His discussion of the subject is summarized as follows: 1. Exophthalmos, or proptosis, is the first and basal sign of exophthalmic goiter. The majority of the other signs follow sequentially. The order in which the most prominent ones should be mentioned is: exophthalmos, Dalrymple's sign, Graefe's sign, Stellwag's sign. 2. In the Dalrymple sign the sclera shows above and below the cornea and more markedly and frequently below than above. It may be absent above but present below, or vice versa. It is distinctly a sign observed in a condition of rest in the primary position of the eye. 3. The Graefe sign is seen only in motion from above downward, and is more marked in all cases in movements below the horizontal meridian. In order to demonstrate this sign, the eye should be made to move *very slowly* from above downward. 4. The pupils are as a rule larger than normal in exaggerated cases; and this sign is more marked in blonds than in brunettes. 5. Trembling of the upper lid sometimes occurs without closure of the lid. The sign exophthalmos, taken in conjunction with goiter in the neck, tachycardia, and the nervous and psychopathic symptoms which go with these signs, form a picture that constitutes the entity known as Parry's disease, Graves' disease, Basedow's disease, and exophthalmic goiter—the most marked and dramatic disease in the realm of medicine.

3. Three Pertinent Questions on Maternal Feeding.—W. A. Mulherin. See MEDICAL RECORD, May 15, p. 847.

4. Frequency of Syphilis with Cancer of the Lips, Tongue and Buccal Mucous Membrane.—N. Austin Cary gives a series of tables compiled from 907 case histories in the record files of the Surgical Pathology Laboratory of the Johns Hopkins Hospital, the material being drawn from that hospital, the clinic of Dr. Joseph C. Bloodgood at St. Agnes Hospital, and from various other sources. The series does not represent selected cases. Cases are classed as positive when either a positive Wassermann test or reasonable evidence of syphilis in the past history was found. Of the 907 mouth lesions 771 were malignant and 136 benign. Of all the cancer cases, only three occurred in the white female, and in none of these could syphilis be proved as an etiologic factor. No cases of cancer were observed in the black female and only two in the black male, in spite of a very considerable proportion of negro patients in Baltimore clinics. The writer considers this fact of special interest in view of the well-known prevalence of syphilitic infection in this race. It was found, among other things, that syphilis in association with cancer of the tongue is approximately three times more common than in association with cancer in other locations about the mouth—14.5 per cent., or about one in seven. He considers this fact urgent reason against protracted antisyphilitic treatment in tongue lesions which may be cancer, even in the presence of positive evidence of syphilis. Regardless of the causal relationship established the prognosis is that of cancer and not of syphilis, and treating the syphilis will not affect the cancer, but will only delay urgently needed surgery.

The Lancet.

September 4, 1920, cxcix, 10.

1. Anoxemia. Presidential Address Delivered Before the Physiological Section of the British Association for the Advancement of Science. Joseph Barcroft.
2. On the Investigation of Gastric Function by Means of the Fractional Test-Meal. John A. Ryle.
3. Antisyphilitic Prophylaxis: An Investigation Into Its Use, Nonuse and Misuse. G. R. Hamilton.
4. The Principles Underlying the Standardization of Agglutinable Cultures, with a Note on the Application of Dreyer's System to B. Paratyphosus A. A. D. Gardner.
5. A Plea for Simple Anatomical Names. Based on the Free Use of the National Language. William Cuthbert Morton.
6. Public Health in Soviet Russia. (*To be continued.*) L. Haden Guest.

2. An Investigation of Gastric Function by Means of the Fractional Test-Meal.—John A. Ryle reports results up to date of investigations being carried on on an extended scale regarding this method as a means of studying normal gastric physiology and as an aid to clinical diagnosis. He gives an abridged account of the technique; reproductions of specimen charts illustrating physiological and pathological phenomena; a summary of the advantages of the fractional method of gastric analysis.

5. A Plea for Simple Anatomical Names.—William Cuthbert Morton points out that he is not pleading for a particular code, nor for particular names, but for the one guiding principle of simplicity based on the free use of the national language. He states some of the outstanding principles and illustrates their application by a few examples. The writer, the student, the teacher, and the patient would profit by this simplification of anatomical terminology. It would greatly "facilitate the progress of study," by removing much of the "rubbish that obstructs the journey." Anatomy is among the most precise of sciences. Why should she not lead the way in the science of terminology?

British Medical Journal.

September 4, 1920, ii, 3114.

(*Educational Number.*)

Bulletin of the Johns Hopkins Hospital.

September, 1920, xxxi, 355.

1. Healing of End-to-End Intestinal Anastomosis with Especial Reference to the Regeneration of Blood Vessels. Florence R. Sabin.
2. End-to-End Anastomosis of the Intestine by Presection Sutures. An Experimental Study. Emile Holman.
3. An Instance of Voluntary Acceleration of the Pulse. John T. King, Jr.
4. The Innervation of the Tensor Veli Palantini and Levator Veli Palatini Muscles. Arnold Rice Rich.
5. Anaphylaxis. H. H. Dale.
6. The Natural History of Typhoid Fever in Baltimore, 1851-1919. William Travis Howard, Jr.

1. Healing of End-to-End Intestinal Anastomosis with Especial Reference to the Regeneration of Blood Vessels.—Florence R. Sabin, following the suggestion of Professor W. S. Halsted, in relation to the study of methods of end-to-end anastomosis of the intestine which he and Dr. Mall had made in 1887, made the application of some of the improved methods in connection with vascular injections, as applied to the healing of blood vessels in these anastomoses. It was thought that some light might thus be thrown on the general problems involved in the healing of intestinal wounds. As in the original experiments of Halsted and Mall, dogs were used in these experiments, the series studied comprising 25 dogs, of which 20 were injected, involving 27 anastomoses. From these studies, which are illustrated by twenty-four plates, it was shown that in the end-to-end anastomosis of intestine the infolding of the wall does not produce any blocking of the lumen, that the infolded parts are viable, and that the mucosa continues to function in absorption, but that there is a very great increase in the number of cells secreting mucus. Ultimately this change in functional adaptation is brought back to the normal by the death of the mucus cells and the regeneration of the mucosa. Wherever the muscularis mucosæ is cut or ruptured without the occurrence of an infection, the glands of the mucosa invade the submucosa, often forming cysts there, but these glands are subsequently restored to the mucosa by the regeneration of the muscularis mucosæ, which makes a barrier for the glands. For the smooth muscle, the histological technique shows that its cells are very sensitive to injury and that it is hardly possible to put a clamp on smooth muscle without producing changes that can be recognized under the microscope. It seems very important to the writer that this series of end-to-end anastomoses produced no dilatation of the wall of the intestine and hence no damage to the musculature sufficient to make it thin out. All of the cases show gaps in the musculature where the stitches pull through, but though this damage is inevitable, the fact that the muscle in syncytial, and that the stitches are limited to six points around the lumen of the gut, seems to limit the amount of destruction to the musculature more than in the end-to-side form of the operation. In the regeneration of the vascular system it has been shown that the regeneration of the vessels is limited to specific areas where the growth of new vessels is preceded by a change in the endothelium of the old vessels which may be characterized as a return of the endothelium to the original angioblastic type involving a very great multiplication of the endothelial nuclei, and from these transformed vessels solid masses of angioblasts like those of the embryo grow out, acquire a lumen, as in the embryo, through liquefaction of the cytoplasm, and become new vessels, first capillaries, then arteries and veins.

2. End-to-End Anastomosis of the Intestine by Presection Sutures.—Emile Holman, who performed the surgical work in connection with the experimental observations by Dr. Sabin (*vide supra*), emphasizes the following points concerning this form of suture: 1. All sutures are applied before incision into the bowel, regardless of the amount of bowel to be resected. The value of this is evident from the point of view of asepsis and from the standpoint of facility in introducing sutures before division of the intestine. 2. All sutures are applied without entering the lumen and without handling the septic mucosa at any time. The method has been applied in the large bowel and in several end-to-side anastomoses in the cecum with excellent results and without subsequent infection. 3. The sutures are applied at right angles to the lumen of the bowel and therefore parallel to the large vessels coursing through the bowel wall. Accordingly, none of the larger vessels are constricted when these sutures are tied, and, as shown by the injections, there is not the slightest impairment of circulation to the severed end of the various intestinal layers. The villi of the mucosa continue to function to the very edge of the divided bowel. There was no evidence in a single specimen of sloughing of the inturned edges, ideal and rapid healing at the point of union being thus provided for. 4. In the entire series there was no evidence of dilatation proximal to the anastomosis, thus indicating the absence of any obstructive narrowing of the lumen of the bowel. If this is true for the intestine of the dog with its small lumen, no such difficulty need be expected in the intestine of the human subject with its larger lumen. There is a minimum of trauma such as accompanies the use of mechanical devices, or the handling of the bowel edges with forceps as in the plain end-to-end and Connell sutures, in all of which injury to the mucosa is quite unavoidable.

El Siglo Medico.

July 17, 1920, lxvii, 3475.

Colored Audition.—Ribon of Bogota, Colombia, S. A., who has published an article on chromacousia or colored audition, received a letter from a reader which outlines his personal case; this letter he sends to *El Siglo*, which publishes it as an original article. The patient at first attached no importance to the phenomenon. Fifteen years before he had become totally blind from disease of the optic nerves and from the very onset of his blindness he noted that certain sounds produced visual effects. For example, the first bars of Gounod's *Ave Maria* called forth a color hard to define—a sort of mixture of violet and rose. This appeared only as a haze without definition. On certain occasions he beheld an emerald green on hearing the violin. Commenting in this case Ribon states that chromacousia is seen in Colombia under exceptional circumstances. He himself knows of a subject who sees blue under the influence of certain musical airs of which he does not know the names; he never pays much attention to the phenomenon. The color seen by the blind correspondent on hearing Gounod's air is doubtless light violet, for that is the shade, along with blue, which Gounod's music usually produces in the subject predisposed to chromacousia. The author has written on the psycho-optic and psycho-auditive centers and in this study had already published the fact that the music of this composer aroused a sense of either violet or turquoise blue. There is no doubt that a concerted effort by ophthalmologists, otologists, psychiatrists, etc., would bring to light many facts in connection with chromacousia, a phenomenon not usually associated with blindness and perhaps in the latter case having a somewhat different motivation.

Gazette des Hôpitaux.

July 13-15, 1920, xciii, 62.

Fatigue.—Laumonnier reviews the recent work on this subject by Mme. Ioteyko, upon which subject she has proved herself one of the world's greatest authorities. Experimental and occupational fatigue are both concerned. Fatigue is so universal a condition that it is seen in the inorganic world and metals when tested for torsion, etc., may exhibit fatigue states. But this form, which is purely a question of physics and molecular activity, is not closely related to fatigue in living beings. As a matter of fact there is nothing to correspond to fatigue in the vegetable kingdom (with the single exception that in experiment the so-called "sensitives" can be exhausted). Of protozoa in the free state the same may be said and we can actually induce exhaustion in cultures of protozoa, yeasts, and bacteria by rendering conditions sufficiently artificial. Here fatigue and vitality appear to be the same thing, which is not true necessarily of mankind, in some of whom exhaustibility may be extreme, yet with great tenacity of life. But it is not certain that fatigue always connotes exhaustion, for we cannot be sure that the phenomenon has not a component of inhibition. In the protozoa, for example, the conditions under which fatigue can be made

to appear are evidently those which favor inhibition. Fatigue is chiefly a phenomenon of the higher metazoa in which within a closed sac there is a circulatory system and fluids of a composition nearly constant. This necessitates elimination of waste products by certain organs adapted for the purpose. Accumulation of a certain amount of such products means fatigue. The need for sleep is best explained on this ground, that cerebral activity is periodically inhibited until this excess is gotten rid of.

La Presse Médicale.

July 17, 1920, xxviii, 49.

Physiological and Pathological "Ringers."—Frenkel writes of certain counterparts in physiological and pathological syndromes, using the word "socie," which may be rendered by the slang term "ringer" (first used in connection with trotting races in which one horse was substituted for another which it strongly resembled). The author divides these into two groups, in one of which the exaggeration of a physiological syndrome simulates a disease, while in the other two pathological conditions having little in common may outwardly resemble each other. Under the first head the continuous evolution of symptomatology of the objective or measurable type promises that it will be well represented in the future. As an example take the case of the "sign of Musset," a physiological behavior dependent on the elasticity of the vascular walls, which closely resembles a pathological cardiac arrhythmia. The method of graphics enables us to illuminate this resemblance. So the protodiastolic *bruit de galop* may not represent a diseased state but only an exaggeration of the so-called "third sound of the heart." Mickulicz's disease of the lacrymal and salivary glands has its physiological analogue and the author has doubts that it is really a diseased condition at all. Anisocoria as is well known may be purely physiological, and the author finds many other simulations of the same type in ophthalmology. In regard to the other form he mentions meningeal reactions which closely simulate one another yet which are found to depend on very different basic conditions.

La Presse Médicale.

July 24, 1920, xxviii, 51.

Biochemistry in the French University of Strassburg.—Nicloux delivered the opening lecture on the chair of medical chemistry at this university, which chair was originally inaugurated in 1870, just in advance of the war which lost the college to the Germans. The original chair of chemistry had been initiated in 1794, and largely as a result of the pioneer work of Lavoisier between 1772-1786. The old faculty professors down to 1870 were not so well known, although Cailliot, the last incumbent, was said to have been a remarkable chemist. Driven out of the city by the German conquest he moved to Paris and attached himself to the laboratory of his old pupil Wurtz, where he continued his valuable studies on the terebenthines and allied substances. The German incumbents were Hoppe-Seyler until 1895, and Hofmeister until the school passed back to the French. The lecturer then passed to the careers of two great French biochemists, Wurtz and Schützenberger, whose names suggest their Alsatian origin. Both men were born in Strassburg. Wurtz, born in 1817, was a resident of the city until 1843, studying under Cailliot and later under Liebig. At Paris he succeeded Dumas as faculty professor of medical chemistry. In 1874 he organized the chair of organic chemistry at the Sorbonne. Schützenberger, also a pupil of Cailliot and later his assistant, remained in his native city until after the war, after which he became professor in the Paris School of Industrial Chemistry. Had it not been for the German occupation he would doubtless have succeeded Cailliot in the Alsatian University. The leading activities of Wurtz were directed to hypophosphorous acid, the cyanogen compounds, the compound ammonias and ureas, carbides having mixed radicals, mono- and polyatomic alcohols and other important aspects of organic chemistry while his colleague is best known for his work on alkaloids, compounds of acetic acid with carbohydrates, platinum compounds, the rare earths, etc., and in the industrial world sodium hydrosulphite —the powerful reducing agent—indigo, etc. His labors on cleavage products of albumins must also be mentioned.

Norsk Magazin for Laegevidenskaben.

August, 1920, lxxxi, 8.

Angina Vincentii.—Voss of the Epidemic Hospital at Ullevaal, says that he sees from 3 to 5 cases of this malady annually but during the last 4 months there have been 16 new cases. The associated germs which cause it were first described by Miller in 1882 but in ulcerative stomatitis. Of the 16 patients all but one were men and the age period was 17-23. The ulcero-membranous and diphtheroid forms are recognized, the latter being much less common and at the same time, despite its name, much milder, running its course in about a week, while the severer form may persist for months. The truth of these assertions was upheld at the authors' clinic, for all the cases were ulcerous. The general reaction is very mild, but there may be severe pain in the throat. On inspection one sees one or both tonsils swollen but this is not inevitable and there may be no swelling anywhere. In these negative cases like the others there will be a membrane on the tonsils in the diphtheroid cases, which when detached leaves a bleeding surface which soon reproduces a new membrane. The ulcerous form may be distinguished by the presence of one or a number of ulcers in various localities, usually below the level of the tonsil, but at times on the soft palate and uvula, the tonsil and gums. In regard to infection at a distance both nephritis and endocarditis have been seen rarely and apparently not of a severe type. The odor of the breath will alone enable an expert to make the diagnosis, but for routine diagnosis and differential diagnosis smears and cultures must be made. The salvarsan treatment proved to be absolutely specific and it does not appear that the injection method is necessary, for the local application of the dry powder or 2 per cent. glycerin solution answered the purpose. Neosalvarsan was not so efficient.

Finska Läkaresällskapets Handlingar.

May-June, 1920, lxii, 5-6.

Wound Diphtheria.—Von Wendt and Wallgren report two cases of wound diphtheria which occurred in the same clinic at the same time. One subject was a wounded veteran of the war, who had submitted to an operation for an aneurysm for which a ligation had been done in the continuity of the right leg. Three weeks later the appearance of the operation wound suggested a probable hospital gangrene. The other case was an appendicitis operation which was complicated by peritonitis at the time; the wound made by the operation had first enlarged and then ulcerated. The first case was complicated by severe toxemia as shown by cardiac weakness, heavy albuminuria and disturbances of accommodation, while in the other there was no notable constitutional reaction. Both cases showed the diphtheria bacillus, streptococci and staphylococci, proteus and various anerobic obligates and the finds were strikingly alike. The first case was accepted as it stood, but in the second by reason of the absence of general reaction animal experiments were made and inoculation of guinea pigs gave positive results. Local measures were inert until Dakin's solution was tested and this had a marvelous result on not only the local, but the general symptoms of the first subject. The solution was applied to the wound by the well known Carrel's method.

Late Result of a Bone Transplantation.—Faltin reports the case of a subject who as a result of an osteochondroma submitted to a resection in the upper portion of the fibula. A piece of the tibia of the opposite side 9 cm. in length was removed and implanted in the osseous defect and healed in properly. Six years later there was a reexamination. The *x*-ray showed dense bony tissue at the seat of the transplant, the structure of which shaded into the fibula without sharp transition. The result, the author says, was approximately perfect.

Book Reviews.

RAMBLING RECOLLECTIONS. An Autobiography. By A. D. ROCKWELL, M.D. New York: Paul B. Hoeber, 1920.

IT has been said that the autobiography of anyone—poet or peasant, saint or sinner, millionaire or pauper—if honest, could not fail to be interesting, as a human document at least. This is to be accepted with reservations, for not every one is humble enough and simple enough, or even with enough sense of humor, to reveal himself satisfactorily to the world. But no such reservations apply to this book. It is written so simply and honestly and, although an autobiography, is so free from any offensive personal note, that it gives pleasure from the first page to the last. Dr. Rockwell was the son of a school teacher and was born in New Canaan, Conn., in 1840. His boyhood was passed in western Connecticut, but he was sent to Ohio for his college education, Kenyon being the institution chosen, for religious reasons, by his father. His medical education was begun in the office of a physician in Milan, Ohio, continued in Ann Arbor, and completed—at least up to the stage of graduation—at Bellevue Hospital Medical College, New York. Upon graduation he entered the army and served as surgeon to the close of the Civil War. He then returned to New York and attended a course of lectures in the College of Physicians and Surgeons. After a brief experience in general practice Dr. Rockwell became a partner of Dr. George M. Beard, his career from that time on being well known to New York physicians, among whom he was one of the first electrotherapeutists, doing much to raise that branch of science out of the disrepute in which it lay for so long a time.

In the list of well-known men whose paths were for a time collinear with Dr. Rockwell's may be mentioned General Sheridan, Austin Flint, Salmon P. Chase, Edwin M. Stanton, John Jay, Mark Twain, General Sherman, and Commodore Vanderbilt.

To Dr. Rockwell's many friends and acquaintances this autobiography will of course be intensely interesting, but even those who have not the good fortune of a personal acquaintance with the author will find this real history of a doctor's life far more entertaining than many a book avowedly designed for entertainment.

THE DAWN OF MODERN MEDICINE. An Account of the Revival of the Science and Art of Medicine which took place in Western Europe during the latter half of the Eighteenth Century and the first part of the Nineteenth. By ALBERT H. BUCK, B.A., M.D., Formerly Clinical Professor of Diseases of the Ear, Columbia University, New York; Consulting Aural Surgeon, New York Eye and Ear Infirmary, etc. New Haven: Yale University Press; London: Humphrey Milford, Oxford University Press, 1920.

THIS volume is a continuation of Dr. Buck's former work on "The Growth of Medicine." Readers of that book will welcome the present volume; and that large class of physicians to whom the History of Medicine is almost a sealed book will find this new work a most delightful introduction to a fascinating subject. The period covered by this volume contains names which are familiar to all educated people; and the novice will feel that he is not confronted with mere names which belong to a period so remote as to be negligible. Thus, to select merely a few instances, the reader of this volume will find an interesting account of Laennec and the introduction of the modern method of auscultation; of homœopathy and some of the reasons why it obtained a footing; of Percival Pott and his description of the disease which goes by his name; of the brothers Sir Charles and John Bell, and their work in anatomy and surgery; and of Bichat and his investigations in anatomy and physiology. Other names which adorn this period are Abernethy, Astley Cooper, Lavoisier, von Haller, Magendie, Larrey. Of all of these and of many others, Doctor Buck gives us, not a complete history, but a brief and graphic account of the main facts of their career; and the story is told in such an interesting way that the reader is likely to venture on some larger work for further information. The greater part of the work deals with Medicine and Surgery in Switzerland, Germany, Italy, England, and France during the period mentioned on the title page; there are also chapters on Smallpox, on Broussais and Broussaism, and on Hospitals and Teaching Organizations. The book is well printed and profusely illustrated; and the author is to be congratulated on having produced a most attractive and readable work on the history of medicine.

THE NEWER METHODS OF BLOOD AND URINE CHEMISTRY. By R. B. H. GRADWOHL, M.D., Director of the Gradwohl Laboratories, Chicago and St. Louis; Director of the Pasteur Institute of St. Louis; and A. J. BLAIVAS, formerly Assistant in Same; formerly Assistant in Chemical Laboratory, St. Luke's Hospital, New York City. Second Edition. With seventy-five illustrations and four color plates. St. Louis: C. V. Mosby Company, 1920.

WE are glad to note that the reception accorded the first edition of this work has been such as to warrant the preparation of a second edition. The increasing interest in the chemistry of the blood is shown by the fact that a number of methods and changes in technique, newly introduced since the publication of the first edition three years ago, have been incorporated in this revision. The authors still adhere to their plan of giving, as a rule, only one method for each test. This is perhaps better if the book is to be used only as a guide for beginners in this branch of laboratory work, and also serves to limit the size of the book, keeping it within the dimensions of a convenient manual; but professional analysts and advanced laboratory workers would need a book giving details of all the methods and techniques of proved value.

ANATOMIE DES MENSCHLICHEN GEHIRMS UND RÜCKEMARKS AUF MYELOGENETISCHER GRUNDLAGE. Von PAUL FLECHSIG. Erster Band. Leipzig: Georg Thieme, 1920.

THIS volume is practically an atlas, having but 48 pages of text aside from the descriptions of the plates which are very full. The plates number 25, each comprising a number of sections of the brain or histological figures, the total being well above a hundred exclusive of a number of text figures. The textual or first part of the volume deals with myelogenesis as a method of research, myelogenetic cortical fields and the relations of myelogenesis to pathology. The bibliography comprises 49 references to works of the author alone, of which the volume represents the summation. These extend from 1872 to date. The author published his celebrated studies of the cortex in the 80's and 90's of the last century with special reference to association centers.

A TEXT-BOOK OF OPHTHALMIC OPERATIONS By HAROLD GRIMSDALE, M.B., F.R.C.S., Ophthalmic Surgeon and Lecturer on Ophthalmic Surgery to St. George's Hospital, Surgeon to the Royal Westminster Ophthalmic Hospital, and ELMORE BREMERTON, F.R.C.S., Consulting Ophthalmic Surgeon to the Metropolitan Hospital, Surgeon to the Royal Westminster Hospital. Second Edition. New York: William Wood and Company, 1920.

THE expressed object of the authors is to give the student, in outline, the chief ways in which the various problems have been attacked, and to leave him to adapt some one of them to his varying requirements. In this second edition they have not found it necessary to deviate very much from the lines originally laid down. The order of chapters, based on the order in which they found it convenient to proceed when teaching the subject to students, has been retained almost unchanged, and includes, in sequence, operations on muscles, for ptosis, on the lids (two chapters), on the conjunctiva; enucleation and its substitutes; operations on the lacrymal apparatus and bones of the orbit; cataract; after-cataract; the operative treatment of glaucoma; some operations on the cornea, sclerotic, and iris; foreign bodies in the eye. It is manifestly impossible, in a book of 427 pages of text, to give descriptions of all ophthalmic operations, or to make such a selection of operative procedures as would meet the approval of all readers. The concern of the authors with the classification more than with the examples chosen to illustrate it, seems to find justification.

Society Reports.

AMERICAN THERAPEUTIC SOCIETY.

Twenty-first Annual Meeting, Held in Philadelphia, May 7 and 8, 1920.

(*Concluded from page* 538.)

The Interrelationship of Tonsillar Infections and Their Bearing on Treatment.—Dr. HARRY B. ANDERSON of Toronto, Canada, read this paper. (See page 589).

The Anatomy and Physiology of the Tonsillar Structures in Relation to Cryptogenic Infections.—Dr. GEORGE B. WOOD of Philadelphia presented this communication. (See page 593).

Dr. SPENCER L. DAWES of New York said that he wanted to compliment Dr. Wood on the study he had made and the beautiful microscopical work which he had shown. He had never seen, during 30 years of practice, any more beautiful and illuminating display of slides.

Dr. CHARLES E. DE M. SAJOUS of Philadelphia, after expressing his appreciation of the work of Dr. Anderson and also of the study of the physiology of the tonsils by Dr. George B. Wood, stated that for some years he had been investigating the relation between the ductless glands and influenza. Recently—very unfortunately only after the pandemic of 1898 and the recent epidemic—he had been able to obtain some light in this direction. He felt that here lay the fundamental explanation of this fell disease. As to the relation between the pathology of influenza and the tonsils there existed a connection of great importance. He had traced the bacteriology of Pfeiffer's bacillus throughout the respiratory channels—the nose, nasopharynx, and tonsils, and the lymph channels along the respiratory tract and bronchioles. It was only when the pulmonary alveoli were reached that he had struck what he regards as the keynote of the disease. Here he had found conditions similar to those which in the laboratory made it possible to cultivate the Pfeiffer bacillus —hemoglobin, oxygen, and elevated temperature. In respect to the tonsils, the salient feature to bear in mind was the all-important role of the defensive barrier afforded by the upper respiratory tract. If the Pfeiffer bacillus was able to reach the pulmonary alveoli after running the gauntlet of its defenses, and also those in the bronchial tree—phagocytic, epithelial, and mucoid—then only did infection occur. The alveoli then became the seat of what the speaker termed a "necrotic alveolitis," a condition which was special to the disease, and which pathologists had recognized as such. The role of the tonsils and of the lymphoid structures of the nasopharynx could be compared to that of a ring of forts through which the air contaminated with Pfeiffer bacillus had first to pass. Tyndall had shown, in fact, that contaminated air, after passing through the nasopharyngeal area was perfectly sterilized. Such being the case the prevailing tendency to remove the tonsils promiscuously would seem to involve risks. Their identity as participants in the protective mechanism should be considered. Efforts might be made to treat them actively if need be, but at the same time, preserving, as was done in thyroidectomy, what portions of the parenchyma were still able to carry on the glandular protective functions.

Dr. A. E. ROUSSEL of Philadelphia said that he thought the tendency to-day was to sacrifice fewer tonsils. This paper brought up a question as to the value of tonsil surgery. Dr. Packard, about 25 years ago, pointed out that endocarditis not infrequently followed acute tonsillitis. That was the first work on focal infection. The chronically infected tonsil contributed a good deal to ill health. Often a persistent albuminuria was associated with such cases. Patients were frequently discharged after an attack of acute tonsillitis, the albuminuria having passed away for the time being onyl, and later a chronic kidney condition was found. This albuminuria was not physiological, but it showed a relative weakness. In studies he had made on some young men of a winning boat crew a slight albuminuria was observed in several cases after return from a race. The career of these men was followed and in later life a larger percentage than one would expect died of kidney disease. Acute virulent streptococcic infections were interesting. Forms of tonsillar and peritonsillar infection showed a remarkable degree of persistency and some cases developed endocarditis.

Dr. N. P. BARNES of Washington, D. C., said that he would like to call attention to the enormous amount of work Dr. Anderson had done. Arthritis and endocarditis were common sequelæ of tonsil infection. Several points need especial emphasis in this subject. During the periods of the year when people lived out of doors, they breathed better air and had better health, thus being able to live above their infections. During the winter months there was less ventilation of the homes, resulting in lowering of vitality. Consequently, there was an increased percentage succumbing to infections. Arthritis and constitutional disorders were more prevalent at that time. The cases that did not succumb to the acute exacerbation, went on to swell the numbers of creaking and enlarged joints, lame backs, and cardiovascular changes of old age. The mucous membranes of the throat should be treated kindly. In some families a sore throat was treated with everything from iodine to kerosene. This not only removed the protecting mucus and left a highly sensitive, reddened mucosa, but actually injured the membrane and lessened its ability to resist infection. In some laboratory work done on tonsillitis, it had been recognized that when the tonsil was removed during an attack of tonsillitis, there was found a high percentage of organisms, mostly streptococci. If the operation was postponed until later, the tonsil infection was not so pronounced. The argument would seem to be to eradicate the tonsil before the infection got through to the joints or the heart. The infection often appeared in the joints in from ten days to two weeks after the tonsillar infection. Absolute enucleation of the tonsil was necessary. Tonsillotomy was of no benefit as it left a submerged, buried form of infection. The entire capsule must be removed.

Dr. GOODMAN of Brooklyn asked if there was any anatomical or etiological connection between the tonsils and the hypophysics.

Dr. THOMAS F. REILLY of New York said he had been sceptical as to the value of removal of the tonsils till last winter when he saw a case of myasthenia gravis in which there was no history of focal infection except in the tonsils. After transfusion the tonsils were removed and the boy's whole aspect changed. He had seen other cases, but not so marked. This was very strong evidence that the tonsils were foci of infection. He would like to know if Dr. Wood considered it bad policy to do surgery during the attack. The surgeon could remove a large portion in acute inflammation. Did that do the patient any real harm? This had not been discussed. It would be bad surgery in other parts of the body. Another point was whether the infection might not be due to blood stream infection rather than to local or focal infection. Perhaps the streptococci of a particular strain might have a chemotactic effect in the tonsils just as some strains had for the gall bladder and gastrointestinal tract. Perhaps they got into the glood first, reached the tonsils and then got back to the lymphatics. Many infections began that way in the lung, peripherally first, and then worked back from the lung and hylus to the lymphatics. Would Dr. Wood discuss that paradox?

Dr. ANDERSON, in closing, said that he wished to add his appreciation of Dr. Wood's paper, to that of the other members. It was a very comprehensive paper. His own point of view was that of the clinician. He was glad to have heard this splendid description of the anatomy and physiology of the tonsil. In regard to Dr. Roussel's remarks about albuminuria there was probably a persistence of local infection which was the original cause of the trouble. If such infection was left sealed up in the tonsil it meant a progressive renal condition. If the infection was removed the case might progress to cure.

Dr. WOOD, in closing, said that it was difficult to appreciate the amount of work that Dr. Anderson had done in getting the material ready for this paper unless one had had experience in this type of bacteriological study. From the comparatively few number of tonsils that Dr. Wood had himself examined bacteriologically he could understand something of the time

and patience required when hundreds of cases were cultured and a differential diagnosis made as to the infecting organism. However, in spite of all this work, Dr. Wood felt that, at present, our knowledge of tonsillar infection was far from being absolute and that the only positive way to determine whether or not a tonsil was the source of a cryptogenic infection was the removal of the suspected tonsil or tosils. In his own experience he has sometimes found that the most vicious tonsils would prove to be innocent while the innocent looking tonsils would occasionally prove to be most vicious. However, except for the discomfort and slight risk of the operation the removal of the tonsils when properly done was an absolutely harmless procedure, and their absence could in no way have any deleterious effect on the patient. According to the best of his knowledge there was no connection between the pharyngeal tonsil and the typophysis. It was against all surgical principles to operate on tonsils during an acute attack but in one case in which he was forced to operate on account of dyspnea, there was no excess of bleeding and even though a tracheotomy had to be done a few hours after the operation the patient made an absolute normal recovery. Dr. Wood did not believe in blood infection of the tonsils but could conceive that in a general bacteriosis they might be involved as could any organ of the body.

The Therapeutics of Benzosulphinide.—Dr. REYNOLD WEBB WILCOX of New York read this paper (see page 595).

Dr. JACOB DINER of New York said that people were accustomed to take four or five lumps of sugar, which was the same as an alcohol derivative, and produced a systemic effect. Benzosulphinide might be used with better advantage to the health.

Dr. WILCOX said that this subject had come before the New York courts and he had been called upon to give testimony. This action finally reached the Court of Appeals in the State of New York and the decision was based upon the fact that benzosulphinide was harmless. He was a member of the Revision Committee of the Pharmacopœia and was responsible for the drug coming into the Pharmacopœia as an antiseptic. The anticeptic properties were, however, not particularly marked. Various boards of health had made an officious ruling against the use of this substance, but they were offset by the decision of the Federal and State courts wherever the scientific facts had been considered.

Third Session—Saturday Morning, May 8.

DR. H. B. ANDERSON, VICE-PRESIDENT, IN THE CHAIR.

A New Procedure to Prevent Spinal Puncture Headaches.—Dr. GUSTAV BAAR of Portland, Ore., presented this communication, which, in his absence, was read by Dr. Anders of Philadelphia. (See page 598.)

Dr. JOHN C. HEMMETER of Baltimore said that he wished to congratulate the society on this very interesting paper, by one who was apparently an able and careful clinician, with conservative and critical judgment. The hydrostatic explanation of the headache was given. The brain floated, it did not rest anywhere on the bony cavity, and when fluid was withdrawn the twelve pairs of cranial nerves rested on the bottom of the cavity with production of pressure. The use of saline solution to replace fluid had its foundation in this fact. There was a rapid osmosis which put the watery cushion back and removed the pressure.

Dr. J. M. ANDERS of Philadelphia said this theory seemed to be quite a plausible one. Those who had had long experience with spinal puncture work were familiar with these headaches and would welcome any method for overcoming them. The method seemed to be founded on a rational basis. It should lead them to make further observations in the same direction and if the work were corroborated it would seem to be a step in advance.

Dr. HENRY BEATES of Philadelphia said that intracranial blood pressure was regulated by the innervation of the trisplanchnic area. The headaches were caused by disturbance of the intraabdominal circulation resulting in relative intracranial ischemia. It had been his practice to treat these headaches with full doses of digitalis. In "Katzenjammer" there was trisplanchnic venous passive congestion and the resultant cerebral ischemia. Full doses of this drug would prevent the headache. In spinal puncture headache, preceding the operation, one could give one-fourth to one-half a grain digitalin, or two to four c.c. digitalin. The former, in 10 c.c. of physiological salt solution hypodermically, would arrest the symptoms. The mechanical effect of posture in ameliorating this type of headache and the physiological prevention with digitalis therapy, could be explained practically in a similar manner—an intracranial circulatory equilibrium was maintained and results thereby secured.

Dr. JACOB DINER of New York said that in the paper it was stated that a 5 per cent. solution of sodium chloride was used. That needed verification. He thought there was a typographical error and the author meant 0.5 per cent. On two occasions he had seen 1/5 per cent. used, and it was attended with serious results.

Dr. J. C. HEMMETER said that the author meant 0.5 per cent. This was an error in the typewriting.

Intestinal Infection with Lamblia Duodenalis.—Dr. JOHN C. HEMMETER of Baltimore made this presentation. He said that this organism was at present also known by the name of "Giardia." The organism had been observed and classified under many names, which had led to some confusion. Dr. Hemmeter had observed the first case reported in America, and since then two cases had been seen in the practice of a Baltimore physician. The case observed by the speaker was in a male child of three years, born in Crisfield, Md., of healthy parents, but the child had suffered abdominal pain and distention since birth. The parasite, a flagellate protozoan, was very common in the upper part of the small intestine of the ordinary house mouse, the brown and the black rat, and the field mouse; it occurred also in domestic cats, dogs, sheep, rabbits and guinea pigs. Man became infected by eating food soiled by mouse excreta containing the encysted stage of the organism. Children probably became infected by being left to crawl about on floors accessible to the animals referred to. The parasite attached itself by means of the sucker, to parts of the duodenum and jejunum, and in severe cases it occurred in the ileum. In diarrheal cases the organism was not found encysted, and freely motile forms were found in the stools. The stool had to be observed warm, to note the motility of the parasite. The parasite probably occurred more commonly than was supposed, because systematic stool examinations were infrequently practised, and also because the usual diarrhea and dysentery remedies were destructive to the parasite. Tannic acid derivatives destroyed it. These remedies could not be given to children, however, in sufficient strength to destroy the parasite. In all cases of diarrhea in children with offensive stools the feces ought to be examined for this organism. The creature attached itself to the small intestine by suction. Observed in warm stools the movements, by means of the flagella, were surprisingly rapid. Its nutrition was by osmosis. It was hard to tell how long individuals had been infected with the parasite, as cases were found infected by millions without exhibiting any clinical symptoms. It was observed that the stools of patients infected were enormously increased in bulk when there was no diarrhea. This was due to two facts, first, the parasites might multiply so enormously that they increased the bulk of the stool; secondly, they might cover absorptive epithelium so completely that food could not be absorbed and reduced in bulk. The acidosis, sometimes observed, was probably due to slow starvation. The organism was usually associated with other intestinal parasites. Although lambiliasis was not so serious as amebiasis, it should not be taken too lightly, for even if the individual was not seriously ill he might become so if not treated. The most effective therapeutic agent was found to be hexamethylenamine tetranime, which rendered the bile sterile. In children the dosage should be graduated according to age and weight. One grain of the above with ½ grain of salol, three times a day, in a child of three years, cleared the intestine within ten days. It would seem advisable to give radium and the *x*-ray a trial, as this would weaken the parasite, which could then be expelled by castor oil. It was important to maintain the nutrition of the patient during treatment. The introduction of methylene blue through a duodenal lavage tube was an effective

form of treatment. Colon irrigations could also be used. When there was associated amebiasis, emetine should be given. In any case treatment should be instituted and persisted in, as continued lambliasis had been known to cause perforation and death.

Dr. N. P. BARNES of Washington asked if ipecac would have any effect on the organism.

Dr. HEMMETER said that these infections were always double, *Ameba hemolytica* were always present with *Giardia*. Emetine had an effect in hypodermic injections on the amebiasis, not on the lambliasis. The patient usually improved and one thought him cured, but there were cycles of recurrence and of quiescence. The patient should be watched.

Dr. H. B. ANDERSON of Toronto asked where these cases originated.

Dr. HEMMETER said he thought they were all imported. In one healthy family in Baltimore there were three daughters affected. It was found that the nurse had been in Constantinople during the war. She had no symptoms but the stools were full of cysts. It was a rare infection and it was to be hoped that it would stay rare. One patient whom he had seen came from tropical regions.

Report of a Case of Encephalitis Lethargica.—Dr. WM. A. CAMPBELL of Colorado Springs reported this case. (See page 434.)

Dr. THOMAS F. REILLY of New York said that the study of these cases was very stimulating and interesting. There were three groups: (1) cases in which the diagnosis could be made at once; (2) those in which the disease was apt to be mistaken for some other, as typhoid fever, meningitis, or tuberculosis; (3) the very mild cases which passed without any attention at all, until perhaps some serious symptom happened. In one man seen with dyspnea and a temperature of 102° there was nothing found; the Widal was negative, all the tests were negative. The case was called typhoid fever. After a week or two there occurred a tremor of the diaphragm. The man got progressively worse, became somnolent, and died. The disease was diagnosed typhoid fever, but at autopsy it was found that the case was encephalitis lethargica. The tremor might be of value in doubtful cases but it was not present in all. In another case there was unusual vomiting, temperature of 102°, negative blood findings, and the case looked like tuberculous meningitis. There was partial Kernig. Sometimes this tremor or "shimmy" sign was present, sometimes not. One man said that if the case got well it was encephalitis, if it died it was tuberculous meningitis. Another case went insane and was transferred to Bellevue. There were psychoses, and the "shimmy sign" was present. There were double vision and other eye symptoms. At autopsy encephalitis was found. A year or two ago one would have called these patients insane. There was no doubt that many cases were picked up among the flotsam and jetsam of the city. These people had alcoholic history and were victims of exposure. The tremor recalled Parkinson's disease. It was not difficult to diagnose. The problem was for the neurologist. Many of these cases had no doubt been called neuritis. The patients came in complaining of a terrible pain, first on one side, then on the other. These were of thermic origin, with referred pain to the nerve branches. In one case a man complained that he went to sleep after luncheon every day and could not keep awake. The physician told him he had digestive symptoms. On questioning he complained of slight blurring in the eyes, stiffness in the back of the neck, and occasional pains in the legs or arms. On looking him over very carefully there was found a slight droop of the mouth on one side. He also said he had difficulty in urination. It was half an hour before he could start the stream. Such a patient would have been called neurasthenic two years ago, or he would have been given alkalies for indigestion. It was necessary to look very closely at these cases, and if this study cleared up some portion of that group of cases called neurasthenia, it would have been worth while. Seventy per cent. of the cases were associated with influenza and enlargement of Steno's duct was found in seventy per cent. The cases had been related to influenza as far as treatment was concerned. The "shimmy sign" was diagnostic. It was an involuntary clonic contraction of the muscles. Benzyl benzoate lessened the frequency of this contraction. Hexamethylenamine was used for internal treatment. One patient improved on large doses of iodine. There were no luetic symptoms.

Dr. A. E. ROUSSEL of Philadelphia said that a certain proportion of cases had not been recognized, but he could hardly agree with the last speaker that they were as common as he thought. He had seen nine cases in 1½ years. These were distinct cases of the so-called Parkinson type. One remained under treatment 6 months. He was seen by Drs. Anders, Stengel, and Dercum. Some of the other cases were seen in consultation. Dr. Roussel said he was rather sceptical about the introduction of new diseases. He remembered distinctly in 1889-90 he was assistant to Dr. Pepper and he saw a case of this type.. Epidemic cerebrospinal meningitis and anterior poliomyelitis were the only instances of comparatively well-defined new diseases. There was no doubt in his mind that this disease was the direct result of epidemic influenza. There is pretty clear clinical evidence of the disease. In some patients there are distinct somnolence, but in others the ptosis conveys an impression more apparent than real. There is hyperesthesia, the reflexes are increased and motor ocular symptoms were prominent; leucocytosis and orientation hallucinations were frequently present. The patient might have to be fed by rectal tube. In one instance, 14 months after discharge, there were slight evidences of difference on the two sides of the face, and tremor was still present, although otherwise the patient had gained. This could be called an influenza sequela. In one case a mother nursed two children with influenza. She did not have it herself, but had pain in her ears and consulted an aurist. The patient slept a good deal, but one could not state positively that this was a case. He did not think it so rare, nor yet so common, as some people supposed. The treatment was entirely symptomatic. Electricity was useful.

Dr. R. W. WILCOX of New York said that there were two or three points that should be emphasized. The condition under discussion was, in the vast majority of instances, associated with an infection. It need not be a specific one; various infections were followed by this disease. It was the experience of those who had seen a great deal of the condition that the most unpromising patients would recover, even after a considerable period of time. In one instance, resulting in a life insurance investigation, the speaker had been asked to decide whether a proprietary hypnotic had caused death. He decided that this cause could be excluded. In another instance, seen in consultation, he had directed a rather large hypodermic injection of caffeine salts to arouse the patient for feeding and for attending to the calls of nature, and this had led to a successful outcome.

Dr. JACOB DINER of New York said he was glad to hear the remarks of Dr. Roussel. The asthenia was often a sequel. There was probably a glandular disturbance, but this was not monoglandular. There was no such thing. It was a pluriglandular unbalance. There was evidently a marked disturbance of the endocrine system. One did not really know the name of this disease.

Dr. D. R. TUCKER of Richmond, Va., said that he had had considerable experience with encephalitis; he had reported eleven cases in the *Journal of the A. M. A.* in May, 1919, and had seen about nine cases since. He was interested in the 1899-90 epidemic in that the cases seemed to have followed influenza and that the Vienna workers had considered it an aftermath of influenza. Of his own cases three came to autopsy. None of these had meningitis, but there were cobweb adhesions over most of the lower part of the brain. The ventricles were dilated in all three cases, and in one case the patient had had eleven lumbar punctures. The pituitary body was swollen; the capsule was tight and there were capillary hemorrhages found in the gland in all three of these autopsies. He did not know what relation the pituitary had to the somnolence, but the pituitary was certainly greatly involved. Some of the patients had acidosis and most of them would wake to take food and medicine regularly. He advocated the use of urotropin, and, as the spinal fluid was always under pressure and the ventricles

were dilated, frequent lumbar puncture was advisable. He had tried a new treatment which had been used in England for violent cases of chorea. This consisted of withdrawing 50 c.c. of blood, centrifuging it until a clear serum was obtained, which was inactivated. From 18 to 25 c.c. of this serum was injected intraspinally, after an equal amount or more of fluid had been withdrawn. This was tried in two cases, and in each case the patient was greatly improved the next day. The method was repeated and still further improvement gotten. He suggested this as an interesting field for therapeutic investigation.

Dr. C. E. DE M. SAJOUS of Philadelphia said that the tendency to somnolence in influenza was accounted for by the newer pathogenesis of the disease he had previously submitted. Many years ago he had urged that the theory of respiration taught in text-books of physiology was erroneous and misleading, and was even yet responsible for the lack of progress in the successful treatment of our most deadly pulmonary diseases. The speaker in 1903 had pointed out, and it had been confirmed since, that the secretion of the adrenals furnished the substance which, in the alveoli, caused the hemoglobin to be converted into oxyhemoglobin, the substance through which all tissues, including the nerves, were oxygenized. As he had previously urged, in respect to influenza, the Pfeiffer bacillus found, in the pulmonary alveoli, when allowed by the defensive functions of the respiratory tract to reach these air vesicles, the very conditions (temperature, hemoglobin, and oxygen) needed in the laboratory to obtain cultures of this bacillus. These cultures causing, as stated, a necrotic alveolitis, the respiratory function was correspondingly reduced, a process entailing lowering of the oxygenizing properties of the blood, as well shown by the more or less marked cyanosis so often observed, and sufficient in some to cause the patient to become almost black. This explained, according to the speaker, the tendency to somnolence. In the lowered oxidizing activity of the body there was produced a condition of lowered metabolism so marked as to inhibit all the cellular functions, including those of the cerebrum, the somnolence in some cases reaching a condition of lethargy which had caused the condition to be mistaken for sleeping sickness or encephalitis lethargica in many instances.

Dr. SPRAGUE of Washington, D. C., said that he would believe anything of the influenza organism, and it was probable that it was the cause of the somnolence. Fifteen years ago he had found the Pfeiffer bacillus in pure culture in the spinal fluid of meningitis. Since this epidemic in the last two years they had seen many cases of encephalitis. There was some abnormal condition of the brain, and it was difficult to make the differential diagnosis between meningitis and encephalitis. One point to be noted was the occurrence of these diseases in pregnancy. He had had a patient referred last October, threatened with eclampsia. She was operated on for congenital absence of right kidney, tube and ovary. She was taken to Washington, and on arriving at the hospital could not be wakened up. The patient had endocarditis, and distinct vegetations were found. The woman died in hospital, but in that case no treatment could have made any difference. Fleeting paralyses occurred in that case. There was ptosis and anesthesia over one side of the body.

Dr. CAMPBELL, in closing, said that in the epidemic of 1889-90 he had seen cases of a lethargic, somnolent character which were then diagnosed as "nona." The conditions were identical with those now described under the name of lethargic encephalitis. Like cases had been described in the histories of all past epidemics. This would lead one to believe that there was some connection between encephalitis and influenza—that the germ causing influenza was a potent factor in causing encephalitis. Cultures from the nares had been carried to the eleventh generation, and when injected into a monkey caused typical encephalitis. Encephalitis had been noted following many acute infectious diseases. This would lead one to draw the deduction that encephalitis was not due to a specific infection from influenza—if there was one—but to a microorganism that was common to all the infectious diseases. He had recently been consultant in a case of encephalitis in a child of five years who commenced with an influenza attack followed by a suppurating mastoid (which was operated on), and this was followed by an encephalitis. While the discussion of symptoms might be important as helping one to make a proper diagnosis, he regretted that the discussion had not brought out more on the treatment of the malady.

A Case of Lymphosarcoma.—Dr. A. F. ROUSSEL of Philadelphia presented a case of lymphosarcoma which had infiltrated the lymph nodes and surrounding structures. The patient was sent to him as one of Hodgkin's disease. The woman was 32 years of age, married, and the glands had commenced to enlarge about two years ago. She had been treated with *x*-rays, but continued to grow worse, and at the time of admission to the Polyclinic Hospital, March 2, 1920, the visible glands in the neck and groins were the size of oranges, and an *x*-ray showed marked involvement of the bronchial glands. Sixteen injections in increasing doses of Coley's toxins had been given until the present time, with the remarkable result that not only were the glands no longer visible, but only one or two remaining small glands could be detected on palpation, and the last *x*-ray picture showed a nearly normal chest. It need hardly be mentioned that a microscopical diagnosis was made. Lymphosarcoma, he said, was a rare disease. It was a definite form of neoplasm arising in lymphoid tissue composed of lymphoblastic cells which did not remain confined to the involved nodes, but infiltrated the adjoining tissue. Distinct metastasis was rare, but all of the nodes might be more or less involved. The following regional types were to be noted: (1) Cervical, axillary, and inguinal; (2) thoracic, (*a*) thymic, (*b*) peribronchial; (3) abdominal (*a*) gastrointestinal, (*b*) intestinal, (*c*) retroperitoneal. In the thoracic type degeneration and softening were rare, but not in the abdominal type. Hodgkin's disease was an inflammatory condition rather than malignant, but it was not a degenerative process, as in syphilis or tuberculosis, but an active proliferation of all types of cells of the lymph glands, due to tuberculosis or other causes. The Coley fluid was the mixed toxins of erysipelas and *Baccillus prodigiosus*. The radium treatment should also be tried.

Dr. MORRIS of New York said that the reason of this remarkable result of the Coley toxins was that in some cases the patient was sensitized to the enzymes. The response to the toxins was an autolysis. Autolysis involves the embryonic cells. One could start out to sensitize the patient before using the toxin. That would open up a new era. One was beginning now to know something about medicine. It was so interesting that he would like to begin his professional life over again. He had seen the new growths disappear promptly in certain cases under the use of Coley serum, and he had come to the conclusion that the response was due to enzyme action.

Dr. L. H. TAYLOR of Washington, D. C., said he was interested in this treatment. He had had one or two cures, but in six cases there was no appreciable result. In one instance he had such a severe reaction to the Coley serum that it was impossible to persuade the patient to go on with the treatment. The reaction was worse when the injection was near the growth. The result was due to necrosis of the sarcoma cells. The growth reacted beneath the skin and discharged necrotic material. In one case the patient had a growth in the gums. He recovered after 12 injections, after a period of intense pain and suffering. In another case there was a spindle celled sarcoma which involved the tendon of Achilles. The man refused to submit to amputation, nevertheless the patient was cured. Both patients had lived ten years.

Dr. H. ANDERSON of Toronto said he knew of one case of a young woman of 23, with an immense mass on the side of the neck. She was referred to Dr. Coley. The mass continued to grow. One day on board ship, going to Europe, she fell on deck and struck the mass. After that it commenced to disappear, and in one year had disappeared.

Dr. ROUSSEL said that he refrained from giving injections locally in that case. The reaction was less when the injection was made at a distance from the site of the tumor.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

TEXAS STATE BOARD OF MEDICAL EXAMINERS.

November, 1919.

(*Continued from page* 546)

BACTERIOLOGY.

1. Name three common pyogenic bacteria. Where are they found in health? Where in disease? Give usual method of staining.
2. Describe the diphtheria bacillus. How would you obtain a specimen for examination, and how would you determine when to release a patient from quarantine?
3. Tell in detail the technique employed in detecting malarial organisms in the blood, and how to distinguish between the quartan and estivoautumnal parasites.
4. What is Ehrlich's side-chain theory of immunity?
5. What is meant by phagocytosis? In what way is it a protective agency to the body?
6. What conditions are essential to the life of bacteria?
7. What are sterilization, antiseptics, disinfectants and germicides?
8. What is tuberculin? Describe the general reaction following the use of tuberculin.
9. What is the specific test for syphilis? Upon what principle does the test depend?

PHYSICAL DIAGNOSIS.

1. Differentiate mitral regurgitation from mitral stenosis.
2. Differentiate emphysema from pneumothorax.
3. Differentiate renal calculus from lumbago.
4. Describe the clinical manifestations of acute nephritis.
5. How would you distinguish amyloid disease of the liver from cirrhosis of that organ?
6. What are the symptoms and physical signs of acute dilatation of the heart?
7. For what conditions might cerebral hemorrhage be mistaken?
8. Give indications of tumor of spinal cord.
9. How would you distinguish paralysis of the musculospiral nerve from the neuritis due to lead poisoning?
10. What are the clinical manifestations of rachitis?

OBSTETRICS.

1. Give maternal locations of fetal heart beats in twin pregnancy at the ninth month.
2. Differentiate a knee from an elbow presentation, and describe procedure of delivery in each case.
3. Describe the mechanism of the left occipito-posterior position.
4. Name all the conditions which retard or obstruct labor.
5. How would you suspect placenta prævia after the fifth month of pregnancy? Give management of such a case.
6. Give detailed description of the care of the child immediately after birth.
7. What changes occur in the uterus during pregnancy? What after birth?
8. What is meant by dystocia, and how would you determine the nature and degree of dystocia? Name all its different causes.
9. What measures would you adopt to prevent an anticipated puerperal eclampsia?
10. Describe delivery of a hydrocephalic fetus when uterine inertia exists to such an extent that parturifacient drugs will not act.

ANSWERS.

BACTERIOLOGY.

1. *Three common pyogenic bacteria: Staphylococcus pyogenes aureus, Staphylococcus pyogenes albus*, and *Streptococcus pyogenes.*

In *health* they may be found on the surfaces of the body (both cutaneous and mucous), skin, hairs, sweat glands, nose, mouth, gastrointestinal tract, and genitourinary tract.

In *disease* they may be found in abscesses, boils, phlegmons, and suppurative inflammations; in phlebitis and lymphangitis; in septicemia, pyemia, and erysipelas; in pneumonia, bronchitis, endocarditis, arthritis, and osteomyelitis.

General method of staining bacteria: "Nearly all the known bacteria are readily stained by the watery solutions of any of the basic anilin dyes. The film on the slide or cover-glass, properly prepared, is covered by a few drops of the stain, or the cover glass, *film-side down*, is floated in a watch-glass full of the staining solution; at the end of from one-half to two or three minutes the staining fluid is poured off, the slide or cover-glass washed rapidly in water and then allowed to *air-dry;* after which, in the case of cover-glass preparations, they are inverted upon a drop of Canada balsam on a slide and examined with the oil-immersion lens; or, when slides have been prepared, after washing and drying a drop of cedar oil is put over the preparation, and the same is examined with the oil immersion objective, without the use of a cover-glass." —(Archinard's *Bacteriology.*)

2. The *characteristics of the bacillus of diphtheria:* The bacilli are from 2 to 6 mikrons in length and from 0.2 to 1.0 mikron in breadth; are slightly curved, and often have clubbed and rounded ends; occur either singly or in pairs, or in irregular groups, but do not form chains; they have no flagella, are nonmotile, and aërobic; they are noted for their pleomorphism; they do not stain uniformly, but stain well by Gram's method and very beautifully with Loeffler's alkaline methylene blue.

A sterile swab is rubbed over any visible membrane on the tonsils or throat, and is then immediately passed over the surface of the serum in a culture tube. The tube of culture, thus inoculated, is placed in an incubator at 37° C. for about twelve hours, when it is ready for examination. A sterile platinum wire is inserted into the culture tube, and a number of colonies of a whitish color are removed by it and placed on a clean cover slip and smeared over its surface. The smear is allowed to dry, is passed two or three times through a flame to fix the bacteria, and is then covered for about five or six minutes with a Loeffler's methylene-blue solution. The cover slip is then rinsed in clean water, dried, and mounted. The bacilli of diphtheria appear as short, thick rods with rounded ends; irregular forms are characteristic of this bacillus, and the staining will appear pronounced in some parts of the bacilli and deficient in other parts.

A patient may be released from quarantine when repeated examinations of the discharges from his nose and mouth are negative.

3. *In examining for malaria:* "Prepare some perfectly clean and very thin cover slips, and remove all traces of grease. Cleanse the skin of the finger-tip or ear with soap and water, and then with alcohol and ether. Make a *small prick* in the skin. Wipe away the first drop of blood, leaving a perfectly dry surface, so that subsequent drops will not run. Squeeze out a tiny drop about the size of a large pin's head. Touch the apex of this drop with the center of a cover glass, and immediately drop it, face downward, on a perfectly clean slide. Make several such preparations, and reject all those in which rouleaux are present. It is absolutely essential that the red corpuscles should lie flat. Examine with a 1/12 immersion lens and rather feeble illumination. Look in the red corpuscles for the presence of small black specks, often rod-like and showing slow movements of translation. These are surrounded by clear areas. One may also see in the center of some of the red cells clear ameboid areas which show no pigment. Rosette forms may also be visible. These forms of the parasite are always present in cases of malaria which have not had quinine. Other varieties are only met with in some chronic cases. Of these there are two chief forms: (1) The crescentic, (2) the flagellated. These are easily recognized. The crescentic bodies are highly refractile, rather longer than a red blood corpuscle, and about 2μ in diameter. Particles of pigment may be recognized in the parasite and also in some of the ordinary leucocytes."—(Hutchinson and Rainy.)

DIFFERENCES BETWEEN THE PARASITES.

QUARTAN.	TERTIAN.	ÆSTIVO-AUTUMNAL.
Cycle three days.	Forty-eight hours.	Forty-eight hours.
Ameboid motion sluggish.	Rapid.	Brisk.
Red cell slowly decolorized.	Rapidly.	Cell becomes darker, bronze-like.
Little change in size of red cell.	Much swollen.	Cells small and shriveled.
Parasite sharply outlined.	Indefinite.	Faint.
Pigment granules coarse and few, and in slight motion.	Fine and numerous; in active motion.	Granules fine, not often in motion.
Spores six to twelve, large and pear-shaped.	Fifteen to twenty, small, round.	Six to twelve small spheres present.

—(From McConnell's *Pathology.*)

4. *Ehrlich's side chain theory of immunity:* "This receives its name from its analogy to the benzole ring in chemistry with the accompanying lateral chains. For convenience terms are used that can be applied to formed bodies, although they cannot be demonstrated as such in body juices. In this theory it is claimed that immunity depends upon the presence or absence of 'receptors,' the equivalent of the chemical lateral chains. The normal or fixed receptor is that body attached to the cell by means of which the cell is acted upon by various substances, nutritive or otherwise. Each receptor is supposed to be so formed as to unite with a certain body of a definite character. When the action of the bacteria upon the tissue cells is considered, it is supposed that the poisonous products consist of two portions, the 'haptophorous' and the 'toxophorous' groups. The combination is thought to take place as follows: The haptophoric group unites with a certain definite receptor, and by so doing interferes with the normal function of the cell. At the same time the toxophoric group is able then to act directly upon the cell. If this group is very powerful the cell is destroyed, and if a sufficient number are involved the individual may die. When such a union occurs the receptors are of no further use. It has been found in such cases that in order to get back to the normal the cell will be so stimulated that new receptors similar to the ones destroyed will be formed. As a rule, a great excess of receptors will result, and many of these will be cast forth into the circulation, becoming free receptors. These cast-off receptors are what constitute an antitoxin, and on coming in contact with the toxin molecule, unite with the haptophorous portion and consequently render it harmless. It being attached to a free receptor, it is no longer able to combine with a fixed receptor. In bacteriolysis and hemolysis, or cytolysis in general, conditions in which the destruction of actual cells is concerned, the destruction is brought about in a more complicated manner. Two other bodies than the cells are involved. One of these, known as the complement, is normally present in all serum. It is destroyed by a temperature of 55° C. for one-half hour, and is termed, therefore, thermolabile. The other, the immune-body, or amboceptor, occurs in serum only as the result of the injection into the individual of the definite antigen. In other words, the amboceptor is specific in that it can combine only with that substance which gave rise to its formation. As it can resist heat up to 80° C., it is termed thermostabile. In order that the cell be destroyed the complement unites with the specific amboceptor, which in turn joins with the fixed receptor, and the destructive action then occurs. In active acquired immunity against foreign cells the invaded animal forms large amounts of amboceptor, which, being free within the blood, unite with and destroy the invading cells. If the supply is sufficient, the individual will recover. In passive acquired immunity large numbers of amboceptors in the serum from the immunized animal are directly introduced into the patient, and in this way effect a cure."—(McConnell's *Manual of Pathology.*)

5. *Phagocytosis:* "There are certain cells in the body that have the power of ameboid movement, by means of which they are able to surround and take up bacteria and destroy them. These cells are known as phagocytes. Metchnikoff believes that immunity is the result of the positive and negative chemotaxis (power of attraction) existing between the phagocytic cells and the microorganisms. He divides such cells into two classes: (1) *Microphages,* represented by polymorphonuclear leucocytes; and (2) *Macrophages,* large mononuclear leucocytes, endothelial cells lining serous membranes, and fixed mononuclear cells of the spleen follicles and lymph sinuses. The most active are the microphages, as they have the power of independent motion. When the bacteria gain entrance into the body, the phagocytes are attracted, and they attempt to ingest and destroy the invaders. If the immunity of the animal is marked, many of the organisms will be bound within the cells; if the immunity is slight, few cells will contain bacteria. At one time it was claimed that phagocytes could take up only dead bacteria, but it has been demonstrated that the leucocytes can take up living organisms. As a rule the bacteria are ultimately destroyed, but on the other hand, the phagocyte may be the one to perish, and in this way permit a wide distribution of the invaders. Experiments have shown that the bacteria must be acted upon by a substance in the blood known as an *opsonin,* before the phagocyte is able to digest them."—(McConnell's *Manual of Pathology.*)

6. *Conditions essential to the life of bacteria:* (1) Suitable *temperature,* which varies with different bacteria; the optimum temperature of most of the pathogenic bacteria is near that of the human body. (2) Absence of *sunlight* or bright light. (2) Slight *moisture.* (4) The presence of *oxygen* for aerobes, and the absence of *oxygen* for anaerobes. (5) Suitable *food,* organic nitrogenous matter being generally desirable. (6) The food medium should be neutral or slightly acid in *reaction.* Individual bacteria may have specific needs in many of these (and other) requirements.

7. *Sterilization* is the process of freeing a substance from the live bacteria that may be on it or in it.

Antiseptics are agents which prevent or restrain putrefaction.

Disinfectants are agents which restrain infectious diseases by destroying or removing their specific poisons.

Germicides are agents which destroy bacteria and their spores.

8. *Tuberculin* is a glycerin extract of cultures of the bacillus of tuberculosis. It is used as a means of diagnosis of tuberculosis.

Von Pirquet's test is a tuberculin test for the presence of tuberculosis. Two small drops of old tuberculin are placed on the skin of the front of the forearm about two inches apart, and the skin is slightly scarified, first at a point midway between them, and then through each of the drops. In about ten minutes the excess of tuberculin is gently wiped away with cotton. No bandage is necessary. A positive reaction is shown by the appearance in twenty-four to forty-eight hours of a papule with red areola, which contrasts markedly with the small red spot left by the control scarification.

9. The *specific test for syphilis* is called the Wassermann reaction. "The reaction depends upon the fact that when an antigen, *i.e.* a substance capable of stimulating the formation of antibodies in animals or man, is mixed with its inactivated antiserum, in the presence of complement, the complement is firmly fixed by the combined immune body and antigen in such a way that it can no longer be found free in the mixture. If such a mixture is allowed to stand at a suitable temperature for an hour or more, and to it is then added an emulsion of red blood cells together with a suitable quantity of inactivated hemolytic serum, no hemolysis will take place, since there is no free complement available to complete the hemolytic system. If, on the other hand, the original mixture contains no antibody for the antigen used, the complement present is not fixed and is available for the activation of the hemolytic serum later added. The reaction thus depends, in principle, intimately upon the fact that neither

antigen alone, nor amboceptor (antibody) alone, can fix complement, but that this fixation is carried out only by the combination of antigen plus amboceptor. Any specific amboceptor can be determined by this method, provided the homologous or stimulating antigen is used; and *vice versa*, by the use of a known antibody a suspected antigen may be determined."—(Hiss and Zinsser's *Bacteriology.*)

PHYSICAL DIAGNOSIS.

1. In *mitral regurgitation*, there is a systolic murmur, heard loudest over the apex, and transmitted round to the left axilla and under the left scapula; the murmur is soft and blowing.

In *mitral stenosis*, there is a presystolic murmur, heard loudest over the apex, and not transmitted; the murmur is generally low-pitched, and rough.

2.

EMPHYSEMA.	PNEUMOTHORAX.
1. Frequently sequel of chronic bronchitis; disease bilateral.	1. Sequel of tuberculosis; empyema may result from traumatism; disease unilateral, as a rule.
2. Emphysematous chest.	2. Phthisical chest or normal.
3. Diminished vocal fremitus.	3. If due to phthisis, vocal fremitus is increased.
4. Succussion produces no abnormal sound.	4. Succussion produces a splashing sound; metallic tinkling may be heard.
5. Heart seldom displaced; upper border of heart dullness depressed.	5. Heart generally displaced.

(From *Pocket Cyclopedia of Medicine and Surgery.*)

3. *Renal calculus:* Symptoms consist of pain in the loins, markedly increased by exercise, especially on jolting. The pain may be referred to the thigh, groin or testicle. The colic is associated with hematuria, and often pyuria exists with frequency of micturition. The kidney may be enlarged, and tender on pressure. A large stone may exist without any symptom whatever. The most typical symptom consists in a sudden attack of excruciating and paroxysmal pain shooting down the loin to the bladder and testis. The attack is accompanied by vomiting, faintness, and collapse. Frequent efforts to pass urine are made, but only a scanty amount of blood-stained urine is passed. The pain ceases suddenly when the calculus slips back into the pelvis or reaches the bladder.—(*Aids to Surgery.*)

The *x*-ray may show the calculus.

In *Lumbago* there are no urinary symptoms, and the *x*-ray examination will be negative.

4. *Acute nephritis:* "In mild cases, slowly developing dropsy with anemia, shortness of breath or dyspnea, and weakness are the only symptoms, the diagnosis being confirmed by the results of urinary examination. Usually, however, it begins suddenly with nausea, violent and persistent vomiting, fever, and dull pain over the kidneys, following the course of the ureters. There is a frequent desire to urinate, and diarrhea, harsh and dry skin, and a quick, tense, and full pulse are present. Dropsy soon appears, beginning first in the eyelids and face, but later becoming generalized. Anemia and weakness are marked, particularly in post-scarlatinal cases. Uremic symptoms may develop at any time during the attack. The affection lasts from one to four weeks. The *urine* is of high specific gravity, 1025 to 1030, scanty, smoky (like beef washings) in color, due to the presence of blood. Albumin is present in large quantities, and the microscope reveals hyaline, blood, granular, and epithelial casts of the uriniferous tubules, blood corpuscles, uric acid, urates, oxalate crystals, and epithelium. The total amount of urea eliminated during the twenty-four hours is lessened from one-fourth to one-half. The amount of phosphates and chlorides is also lessened."—(Hughes' *Practice of Medicine.*)

5. The diagnosis of *hypertrophic cirrhosis of the liver* is based on: "The chronic enlargement of the liver and spleen; the persistent jaundice; a tendency to hemorrhages; and the absence of ascites. The affection is to be differentiated especially from amyloid disease, sometimes from abscess or carcinoma of the liver, and echinococcus cyst.

Amyloid disease follows a history of suppuration, tuberculosis, or syphilis; the skin is waxy, seldom jaundiced. The liver is hard, and other organs are affected.—(French's *Practice of Medicine.*)

6. CARDIAC DILATATION. *Symptoms:* "The manifestations are referable to the enfeebled circulation and include feeble pulse, headache aggravated by the upright position, attacks of syncope, cough, dyspnea, jaundice, dyspepsia, constipation, scanty, often albuminous urine, mental dullness, vertigo, often relieved by a copious epistaxis, and finally dropsy beginning in the lower extremities. The condition terminates in death by exhaustion. Treatment may serve to temporarily relieve any of the symptoms just mentioned."

Physical signs: "*Inspection* detects enlargement and distention of the superficial veins and an indistinct, often wavy and diffused, cardiac impulse. If tricuspid regurgitation is present, jugular pulsation will be observed. *Palpation* confirms inspection; the impulse is feeble, irregular, and heaving. *Percussion* serves to determine extension of the area of cardiac dullness transversely and especially toward the right side. *Auscultation* in the presence of valvular lesions reveals characteristic murmurs. If there are no valvular lesions the cardiac sounds are weaker than normal and the first sound is sharper in quality than usual."—(Hughes' *Practice of Medicine.*)

7. *Cerebral hemorrhage might be mistaken* for: Alcoholism, opium poisoning, uremia, cerebral embolism, or thrombosis, syncope, epilepsy.

8. *Tumors of the spinal cord* "develop in several situations, and the symptoms are thereby somewhat modified. (*a*) *Outside the spinal dura.* Lipoma and sarcoma are here most often seen, and the symptoms of cord pressure, such as loss of power and sensation, are preceded by those of spinal irritation, *e.g.* neuralgic pain, increased on movement, and are often limited for some time to one side. Multiple neuro-fibromata of the nerve roots are by no means uncommon. (*b*) They may grow *from the inner aspect of the dura mater*, and thus produce symptoms of cord pressure and meningeal irritation concurrently. Sarcoma, endothelioma, fibroma, and gumma, are the commonest forms of neoplasm in this situation. (*c*) *From the spinal cord* itself, myxoma, psammoma, and sarcoma may originate. The symptoms are those of paraplegia combined with some localized and referred pain or tenderness, and either bilateral from the start, or sometimes of the crossed type, anesthesia being marked on one side of the body, and paralysis and hyperesthesia on the other —*i.e.* on the side of the tumor."—Rose and Carless' *Manual of Surgery.*)

9. *Musculospiral paralysis:* "The symptoms of this paralysis are 'wrist-drop,' due to an inability to extend the wrist or fingers. The first and second phalanges can be extended somewhat by the interossei and lumbricales, but the last phalanges cannot be extended at all. The first finger is least affected. The fingers can be only slightly abducted, supination is generally lessened or lost; if the lesion is high up, the triceps is involved and the power of extending the forearm weakened. There may be atrophy of the muscles and degeneration reaction. A swelling over the tendons of the wrist-joint may occur. Some numbness and tingling exist, and occasionally there is anesthesia in the distribution of the radial nerve on the hand. The disease lasts but a few weeks if due to compression; for months if due to neuritis, lead poisoning, or severe injury of the nerve. Eventually recovery takes place, as a rule.

"When the disease is due to *lead poisoning* there are some peculiarities in its course. Thus the supinator longus usually escapes; the palsy begins gradually and usually involves both arms; it may extend to the upper arm. Partial degeneration reactions are present. There is rarely any anesthesia and but little pain. Often there is a lead line on the gum and a history of constipation and colic."—(Dana's *Textbook of Nervous Diseases.*)

10. RACHITIS: "The head is elongated from back to front, the forehead is square and overhanging, the fontanelles are slow in closing, and the veins in the

skin are distended. The flat bones are usually much thickened, and frequently 'bossed' by irregular masses of calcified material. Often, however, the occipital bone and certain parts of the parietal bones are *thinned.* Though the skull as a whole is enlarged, the puny face makes the enlargement more noticeable by comparison; measurements show the enlargement to be more apparent than real. *The ribs* often show characteristic 'beading' at the junction of the costal cartilages (*rhachitic rosary*). Pressure of the external air on the softened anterior ends of the ribs produces the 'rickety chest,' characterized by a shallow vertical depression on each side of the sternum. *'Pigeon breast'* is due to impeded inspiration, as is 'Harrison's groove,' a transverse depression running from the xiphoid cartilage toward the axilla. *The lower limbs* are bowed, or sickle-shaped, and show well-marked epiphyseal enlargements, especially at the lower end of the *tibia. The upper limbs* also show the most marked changes at the lower ends of the ulna and radius, but the humerus and clavicle may also be affected. *The pelvis* is often much deformed. *The spine* is bowed forward from muscular weakness. There may be lateral curvature. The deformities, dependent partly on excessive deposits of calcareous material, are largely due to the yielding of the softened bone to mechanical causes; hence the necessity of rickety subjects avoiding any undue or avoidable strain, such as too early walking. The most prominent *general symptoms* are three: profuse sweating of the head at night, throwing off the bedclothes even in cold weather, and crying on being moved or handled. The mind is often backward; the body is stunted and may be emaciated, but the abdomen is prominent from flatulent distension, and from the enlargement of the liver and spleen. The bowels are sometimes costive, sometimes loose, and the stools are usually pasty, or green like boiled spinach, and very fetid."—(Wheeler and Jack's *Handbook of Medicine.*)

OBSTETRICS.

1. Normally, the position of the fetal heart-sounds is as follows: In L. O. A. and R. O. A., they are best heard one inch below and one inch to the left or right (respectively) of the umbilicus; in L. O. P. and R. O. P., one inch below and well over in the left (or right) flank.

In twin pregnancy there may be two heart-sounds, of different rates, heard at different points over the abdomen, possibly on opposite sides, and separated by a space over which they are heard indistinctly or not at all. Sometimes only one can be heard.

2. In the *knee* presentation, the flat patella may be felt; there are also two tuberosities with an intervening depression; abdominal palpation will show that the fetus is in a more or less vertical position.

In the *elbow* presentation, the sharp point of the olecranon will be felt, with a depression on one side; there are also two lateral prominences; abdominal palpation will show that the fetus is in a transverse position.

In the *knee* presentation, delivery is effected as in cases of breech presentation. "Before labor external version may be attempted. It will not always be found practicable, and after the fetal body has been turned there is a disposition on the part of the fetus to resume its original position. The application of two long cylindrical compresses to the sides of the uterus, and a firm abdominal binder, may prevent a return of the breech presentation. When labor has begun, inaction should be the physician's policy until the fetal body is born to the umbilicus, unless maternal or fetal life is threatened or an indication for rapid delivery arises. As soon as the trunk appears the patient should be placed in the lithotomy position across the bed, and delivery of the shoulders and head should be effected by pressing upon the fundus with one hand, the other hand being inserted in the vagina to favor anterior rotation of the shoulder, anterior rotation of the occiput, and to direct the passage of the head through the vagina."—(Hirst's *Obstetrics.*)

In the *elbow* presentation, version should be performed, and the delivery effected for the vertex or breech presentation which results.

3. *The normal course of delivery in occipito-posterior positions* is the same as in occipito-anterior positions except that the head must rotate to the front through three-eighths of a circle; of course this takes longer and is more tedious.

In abnormal cases the management is as follows:

"(*a*) *When diagnosed while the head is at the brim.* (1) Leave it alone. The occiput will probably rotate to the front all right if it is given plenty of time. (2) If flexion appears to be deficient, try to increase it by pushing up the sinciput with the fingers in the vagina during a pain, at the same time pressing down upon the fundus with the other hand. (3) The head may be rotated by passing the hand into the vagina and grasping it between the fingers and thumb. At the same time the shoulders must be rotated by abdominal palpation, or else the head will at once go back to its original position. This maneuver generally requires an anesthetic.

"(*b*) *When diagnosed after the head has entered the pelvis.* (1) Leave it alone. After exercising the patience of all concerned, it will probably rotate spontaneously. Only about one case out of twenty fails to do so. (2) An attempt may be made to increase flexion as before. (3) Manual rotation may be attempted as before, but the head must first be flexed and gently pushed back out of the pelvis. (4) If the pains are weak, forceps should be applied well back on the head, so that when traction is applied, flexion will be promoted. The head should then be pulled well down on to the pelvic floor. If it begins to rotate, take off the forceps and leave the rotation to nature, merely keeping the head on the pelvic floor by pressure on the fundus. After rotation the forceps may, if necessary, be reapplied and delivery completed.

"(*c*) When the occiput has definitely rotated into the hollow of the sacrum, and the case has become a persistent occipitoposterior, forceps should be applied and the head delivered with the occiput posterior. The perineum should be guarded as much as possible, and any tears stitched up at once. In extreme cases craniotomy and pubiotomy may require to be considered."—(Johnstone's *Textbook of Midwifery.*)

4. *Conditions which retard or obstruct labor:* Uterine inertia; rigid cervix; breech presentations; twins; contracted pelvis; pelvic tumors; transverse presentations; hydrocephalus; faulty attitude or position or presentation of the fetus; rigidity or atresia of the vagina and vulva.

5. PLACENTA PRÆVIA: There is generally a sudden hemorrhage, accompanied by syncope, vertigo, restlessness, and feeble pulse. On examination placental tissue will be found over the internal os.

Treatment before term: Rest in bed, with or without a *tampon,* will arrest hemorrhage for the time; the sinuses are closed by thrombi, and the case may go on to term or another hemorrhage. The patient should be allowed cold drinks; opium may be used where pain is present. If the hemorrhage is great it is safer to induce labor at once than to wait. Occasionally no hemorrhage occurs during pregnancy, not even in labor.

Treatment at term: (1) Introduce one or two fingers within the os (the hand being in the vagina) and dissect the placenta from the uterine wall for about three inches from the os uteri in all directions, pushing it to one side if necessary. (2) Rupture the membranes, and if there is an unfavorable presentation, turn the child and make the breech engage in the os; or, if the head presents, the forceps may be used, if speedy delivery is necessary. Stop the hemorrhage by a tampon; this must be tight and thorough. *Accouchment forcé* is indicated; this consists of dilatation of cervix, version and immediate extraction of the child.

6. *Care of infant:* "After the cord has been ligated and cut, the eyes should be cleansed with a saturated solution of boric acid, after which, if there is any vaginal discharge from the mother, 1 or 2 drops of a 1 per cent. solution of silver nitrate should be instilled in each eye. The mouth should also be gently cleansed, for which may be used a soft cloth and boiled water. The vernix caseosa should be removed by means of some oily substance. The baby should be bathed in water at 100° F., carefully dried, and the cord dusted with some antiseptic powder. Sponging should be practised for ten days, after which a full tub bath at 98° F. should be given daily for 6 months. The temperature may then be reduced to 95° F., and at the end of a year to

90° F. The binder and clothing should be woolen. If the infant's extremities are blue or cold, external heat should be applied. The diapers should be made of flannel, and dusting-powders should be used to prevent chafing. An infant may be taken out-of-doors in summer when one week old, and in winter on pleasant days at 3 months of age. The new-born infant should sleep about 22 hours out of a possible 24, gradually diminishing this until at 2 years the child should sleep at least 12 hours of the day, and at 3 years not less than 11. The sleeping-room should be well ventilated.—(*Pocket Cyclopedia.*)

7. *Changes in the uterus during pregnancy:* "Before impregnation the length of the uterine cavity is about 2½ inches; at term it is increased to 12 inches, while its breadth is 9 inches and its depth 8 inches. The capacity changes from little more than 1 cubic inch to more than 400 cubic inch, and its weight increases from about 1 ounce to the neighborhood of 2 pounds. At first the uterus is changed from a flattened, pyriform body to a spherical or fig-shape, and after the fourth month to an ovoid. During the early months the uterus descends into the pelvic cavity. After the third month it rises steadily until the fundus reaches the epigastrium in the ninth month, but before term the fundus sinks again. During the first three months the womb exhibits a sharp anteflexion. The cervix is softened and somewhat hypertrophied during the first four months, but its canal is undilated until the first stage of labor begins. Throughout the whole duration of pregnancy the canal remains unaltered in length. The mucous glands of the cervix secrete a peculiarly tough mucus (mucous plug), which stops up the cervix like a cork during pregnancy.—(From Hirst's *Textbook of Obstetrics.*)

After labor, a process of physiological atrophy goes on in the uterus, and the tissues return almost to the condition in which they were before pregnancy. This process is called involution.

8. Dystocia, or pathological labor, is the term applied to labor which, without artificial assistance, would be difficult or impossible, or would be attended with danger to mother or child. Every case of labor is a mechanical problem in which the three main factors are the expelling force, the fetus which is to be expelled and the resistance of the parturient canal. So long as these three main factors are properly correlated, all goes well; but if their harmonious action be impaired, the normal mechanism of labor may be disturbed, and dystocia may be the result. In the management of a case of dystocia the recognition of the disturbing cause forms the basis of rational treatment.

Varieties of dystocia: These may be classified, according to causation, as follows:

(1) *Anomalies of the expellent forces:* (*a*) Excess—precipitate labor; (*b*) deficiency—delayed or protracted labor and inertia uteri; (*c*) spasm and irregularity—rigid os and cervix, and tetanus uteri.

(2) *Anomalies of the passages:* Pelvic deformities; uterus, developmental anomalies of, atresia of cervix, rigidity of cervix, impaction of cervix, malposition, sacculation, and new growths; stenosis and rigidty of vulva and vagina; hematoma or edema of the vulva; labial abscesses and cysts; conditions of intestines or bladder; tumors and swellings of various tissues.

(3) *Anomalies of the fetus:* Malposition of the head; occipito-posterior cases; malpresentations—face, brow, pelvic, and transverse; prolapse of limbs; anomalies of fetal development—shortness of cord, unduly ossified skull, large size of fetus, death of fetus, and enlargement of head or body by disease; plural births, and monstrosities (modified from Jewett's *Practice of Obstetrics*).

9. "*The prophylactic treatment of puerperal eclampsia* consists in frequent and regular examination of the urine. After the first appearance of albumin, daily quantitative examination of the urine should be made. The diet should be milk; the bowels should be kept freely open by means of calomel and salines; the skin should be kept active by hot baths, followed by vigorous rubbing. Diuretics, such as Basham's mixture, digitalis, and caffeine, should be administered. During pregnancy, if the percentage of albumin increases in spite of the treatment, abortion or induction of labor is indicated."—(*Pocket Cyclopedia.*)

10. In the case of *hydrocephalus,* "the ideal treatment is to tap the dropsical head with a trocar, draw off the fluid, dilate the cervix if necessary with a water-bag, and then perform podalic version when it is fully dilated. In this way there is a slender chance of a living child being delivered which, after giving a great deal of trouble to its mother and nurse, will probably die within a year, but has a remote chance of growing up into a deformed imbecile. The usual treatment (as a trocar and cannula are not generally carried in the obstetric bag) is to perforate and deliver with the cranioclast or cephalotribe as soon as the diagnosis is made. This is safer for the mother, as there is a slight risk of rupturing the uterus in introducing the hand for turning. The after-coming hydrocephalic head has been known to burst under traction used for delivery. The proper treatment is to perforate as soon as it is clear that the head is so large that it cannot be delivered quickly. The death of a hydrocephalic fetus is not a misfortune."—(Herman's *Difficult Labor.*)

BULLETIN OF APPROACHING EXAMINATIONS.

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†	
Alabama*	S. W. Welch, Montgomery	Montgomery	Jan. 11
Arizona*	A. Martin, 207 Goodrich Building, Phoenix	Phoenix	
Arkansas	T. J. Stout, Brinkley	Little Rock	Nov. 10
California	C. B. Pinkham, Sacramento	Sacramento,	Oct. 18
Colorado	David A. Strickler, Empire Building, Denver	Denver	
Connecticut*	R. L. Rowley, Hartford	Hartford	Nov. 9
Delaware	H. W. Briggs, Wilmington	Wilmington	Dec. 14
Dist. of Col'ba	E. P. Copeland, Washington	Washington	Oct. 12
Florida*	W. M. Rowlett, Tampa	Gainesville	Dec. 6
Georgia	C. T. Nolan, Marietta	Atlanta	Oct. 12
Idaho*	Robt. O. Jones, Boise	Boise	April 5
Illinois	F. C. Dodds, Springfield	Chicago	
Indiana	W. T. Gott, Crawfordsville	Indianapolis	Jan. 11
Iowa	G. H. Sumner, Des Moines	Iowa City	
Kansas	H. A. Dykes, Lebanon	Topeka	Oct. 12
Kentucky	J. N. McCormack, Bowling Green	Louisville	
Louisiana	E. W. Mahler, New Orleans	New Orleans	Dec. 2
Maine	F. W. Searle, Portland	Portland	Nov. 9
Maryland	J. McP. Scott, Hagerstown	Baltimore	Dec. ..
Massachusetts*	W. P. Bowers, 1 Beacon St., Boston	Boston	
Michigan	B. D Harrison, 205 Whitney Building, Detroit	Lansing	Oct. 12
Minnesota	T. McDavitt, St. Paul	Minneapolis	
Mississippi	J. D. Gilleylen, Jackson	Jackson	
Missouri	G. H. Jones, Jefferson City	St. Louis	
Montana*	S. A. Cooney, Helena	Helena	
Nebraska	H. H. Antles, Lincoln	Lincoln	Nov. 10
Nevada	S. L. Lee, Carson City	Carson City	Nov. 1
N. Hampshire	C. Duncan, Concord	Concord	
New Jersey	A. MacAlister, Trenton	Trenton	Oct. 19
New Mexico	R. K. McClanahan, E. Las Vegas	Sante Fe	
New York	G. M. Wiley, Univ. of State of New York, Albany	New York / Albany / Syracuse / Buffalo	
No. Carolina	K. P. B. Bonner, Moorehead City	Raleigh	June ..
No. Dakota	G. M. Williamson, Grand Forks	Grand Forks	Jan. 4
Ohio	H. M. Platter, Columbus	Columbus	Dec. ..
Oklahoma	J. M. Byrum, Shawnee	Oklahoma City	Oct. 13
Oregon	B. E. Miller, Portland	Portland	Jan. 4
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia / Pittsburgh	Jan. ..
Rhode Island	B. U. Richards, Providence	Providence	
So. Carolina	A. E. Boozer, Columbia	Columbia	Nov. 9
So. Dakota	H. R. Kenaston, Bonesteel	Pierre,	Jan. 18
Tennessee	A. B. DeLoach, Memphis	Memphis / Nashville / Knoxville	
Texas	T. J. Crowe, Dallas	Dallas	Nov. 16
Utah	G. F. Harding, Salt Lake City	Salt Lake City.	
Vermont	W. Scott Nay, Underhill	Burlington	Jan. 11
Virginia	J. W. Preston, Roanoke	Richmond	Dec. 14
Washington*	W. M. O'Shea, Spokane	Spokane	Jan. 4
W. Virginia	S. L. Jepson, Charleston	Charleston	Oct. 12
Wisconsin	J. M. Dodd, Ashland		Jan. 11
Wyoming	J. D. Shingle, Cheyenne	Cheyenne	
National Board	S. Rodman, 1310 Medical Arts Building, Philadelphia		

*No reciprocity recognized by these States.

†Applicants should in every case write to the secretary for all the details regarding the examination in any particular state.

Lichens and Lichenification.—Dind discusses in a serial article numerous dermatoses which have hitherto been classed as lichen or lichenoid eruptions. He pays special attention to the socalled neurodermitis, prurigo of Darier and prurigo of Besnier, conditions which to a certain extent have superseded the old and conventional lichens of authors. Thus the old lichen of Vidal is now claimed as a special form of neurodermitis and lichen ruber in its clinical varieties belongs under the same general head.—*Annales de dermatologie, etc.*

Miscellany.

The Sexual Differences of the Atlas.—In the *Progrés Médical* for June 19, 1920, xlviii, 25, there appears a communication from Dubreuil-Chambardel, chief of the anatomical department of the Medical School of Tours, who claims that he drew attention to sexual differences in the atlas as far back as 1907 before the *Société d'Anthropologie* of Paris. The article appears on page 309 of the transactions for that year and goes into the subject minutely, giving many measurements. A discussion followed in which Baudouin, who has recently written on the subject, participated. It was remarked that the discovery was of archeological value as well as forensic. But in his recently published article on sexual differences of the atlas Baudouin for some unknown reason suppressed the author's name. He has evolved the conception of the glenoid index, which he based on a few cases. But Dubreuil-Chambardel has studied the glenoid cavity in hundreds of skeletons and, like his predecessor Lenoble, found it subject to extreme variation. He therefore preferred as more constant the totality of the lateral masses of the atlas. Baudouin appends his reply to the above letter of his colleague, disclaiming any intention of reviewing the entire history of the atlas as an organ of sex differentiation. He sought only to make an announcement concerning the glenoid index. His colleague seems to have no priority claim for the latter nor have his remarks invalidated the claims made for the index.

London Fellowship of Medicine.—The Fellowship of Medicine was founded in July, 1918, at a meeting convened by Lord Eustace Percy, with a view to establishing a body which might unite the British profession with their overseas brethren in closer bonds of sympathy. Sir William Osler acted as president to the time of his death. During the last twelve months the organization of the Fellowship has been quietly proceeding, and the many opportunities for post-graduate study offered by London are being coordinated and augmented. To those who subscribe to the monthly ticket of the Fellowship practically every door in medical London is open, and small additional fees will admit him to special lectures if they are not already free.

American medical men who are considering the desirability of study in Europe are invited to apply for a post-free copy of the weekly Bulletin of the Fellowship, which provides a daily program of the work in the wards and out-patients' departments, together with a syllabus of each special course and list of all current lectures. The Fellowship also collates information of post-graduate work in the United Kingdom and in Paris, where a permanent branch is in course of being established. Correspondents should state the subjects they are interested in, and announcements of forthcoming arrangements will be forwarded from time to time. The offices of the Fellowship of Medicine and Post-Graduate Medical Association are at present in the House of the Royal Society of Medicine (by courtesy of the Royal Society of Medicine), No. 1 Wimpole Street, London, W.1., England.

Therapeutic Hints.

Burns.—McGeary gives the following formula for the preparation of paraffin dressings used as the routine treatment of burns at the Minneapolis City Hospital:

1. Resorcinol	10
2. Olei Eucalyptii	20
3. Olei Olivae	50
4. Petrolatum	250
5. Paraffin	670

Melt 4 and 5 together.

Dissolve 1 in alcohol and add to 4 and 5 while latter is hot, to drive off the alcohol. When cool, add 2 and 3.

The dressing is applied daily until healing is complete. The area is first washed with Dakin's solution. —*Minnesota Medicine.*

Dogwood for Labor Pains.—An Indian observer (Rai Saheb Thakur Ram Dhari Sinha) states that Jamaica dog wood (*piscidia erythnena*) appears to possess the good qualities of opium without the bad. In one-half dram doses it is an elegant palliative in the pains of labor.—*Indian Medical Record.*

Infectious Diarrhea.—Edward A. Morgan gives the following indications for the treatment of infectious diarrhea: (1) neutralization of specific toxins by injection of a specific antitoxin if this is available; (2) correction of dehydration by saline or glucose injections; (3) prevention of formation of toxic products of protein putrefaction by administration of a food rich in carbohydrate; (4) specific therapy.

Oral Analgesia.—J. T. Gwathmey, discussing preliminary medication in connection with the administration of anesthetics, says "oral analgesia" may be used with assurance when morphine is contraindicated. It is especially useful in painful dressings or slight operations. The method of administration is as follows: One ounce of port wine is placed in a glass, and the "analgesic" in another glass. The patient takes a small mouthful of the wine, holds it about 15 seconds, rinsing the mouth so as to get the aroma in the upper air passages and the taste well established, and then swallows the wine. The "analgesic" is then taken, and is followed immediately by the remainder of the wine. Patients are able to take food and water shortly afterward, and even in patients much exhausted by infection there have been no deleterious after-effects. While it is well not to give the "analgesic" immediately after a meal, no special preparation of the stomach is necessary. The following formulæ have been used clinically with success:

1. Ether,
   Liquid paraffin, āā.....drams iv
   Aq. menth. pip. .....m v
2. Ether,
   Paraldehyde, āā .....drams ii
   Liquid paraffin .....drams iv
   Aq. menth. pip. .....m v
3. Ether,
   Chloroform, āā .....drams ii
   Liquid paraffin .....drams iv
   Aq. menth. pip. .....m v

—*Annals of Surgery.*

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Original Articles.

ORGAN THERAPY IN THYROID AND ALLIED DISORDERS.

BY JOHN ROGERS, M.D.,

NEW YORK.

THE material ordinarily employed for thyroid feeding is made by desiccation of the entire gland. The resultant powder has a variable content of iodine and of fatty and fibrous or other tissue, and in the drying process, which takes some time, may become contaminated with the more or less toxic products of autolysis. In addition, the original glands may be goitrous. Therefore, about fifteen years ago the (then) Department of Experimental Therapeutics in the Cornell University Medical College undertook an attempt to improve upon this somewhat crude medicament. It was soon found that the nucleoprotein material, which could be readily obtained from an aqueous extract of hashed fresh glands, was clinically much less toxic and far more generally beneficial and useful than the powder made from the entire dried organ. It consists always of the same kind of thyroid material, and must be made from fresh and not stale or decomposed or autolyzed glands, and can be standardized to contain always the same amount of iodine.

Of the pig, sheep, and beef thyroids which were tested, the pig glands were the most constantly normal in character, contained the most iodine, and seemed the most active and valuable in hypothyroid conditions, especially if the blood pressure in these cases was above normal. When the blood pressure was low the sheep thyroid nucleoproteins were equally good, and occasionally better.

In testing the comparative advantages of pig and sheep thyroid there was noted one very curious effect. A few individuals, who otherwise were objectively benefited by the pig nucleoproteins, developed a feeling of melancholy which was accompanied by a "teary" or lacrymose condition. A change to sheep thyroid would immediately dissipate the tears and induce smiles. Although this somewhat weird effect is uncommon, it can be so immediately changed by substituting the sheep for the pig thyroid that it seems to be real and not imaginary. The sheep thyroid glands contain less iodine than the pig, and show rather marked seasonal variations in this element, and are very frequently goitrous. As they are expensive, and sell by the pound, the temptations to use goitrous glands which may be as large as one's fist are obvious. The normal sheep thyroid gland is about the size of an almond. Extracts or derivatives of goitrous glands in our experiments were apparently inert. The beef thyroids contain the least iodine of the three, and clinically seemed of doubtful value and were soon rejected. The thyroid globulins which can also be obtained from an aqueous extract are richer in iodine than the nucleoproteins, but when tested clinically were much more prone to excite tachycardia or other unpleasant symptoms and, like the beef thyroids, were soon abandoned.

The nucleoproteins from the pig and sheep glands were finally selected as the best thyroid medicament, and their dosage standardized by their iodine content. This material was most conveniently mixed with some inert substance so as to make one grain tablets which contained in each 1 per cent., 2 per cent., 5 per cent., or 10 per cent., respectively, of iodine. This means approximately 1/100, 1/50, 1/20, or 1/10 grain of the pig or sheep thyroid nucleoproteins, which clinically for indications and dosage, is more or less equivalent to ⅛, ¼, ½, or one grain of the dried powder made from the entire gland. But, as remarked before, the thyroid nucleoproteins with their definite iodine content and freedom from foreign or autolyzed tissue are a much more accurate medicament and, clinically, seem much preferable to those in general use.*

As the thyroid nucleoproteins seemed so advantageous, the nucleoproteins of other endocrine organs were also tested. The indications for pituitary, parathyroid, adrenal, ovarian, or other organ feeding are by no means so clearly definable, nor are the results so striking as those of thyroid feeding. Nevertheless, there are at least some theoretical reasons, especially for adrenal feeding, and some symptoms which are capable of relief by the administration of the other endocrine organs, and in our tests nucleoprotein material seemed generally better and more efficacious than any desiccated entire gland.

The animal experiments which were started with the clinical tests showed that feeding the thyroid nucleoproteins by mouth stimulated the metabolism to about the same degree as did the dried entire gland when the dosage of iodine corresponded. But hypodermatically neither the nucleoproteins nor any of the coagulable portions of an aqueous thyroid extract excited any *immediate* response. The filtrate which remained after the removal of these substances was then boiled and thus, after some concentration, was more or less hydrolyzed and for lack of a better name was called the thyroid "residue." This liquid, when given subcutaneously or intravenously, excited prompt and vigorous reactions. It could be subdivided into active and inactive portions, but in the end it seemed that the

*These and the other preparations mentioned below are now generally obtainable through Schieffelin & Co., New York City.

original "residue," when concentrated to contain about 0.05 mg. of iodine per cc., was more active than any of its parts.

Tests were next made with an alcohol extract of the thyroid. Hashed fresh pig glands were extracted for several days with 95 per cent. alcohol which was evaporated by slow boiling and water then added until the iodine content was the same as that of the "residue," or about 0.05 mg. per cc. This alcohol extract had almost exactly the same physiological action as the residue or non-coagulable hydrolyzed aqueous extract of the thyroid. Clinically, about 5, 10, or 15 minims of either extract by mouth were found to be therapeutically effective. The thyroid residue has seemed most useful in hypothyroid conditions in which the more prominent symptoms were those of deficient functionation in the gastrointestinal tract, and especially when the blood pressure was much elevated. The alcohol extract seemed particularly useful in hypothyroidism which was accompanied by a sensation of subjective dyspnea or by any ill-defined pain without discoverable lesion which has the character of neuralgia. The question then arose as to the comparative advantages of the thyroid nucleoproteins and the liquid residue.

Experimentally, it was found, as is now more or less well known, that a thyroidectomized dog could live indefinitely and show no apparent change. But the administration of any thyroid material to the animals immediately increased the metabolism, and unless the experiment was soon stopped, the dog died. A normal dog, on the other hand, after the cessation of thyroid feeding rapidly recovered.* From these and other facts, the inference has been drawn that the feeding of thyroid (or for that matter of any other organ product) can be effective only after passing through the patient's own gland. If this is absent, as for example after double oophorectomy, organ therapy is probably useless or harmful. It seems to be necessary for the patient to possess at least some thyroid epithelium (or adrenal or ovarian as the case may be), and it must be capable of some functionation to permit the corresponding "feeding" test to be of any therapeutic value. These considerations bear upon the comparative advantages of feeding the thyroid nucleoprotein material or the liquid residue. In normal dogs the nucleoproteins produce their effects more or less slowly. The thyroid residue, on the other hand, excites an immediate reaction, and hence must be at least somewhat related to the gland's active principle. Hence, clinically and for therapeutic purposes, the thyroid residue should be indicated when there is reason to suspect an extreme functional incapacity in the patient's own thyroid epithelium. Such conditions might exist acutely after operative traumatism of the gland, or chronically in cases of long-continued hypothyroidism. Experimentally, the thyroid residue is a vigorous vasodilator and stimulant, particularly of gastrointestinal activity, and practically, as remarked before, it seems most useful in the chronic hypothyroid disturbances which are accompanied by high blood pressure, or by evidences of deficient gastrointestinal functionation, or by both of these conditions together. The thyroid nucleoproteins generally seem better in the more typical hypothyroid or myxedematous conditions.

*Unpublished experiments.

The symptoms which permit a recognition of the distinctions between hypo- and hyperthyroidism and the so-called mixed types of these disorders require some discussion of the physiology of the thyroid. The prevailing conception of this subject seems to be chiefly derived from the well-known effects of thyroid feeding upon the action of the heart. Because the administration by mouth of a few grains of the desiccated entire gland is so often followed by tachycardia, the average observer believes that the thyroid must, therefore, stimulate the cardio-accelerator nerve; and if it affects this nerve why not the whole sympathetic system? But he forgets that if the thyroid feeding is continued long enough there are added to the tachycardia, vasodilatation, sweating, and increased functional activity of practically the entire gastrointestinal tract. These latter phenomena are not traceable to stimulation of the sympathetic but to that of another group of nerves, namely the autonomic or vagus system. For the viscera, it should be recalled, apparently have a double nerve supply: one is the sympathetic proper, with its cervical, thoracic, and abdonimal plexuses, which, when stimulated, produce vasoconstriction and, as a rule, inhibition of functional activity. The other group of nerves is sometimes called the parasympathetic, or the autonomic, but would be more easily recognized if it were designated by the name of its most prominent and best understood member, or as the "vagus system." This vagus system (though, of course, the vagus itself does not supply the skin and all the blood vessels), according to electrical and chemical tests, produces vasodilatation, sweating, exaggerated heart action, and increased functional activity of the gastrointestinal tract, and all of these phenomena are accepted, together with the tachycardia, as evidences of the typical condition of hyperthyroidism. The atypical forms of the disorder are usually designated as such because the signs of autonomic or vagus activity are not prominent or are intermittent, or even entirely absent. For example, a patient with a "goiter" and more or less tachycardia and asthenia, but with headache, a pale dry skin and evidences of insufficient gastrointestinal functionation is generally now described as suffering from atypical hyperthyroidism, or from mixed hypo- and hyperthyroidism. That is, when the "vagus system" is inactive, as evidenced chiefly by the condition of the skin and gastrointestinal tract, and there is present more or less "goiter" and tachycardia, the disturbance is generally described as "atypical," or "mixed." Thus the clinical differentiation must be traced back to the visceral nerves and to the seemingly opposite functions which they are believed to perform. The impulses they convey can, perhaps, be more clearly visualized if they are expressed briefly as those of "drive" and "check." For the vagus and its allies in this system (the third, seventh, ninth, and eleventh cranial nerves, the visceropelvic nerve, and the vasodilating fibers) seem in general, by their power of dilating blood vessels and by their action in increasing functional activity, to "drive" the viscera to do their duty. The sympathetic, on the other hand, with its vasoconstricting properties

and its power mainly to inhibit the functions of the gastrointestinal tract, can be said to exert an influence which is that of "check." The chief clinical difference, then, between the typical and atypical forms of so-called hyperthyroidism consists in an excess of, or absence of, visceral and cutaneous "drive." The typical cases show a "drive" in vasodilatation and sweating and overacting, rapid heart, and in the excessive hunger ("vagus hunger" contractions of the stomach) and excessive intestinal peristalsis. The atypical cases, except for the tachycardia, show opposite signs, or an absence of drive, and generally also more or less headache. The typical or pure *hypo*thyroid cases are the same as the atypical *hyper*thyroids, except that there is no tachycardia. True myxedema differs from hypothyroidism only in the intensity of the failure of the "drive." The quiet pulse is more like a quiet bradycardia, and there is added more of the characteristic color and edema, particularly in the face. There are present almost no impulses of vasodilatation. The color is that of vasoconstriction.

To add to the difficulties of differentiation, there is now quite general agreement that these conditions are interchangeable. In other words, a case of typical hypo- may within a few weeks become a typical hyperthyroidism, and even have exophthalmos added; or the developments may take place in the reverse order. But if a sufficient number of these patients are observed for a long enough time there will be noted a rather definite sequence of events. For they all seem to begin with some kind of fatigue or with mental or nervous "strain" which is its psychological equivalent. This "worry" involves an effort of will in which the visceral "drive" to support the cerebral expenditure of energy is constantly accompanied by a "check" to restrain the impulse to relax or "run away." The result, especially in a nervous individual, who can be defined as one more responsive than the average to environmental influences, is a more intense exhaustion or fatigue than that induced solely by muscular effort. After this initial fatigue there follow the signs of hypothyroidism. If the conditions which induce fatigue continue, these signs more or less rapidly change to those of hyperthyroidism and still later there may be added exophthalmos. The mechanism which causes the latter symptom is still unknown, but it, like others, can be intensified by fatigue and relieved by rest. If recovery occurs there is always a more or less prolonged period of hypothyroidism after the tachycardia subsides before health is regained. But improvement is so constantly preceded and accompanied by rest, and the advancement from a milder to a more severe condition so constantly follows fatigue that the relationship seems obvious.

In experiments with the contractions of voluntary muscles, it has long been known that fatigue first affects thae functions performed by the nerve terminals of end plates. When these structures begin to fail the injection of a thyroid extract (the hydrolyzed residue or alcoholic extract) immediately restores the muscular vigor. But if the fatigue of the end plates is continued until their function is exhausted, then the thyroid injection is without result.* This indicates, of course, that the thyroid acts through or upon the end plates of voluntary muscles. But it acts only when these end plates are capable of at least some functionation. If the end plate for any reason is incapable of functionation then, clinically, there should be no result from thyroid feeding.

The effect of fatigue upon the involuntary nerve terminals has not been demonstrated, but there is every reason to believe that their functionation is governed by the same general laws. If, therefore, extracts of the thyroid can be shown to affect the driving terminals of the visceral nerves, then much of the physiology of the thyroid becomes explainable. And this has been accomplished* For the hydrolyzed thyroid residue or the alcoholic extract of the gland, apparently by acting through or upon the terminals of the vagus, increases the flow of the gastric secretion from ten to twenty fold and that of the pancreas to a somewhat less extent. They also seem, through the corresponding nervous mechanism, to increase the flow of saliva and of urine, and to stimulate the peristalsis of the stomach and intestine and the uterine muscle. In the course of these experiments it was noted that no material could be obtained from either the normal animal thyroid or from the pathological human hyperthyroid gland, which excited, at least for the usual two or three hour period needed for kymograph tracings, any appreciable degree of tachycardia.† But almost any thyroid derivative, when administered for a long enough time, will produce tachycardia. As this symptom under these conditions is accompanied by increased metabolism, it seems probable that the increased heart action of hyperthyroidism is merely an accompaniment of a generally increased chemical activity. The tachycardia seems *not* to be the result of direct stimulation of the cardio-accelerator nerve by the thyroid product.

Extracts of the adrenal gland show effects which are exactly opposite to those of the thyroid. That is, they stop the stimulation previously induced by the thyroid extracts. They act like atropine, but these adrenal derivatives apparently produce their inhibition by stimulation of the functions believed to be performed by the terminal filaments of the sympathetic or "check" nerves. This general inhibitory power of adrenal extracts does not seem to be dependent upon the vasoconstriction produced by their content of epinephrin. For visceral anemia is not evident and a 1:1000 solution of adrenalin has not nearly as much inhibitory power over the stomach as, for example, the adrenal nucleoprotein material which contains only faint traces of epinephrin. These adrenal nucleoproteins, by the way, are particularly active in decreasing the hydrochloric acid of the gastric secretion and in checking gastric and intestinal peristalsis (in dogs).

In the course of experiments to determine the effects of adrenal feeding it was noted that nearly all of the adrenal products or derivatives, except probably adrenalin, seemed to produce a very marked increase in the thyroid's content of iodine.‡

*Extracts of the parathyroid or adrenal glands or adrenalin act in this same way. *Amer. Jour. Physiol.* Vol. xlv, No. 2, January, 1918, p. 97.

Amer. Jour. of Physiol., Vol. xxxix, 1916, p. 345; 1918, xlviii, p. 79.

†*Amer. Jour. of Physiol.*, Vol. xxxix, January, 1915, p. 113; xxxvii, June, 1915, p. 453.

‡Unpublished experiments.

The hydrolized aqueous adrenal "residue" (made like the thyroid "residue") which is rich in epinephrin, seemed the most efficient preparation in this respect. In hyperthyroidism, the severity of the symptoms bears some proportion to the decrease of iodine per gramme of gland substance, and if this means that an increase of iodine signifies a retention of the thyroid product or a decrease in output, then the adrenal derivatives, particularly the adrenal residue, have the same inhibitory effect upon this organ as they do upon the stomach and pancreas. Thus practically all adrenal derivatives seem to act through or upon all of the terminal filaments of the sympathetic ("check") system.

From these observations it is possible to believe that the chemistry or metabolism of each organ is automatically accelerated or retarded by a constantly varying "drive" or "check" mechanism. That the product or secretion of the thyroid (and probably other organs) acts through or upon the terminal filaments of the vagus system and thus, in conjunction with the nerve impulse, forms part of the "drive." That the adrenal product acts similarly through the sympathetic terminals and thus constitutes an essential part of the "check," and because the thyroid and adrenal glands are both believed to be supplied by vagus and sympathetic filaments, it is not improbable that any excess of thyroid product normally produces, by stimulation of the adrenals, a check upon itself. The excess of adrenal secretion should return in the circulation to the thyroid and inhibit the latter's activity. Experimentally, as remarked before, adrenal feeding at any rate seems to increase greatly the thyroid's iodine content.

The simplest explanation of the so-called thyroid neuroses (and indeed of all the visceral neuroses, especially those of the stomach and intestines) involves fatigue and the probable effects of this influence upon the functions of the drive and check nerve terminals. At the outset, fatigue should impair the activity of both mechanisms. Later, with its continuation or increase, the preponderance of the deficiency might be manifested in an increasing failure of the drive, which in the case of thyroid disorders would explain the symptoms of myxedema; or in an increasing failure of the sympathetic or check nerve terminals which would leave the thyroid free from inhibition. The result should be hyperthyroidism. This sequence is more in accord with the observed facts than any primary and vicious overactivity of the gland or of the vagus system. Fatigue, however, is not the only influence known to cause failure in nerve terminals. Poisons or the toxins of bacterial infection produce similar effects. But, clinically, fatigue seems to be one of the most common causes of these neuroses, and for therapeutic purpose is always of great importance.

The narration of case histories to demonstrate the success of any particular kind of treatment is of little scientific value unless the cases can be identified as belonging to more or less definite clinical groups in which other experimenters can verify all the facts. Fortunately, the typical hypothyroid and the typical hyperthyroid disorders can be quite easily identified and the results, if the same medicaments are employed, can be readily confirmed.

Typical myxedema, though comparatively rare, is almost unmistakable. In my experience, however, it is not as easily curable as the text books state.

CASE I.—Mrs. M., age 57, housewife, states that fifteen years previously several well known physicians had told her she had myxedema, and since then she had constantly been taking thyroid tablets, at first with great benefit. Of late, however, the conditions seemed to have changed. If she took no thyroid tablets there were in evidence a general mental and physical asthenia with deficient gastrointestinal functionation and much somnolence. If she took enough thyroid to relieve these symptoms there were added a more unpleasant group. The weakness, if anything, was made worse and there were palpitation and breathlessness, with nervous irritability instead of lethargy.

Physical examination showed the charcteristic facies with the typical ivory pallor and puffy eyelids; some dense edema; pulse rate 54, temperature 97°, respiration 18, weight 174, blood pressure 180. Blood and urine examination showed a slight anemia and a trace of albumin with a few hyaline casts.

June 5, 1915. A trial of 5-grain desiccated thyroid tablets t.i.d., resulted after three days in raising the pulse rate to 120 and a change from sluggish quietude tto a nervous restlessness. The blood pressure remained at 180-190. Weight 170, or a loss of 4 pounds. The desiccated thyroid was discontinued.

June 20, 1915. The signs of hyperthyroidism have disappeared and those of myxedema again prominent. Pulse rate 60, blood pressure 180, weight 172. A tablet containing 2 per cent. of the (pig) thyroid nucleoproteins was given every two hours.

June 25. No hyper symptoms and some improvement in those of the myxedema. Pulse rate 65, blood pressure 160, weight again 176. Medication increased to tablets containing 5 per cent. of the thyroid nucleoproteins every 2 hours.

July 2. No nervous irritability. Perceptible subjective gain. Pulse rate 70, blood pressure 150, weight 178. Medication increased to tablets containing 10 per cent. of the thyroid nucleoproteins.

July 15. Pulse rate 70°, respiration 20, blood pressure 140, weight 178. The puffiness of the eyelids has nearly disappeared. There is some color in the face. The skin is about normal, though still rather dry. The digestion is satisfactory and the subjective symptoms have practically disappeared.

May 3, 1920. This patient is active in "social service" work, but has to take 8 to 10 tablets daily of the 10 per cent. thyroid nucleoproteins. Even a much larger dose does not excite the dreaded hyper signs. While resting or on vacation, 4 or 5 of the 10 per cent. tablets seem sufficient. Any marked degree of activity, especially of nervous strain, induces an asthenia which can be relieved only by increasing the number of tablets.

Discussion:—Some cases of myxedema, especially if the blood pressure is higher than usual, if given sufficient desiccated thyroid to relieve the symptoms, will develop the even more troublesome signs of hyperthyroidism. If, however, the form of the thyroid medicament is altered to the nucleoproteins of the gland, the evidences of overdosage or change from a bad to an even worse condition has not in my experience occurred.

The following is an example of a very large group of cases which pass under the name of "neurasthenia," "nervous prostration," "nervous indigestion" or incipient or typical hypothyroidism. The condition seems really to be the result of too much work by too frail an organism, or a fatigue presumably of both the drive and check mechanisms. The key to the therapeutic problem is first rest, and next the psysiological aid of the drive which can be supplied by the right kind of thyroid feeding.

CASE II.—Miss A., age 19, telephone operator. Referred to me with a diagnosis of incipient hyperthyroidism and probably in need of operation. She has been unable to perform her regular duties for six weeks.

Complains chiefly of being "weak, tired, and nervous"; weeps easily and frequently; many headaches; "palpitation" and "breathlessness" are troublesome, especially after the least exertion or excitement. The palpitation of the heart often occurs on going to bed. Sleeps poorly and with bad dreams; has anorexia, gaseous indigestion, constipation. Physical examination shows a rather thin, poorly-nourished, and evidently "nervous" individual. Pallor noticeable, skin dry, hands cold. There is a slight thyroid enlargement which is perceptible to sight and touch. Tremor of the extended fingers. Pulse rate evidently "irritable," and 100-110 at first, but after sitting and talking quietly a few minutes it was counted again and found to be 80. Blood pressure (systolic) 110. Weight 120. Blood examination showed 95 per cent. hemaglobin. Cell count normal. Urine normal. No detectable visceral defect.

Diagnosis.—Chronic hypofunctionation of the vagus system and probably also of the thyroid.

Treatment.—November 10, 1919. When advised to take every two hours a tablet containing 2 per cent. of sheep thyroid nucleoprotein material, she manifested some reluctance as she said the thyroid tablets previously recommended had made her much worse. Finally the medication was accepted. In addition she was told to lie down an hour before and after meals and to be on her feet not more than fifteen minutes at a time and to be in bed at 9 p. m.

November 17, 1919. Reports one week later with considerable subjective improvement. Is much less "weak and tired and nervous." No headache. Appetite, digestion and sleep are better. No palpitation. Pulse rate 76 to 80, but still somewhat "irritable." Blood pressure (systolic) 120. Weight 123, or a gain of 3 pounds. Advised to double the amount of 2 per cent. sheep thyroid nucleoprotein tablets.

November 24, 1919. Examined and found practically normal, but still easily fatigued. Weight 126, or a gain of 6 pounds in two weeks. Returned to work, but advised to continue two of the tablets of 2 per cent. sheep thyroid nucleoproteins five or six times daily for months.

Discussion:—The history was that of constant work under much "nervous strain" followed by symtoms which indicated a fatigue of both the vagus and sympathetic systems. There was an evident lack of mental inhibition or "check" in the emotionalism, and of muscular "check" in the tremulousness and irritable pulse rate. The lack of "drive" showed chiefly in the deficient cutaneous vasodilatation and muscular energy, and the deficient gastrointestinal functionation. If the thyroid is part of the "driving" mechanism, then thyroid feeding with the least "toxic" thyroid material should be the logical and physiological treatment. Rest, of course, is essential.

The variable effects of the different thyroid preparations are difficult to explain, but real and important, and can probably be best understood from case histories.

CASE III.—Miss B., age 20, saleswoman. Unable to work for two months. History almost exactly like that of CASE II. Complains chiefly of anorexia and some nausea, and of much epigastric distress after eating, with gaseous indigestion and eructations and constipation. Amenorrhea for three months. She is also "weak, tired, and nervous" and emotional; many headaches, especially in the morning. She had been treated for some time for "stomach trouble" without gain, and had finally gone to a dispensary where a trial of 1 grain thyroid tablets had excited marked palpitation and nervousness. She later had had the Goetsch test with adrenalin, which she said was positive. A "goitre" had been noted since puberty, and recently had increased in size. A thyroid operation had been advised.

Physical examination showed a tall, poorly developed, and poorly nourished young woman. Noticeable pallor. Dry skin. Moderate, soft, perfectly symmetrical enlargement of the thyroid to about triple the normal size. Pulse rate irritable and 120-130 at first, but after lying at rest for half an hour it was counted at 80. Blood pressure (systolic) 145, weight 132. Blood count and hemaglobin normal. Urine normal.

Diagnosis.—Chronic hypofunctionation, probably of the visceral vagus system, and also of the thyroid.

Treatment.—April 25, 1919. Rest, as in Case II, and every two hours the tablets of 2 per cent. thyroid nucleoprotein.

April 28. Reports with little or no improvement and with some increase in the "nervousness" and "palpitation." Tablets discontinued and 5 to 10 drops of the liquid thyroid residue given every two hours by mouth.

May 5, 1919. Reports that she feels exceedingly tired, but is sleeping and eating better, and has almost no indigestion. Pulse 76, blood pressure 110, weight 134, or a gain of 2 pounds. Thyroid residue (10 to 12 drops) by mouth continued, and the tablet containing 2 per cent. of thyroid nucleoproteins added to the medication.

May 14. Almost no indigestion; appetite improved. Complains only of being weak and easily tired. Sleeps better. Pulse 76, blood pressure 115, weight 138. Thyroid residue and 2 per cent. tablets discontinued, and in their place there was given the tablet of 5 per cent. sheep thyroid nucleoproteins to be taken every two hours indefinitely. Returns to work with the warning to regard lack of sleep, nervous irritability, or indigestion as the initial signs of a recurrence of the "overstrain" or thyroid disorder.

CASE IV.—Mrs. C., age 30, machine operator in a "sweat shop." The history and physical examination are almost exactly the same as in Cases I and II, except that the chief complaint is of an ache or pain in the region of the thyroid gland, with a sensation of tightness as of a band or cord around the neck. After exertion or excitement this "tight feeling" causes difficulty in swallowing. Had been told to have the thyroid excised. In addition, there were the usual complaints of "lack of drive" in many organs, or hypothyroidism.

Physical examination showed only a slight, soft, symmetrical enlargement of the thyroid gland. Pulse rate 70-80. Blood pressure 130. Weight 128. Blood and urine normal.

Diagnosis.—Chronic hypofunctionation of the vagus system, and probably also of the thyroid.

Treatment.—March 12, 1918. Cessation from work for one week, with as much rest as possible. Thyroid residue, 10-12 drops every two hours.

March 15, 1918. The discomfort and pain in the throat have disappeared. Appetite, digestion, and sleep improved. Tablets of 10 per cent. thyroid nucleoprotein substituted for the liquid residue.

March 23. Compelled to return to work, but though still easily fatigued can continue her occupation without the distress in the throat as long as she takes the thyroid tablets.

Discussion:—Cases II and III both had, in addition to the accepted signs of hypothyroidism (which are chiefly those of deficient functionation in the vagus system), an "irritable" pulse rate. This is generally supposed to indicate a "mixed" hypo- and hyperthyroidism, and yet it can be relieved by the right kind or least "toxic" form of thyroid feeding. The nucleoproteins acted well in Case II and did not in Case III in which deficient gastrointestinal functionation was the most distressing complaint. But after feeding the liquid thyroid residue for a short time there was relief of the indigestion and decrease of the blood pressure. The nucleoproteins then acted well and continued the improvement. In Case IV, the pain or ache in the region of the thyroid, or a "choking," "constricted" sensation, almost always accompanied by at least a perceptible enlargement of the gland and other signs of hypothyroidism, is very common. It cannot be hysterical or imaginary because it is regularly relieved by rest and by feeding preferably the thyroid residue. This discomfort or pain in the throat is apparently not

due to mechanical pressure, as evidenced by the following history.

CASE V.—Mrs. W., age 42. After a strenuous period of Red Cross and other social war activities, noted a circumscribed swelling in the right lobe of her thyroid gland. This had slowly enlarged for the past six months, and is always more noticeable during menstruation or after exertion or excitement. For the past month has been "weak, tired, and nervous," with rather constant "palpitation and breathlessness." Her neck for years has been "full," and formerly there were many headaches, especially after any fatigue. There used to be much anorexia, dyspepsia, and constipation. Of late, the headaches have disappeared and the appetite and digestion have improved. Much alarmed about the disfiguring "goiter" and about the feeling of "constriction" and "pressure" in the thyroid region.

Physical examination showed a well nourished woman, good color, flushes easily; a rather firm, circumscribed, globular tumor, apparently an adenoma or cystadenoma, some two inches in diameter in the right lobe of the thyroid. The rest of the gland seemed slightly enlarged throughout, and except for this single tumor, of an even consistence throughout. Tremor in extended fingers. Pulse rate 110-120, and in repose 100. Blood pressure 140. Weight 156. Blood and urine and other examinations were negative.

Diagnosis.—Mild incipient hyperthyroidism, or mixed hypo- and hyperthyroidism, probably dependent upon a so-called "toxic adenoma."

Treatment.—Nov. 18, 1919. Rest, and the tablets containing 2 per cent. of the sheep thyroid nucleoproteins every 2 or 3 hours. Result: Some relief of symptoms, especially of the feeling of pressure and constriction of the throat. But unless a very quiet mode of life were pursued, with much rest, the nervous and emotional irritability and the palpitation immediately reappeared. The pulse rate was regularly about 100. Therefore, on February 4, 1920, under local anesthesia with 1 per cent. novocaine, I "shelled out" of the right lobe of the thyroid a well encapsulated, solid, globular adenoma about two inches in diameter. Both superior vessels were at the same time tied and cut, and a section for histological study taken from the tips of both thyroid lobes. The pathologist's report later stated that the lobes appeared normal, except that the alveoli were rather large and the colloid matter stained palely. The tumor was an adenoma with considerable hyperplasia.

February 15. The nervous and vasomotor irritability had promptly subsided. Pulse rate 72. Blood pressure 120. Condition normal, except for a rather noticeable pallor. A perceptible, symmetrical thyroid and some natural weakness. Goes to Atlantic City for two weeks of rest and quiet. Condition that of mild hypothyroidism.

April 2. States that she returned perfectly well to take up her usual activities and again was easily fatigued and had a "tight feeling" in her throat. Her family physician had advised some 1 grain thyroid tablets which, after a few days, had seemed to make her very nervous and short of breath and had not relieved the pain in the thyroid region. This peculiar symptom alarmed her with fear of recurrence of the "goitre." Physical examination showed the usual transverse scar and the thyroid slightly smaller, if anything, but still perceptible, and of even soft consistency. Pulse rate 110. Blood pressure 120. Weight 160.

Diagnosis.—Recurrent mild hyperthyroidism, probably due to injudicious thyroid feeding.

Treatment.—April 2. The commercial thyroid tablets were discontiuued for three days, and also every unnecessary activity.

April 6. Reports that the nervousness has disappeared and the constriction of the throat is less but recurs after any exertion or excitement. Pulse rate 76. Blood pressure 120. Advised that the tablets of 5 per cent. sheep thyroid nucleoproteins be taken every two hours, but stopped if they excite any nervousness or palpitation.

April 16. Reports much improved. The disagreeable throat sensations promptly disappeared. Much less easily fatigued.

Several weeks later she reported again that she had had to continue the thyroid feeding, as after interrupting it a few days she felt "tired." Advised to continue the tablets indefinitely.

Discussion:—This last patient gave a history strongly suggestive of a mild "hypothyroidism" which had existed for years. Then after prolonged exertion and excitement there developed a so-called toxic adenoma and symptoms of mild hyperthyroidism which could only be entirely relieved by operation. The distressing "constriction" or "pressure" in the thyroid region could not have been due to the mechanical pressure of the tumor because it returned after its removal, and disappeared after the thyroid feeding. In the preceding case, with the same symptom of "constriction" or "pressure" pain in the thyroid region, there was never any tumor and only a very slight enlargement of the thyroid.

After operation in Case V, the patient apparently returned to her original condition of mild chronic hypothyroidism, which was then changed to hyperthyroidism by feeding the usual commercial preparation of thyroid. The less "toxic" nucleoprotein material did not excite these signs and did relieve all the symptoms. The previous patient, however (Case IV), could not even take the thyroid nucleoproteins until a beginning was made with the hydrolyzed thyroid residue. Whether this has anything to do with the functional activity of the digestive system it is impossible to say, but if the predominant symptoms are those of hypofunctionation of the gastrointestinal tract, the liquid thyroid residue seems generally more beneficial than the nucleoprotein tablets. After a preliminary improvement with the residue the nucleoproteins will generally prove beneficial. The most definite sign of hyperactivity of the thyroid is believed to be furnished by the calorimeter. Even when this proves that the rate of metabolism is above the normal, the thyroid residue may not be counterindicated, as shown in the following case.

CASE VI.—Miss L., age 38, presents the usual symptoms of mild exophthalmic goitre, except a rather marked pallor (no anemia). Poor appetite and deficient functional activity of the gastrointestinal tract (gaseous indigestion and constipation). General condition good. Slight but unmistakable exophthalmos, small firm goiter. Pulse rate 110-115. Temperature 99-100. Blood pressure 180. Weight 156. Tremor in extended fingers. Goetsch adrenalin test had been positive. Calorimeter test (Benedict apparatus) 20 per cent. above normal.

Treatment.—March 2, 1920. Because of the general good condition, the marked pallor, the apparent deficient functionation of the gastrointestinal vagus, and the rather high blood pressure, a trial was made of feeding the thyroid residue at first in five, then ten, drop doses by mouth every two hours. No change in diet or mode of life. She had been practically in bed for the previous six weeks.

March 12. Considerable subjective improvement, especially in digestion. Pulse rate 90-100. Temperature 98.4°-99.5°. Blood pressure 150. Tremor less marked. Calorimeter test had decreased to 8 or 10 per cent above normal. Thyroid residue continued.

March 19. Out of bed most of the day. Exophthalmos just perceptible. "Goiter" softer. Pulse rate 80-90. Temperature 98.4°, and after awakening in the morning slightly subnormal. Blood pressure 115-120. Weight 160. The only subjective symptoms were asthenia and some wakefulness relieved by a mild hypnotic. Medication changed from the thyroid residue to the tablet containing 5 per cent. of the sheep thyroid nucleoproteins.

She has resumed work as a private secretary, but has

to continue the thyroid nucleoproteins. If omitted for any length of time the general asthenia returns.

Discussion:—There was every evidence, in the clinical signs and in the increased metabolism, of hyperthyroidism, yet "feeding" thyroid seemed to effect a cure. Although the opportunity to repeat the crucial calorimeter test in conjunction with the thyroid residue medication in a case of apparent hyperthyroidism which showed exophthalmos has not again occurred, this clinical experience has been noted several times. That is, patients with all the clinical evidences of hyperthyroidism and with more or less of the temperature which accompanies increased metabolism may be benefited by this form of treatment, and when in doubt as to the exact indications a cautious trial of the medicament in 5 or 10 drops doses is at least free from danger. If it intensifies any symptoms it can be stopped and the symptoms will soon disappear.

The following experience with the thyroid residue shows how it may be of value in the so-called postoperative exacerbations of hyperthyroidism.

CASE VII.—Miss C., age 42, showed multiple toxic adenomata of the thyroid with symptoms of marked hyperthyroidism and some tracheal pressure.

Oct. 5, 1917. Enucleation of several large adenomata from both lobes of the thyroid. Ligation of both superior vessels. Much traumatism of the gland. There remains probably about one-half of the normal amount of thyroid tissue.

Oct. 7, 1917. Severe reaction. Headache, much nervous irritability, scanty urine. Pulse rate 160. Respiration 50. Temperature 104°. Thyroid residue, 20 minims given by hypodermic three times at four-hour intervals.

Oct. 8, 1917. Pulse rate 120. Respiration 30. Temperature 101°. Headache, nausea, and nervousness much improved. Skin moist. Ten drops of thyroid residue given by mouth every 2 hours for four days.

Oct. 13, 1917. Condition practically normal. Left the hospital at the end of four weeks taking the tablets of 2 per cent. sheep thyroid nucleoproteins with apparent benefit.

March 20, 1919. Reports without any perceptible thyroid enlargement or any evident functional thyroid disturbance. But complains bitterly of an aching pain in the right arm and in the shoulder, and "shortness of breath." Respiration has a "sighing" character with a constant effort to obtain "more air." Some gaseous indigestion and constipation. Blood pressure 120, pulse rate 70. Urine negative. No gross abnormality could be detected. A tentative trial of the liquid thyroid residue and then of the nucleoprotein tablets produced some relief of the gastrointestinal symptoms, but not of the troublesome "neuralgia" nor of the peculiar subjective dyspnea. An alcoholic extract of the thyroid (pig), made as described previously but with only one-half of the iodine content of the thyroid residue, was then given by mouth in 10-12 drop doses every 2 hours.

After the first 24 hours the "neuralgia" had disappeared and the dyspnea was less. Two days later all symptoms had disappeared. The alcoholic thyroid extract was continued for a week, and the tablets of 10 per cent. sheep thyroid nucleoproteins then substituted. Since then if she suspends the thyroid feeding for any length of time and then indulges in much social activity, the neuralgia recurs, if not in the arms, in the leg or often in the back or occipital region. This alcoholic thyroid extract promptly relieves it.

Discussion:—The threatening reaction which followed the operation upon the thyroid seemed to be greatly relieved by the thyroid residue. Its use was suggested by the apparent deficient functionation in the gastrointestinal vagus system, and because it seemed improbable after the violent manipulation of the thyroid that this gland was capable of any activity. The result seemed to justify the assumptions, and the experience has been repeated, although always with caution, in many similar cases. In a few instances, but by no means in all of the postoperative toxemias, the thyroid residue has seemed to be life saving. Several years later, this patient presented no evidences of thyroid abnormality except the history. The complaint was chiefly "neuralgia" and subjective dyspnea. Neither symptom was affected by the (aqueous) thyroid residue nor by the nucleoprotein tablets. The latter seemed even to increase the dyspnea. But the alcoholic extract of the thyroid promptly relieved both the dyspnea and the neuralgia. I can offer no explanation for the different effects of these different thyroid preparations. I can only state that if the symptoms of deficient activity in the vagus system are very suggestive of thyroid hypofunctionation, and one kind of thyroid medicament fails, another thyroid preparation may succeed. The alcoholic extract of the gland is very useful for these vague but evidently distressing "neuralgias," and also for the rather peculiar "dyspnea" which is generally regarded as hysterical.

The typical hyperthyroid cases show an apparent overactive functionation or "vagotonia" of the entire autonomic or "driving vagus system." These symptoms, as remarked above, are more easily explained as really dependent upon a deficiency in the chromaffin or general sympathetic-adrenal "check" mechanism. Although the majority of these patients require more or less extensive operation, a few can be greatly benefited by one or another kind of adrenal feeding. Experimentally, as remarked before, this increases the iodine content of the thyroid. In hyperthyroidism the iodine content of the gland is less than normal. Theoretically, also, adrenal feeding should stimulate or increase the functionation of the apparently deficient check mechanism.

CASE VIII.—Miss H., age 18, after a strenuous "coming out" season, with much excitement and insufficient sleep, showed mild but perfectly typical symptoms of exophthalmic goitre. Has been resting and taking iodine and ovarian tablets (for scanty and painful menstruation) with bromides and sedatives for three months without improvement.

Physical examination Sept. 20, 1919, showed slight but unmistakable exophthalmos. Moderate-sized, soft, symmetrical thyroid enlargement. Pulse rate 120-130. Blood pressure 120. Weight 118. Temperature 99.1°. Tremor pronounced, with "jerky" movements. Good color, flushes and pales easily. Moist skin, appetite abnormally good. Bowels move twice or thrice daily. Cannot sleep before midnight. Fatigues easily, both mentally and physically.

Treatment.—Advised 10 drops of the adrenal residue by mouth in water every two hours. No change in the mode of life, which for the past three months had been one of seclusion, and only about four hours daily out of bed.

Oct. 15, 1919. Appreciable though slow gain in the pulse rate, now 110-115, and especially in the weight, now 128. Subjectively less "nervous." Adrenal residue continued.

Nov. 19. Continued improvement. Pulse rate 90-100. Weight 132. Sleeping more normally. Bowels move once instead of several times daily. Up and about the greater part of the day. Adrenal residue continued.

Dec. 10. The exophthalmos is almost imperceptible, the goitre smaller, tremor much less, no jerky movements. Pulse rate when quiet 80-90. Weight 136. To the medication with the adrenal residue there was now added iodine after meals in the form of 1 grain

iodide of iron pills (which in these cases seems the best tolerated of any iodine preparation). Iodine in the form of small doses of iodide of potassium had been given during the previous summer without effect.

Dec. 15. Following the administration of the iodide of iron the "goitre" has enlarged—this is accompanied by a "tight feeling in the neck." The iodide of iron was stopped, adrenal residue continued.

Dec. 17. Goitre again soft and smaller, no feeling of constriction. The 1 grain pills of iodide of iron given once daily every other day. Ten drops of the adrenal residue six or seven times daily. There followed no ill effect and apparently much gain.

Jan. 15, 1920. About normal, except for a perceptible thyroid enlargement; a rather irritable pulse rate which when lying down was between 70 and 80. Weight 142. Asthenia still present. The iodide of iron was now given once daily, and later twice, and with apparent benefit. The adrenal residue as before.

March 10. Discharged as well.

Discussion:—The administration of the adrenal residue without other change in the treatment seemed very beneficial. Iodine has to be used with caution in these cases, because of the danger of an acute exacerbation of hyperthyroidism. But this risk can always be escaped if, as in this case, the preliminary swelling of the gland with the sensation of constriction are noted and the iodine stopped. It had been given in the preceding summer without any appreciable effect, but after a preliminary treatment with adrenal feeding the iodine then seemed useful.

CASE IX.—Mrs. M. dates her present illness from the effects of a hysterectomy for fibroid uterus at the age of 34, in 1906. Both ovaries had been preserved. During the Spring of 1908 she developed typical rather severe symptoms of hyperthyroidism, and apparently recovered after the use of antithyroid serum. Remained well for nine years.

Nov. 10, 1917. After a period of hard work and worry again shows somewhat irregular signs of hyperthyroidism. No exophthalmos; brownish coloration of the skin, which is moist; small, firm, symmetrical "goitre"; pulse rate 110-120; blood pressure 210; weight 104; blood and urine negative; tremor present, with nervous, jerky movements; good appetite; bowel movements loose and 5 or 6 daily; has been practically in bed for two weeks and has lost 8 pounds.

Treatment.—Nov. 10, 1917. Diet and mode of life unchanged. Advised 1 grain tablets containing 10 per cent in each of adrenal nucleoproteins, 2 every 2 hours.

Nov. 17. Considerable improvement, especially in the "colitis." Bowel movements 2 instead of 5 or 6 daily. Pulse rate 90-100; blood pressure 180; weight 106. Less nervous, less hungry. Adrenal nucleoproteins continued.

Nov. 24. Continued gain. Pulse rate 80-90; blood pressure 170; weight 108. Up and about the house.

Dec. 2. Practically normal again, except for the "goitre." Somewhat irritable pulse rate (after resting 76-80, after any exertion 90-100), and blood pressure 150. Weight 107. The continuation of the adrenal nucleoproteins for another month with a quiet mode of life seemed to restore the usual good health.

A year later, however, after "moving," almost the same condition returned, with tachycardia, signs of a painless enterocolitis and high blood pressure (220). These symptoms were again apparently all relieved by feeding the adrenal nucleoproteins. The blood pressure returned to 150.

Discussion:—The adrenal nucleoprotein material, because of its low content of epinephrin (mere traces), was employed instead of the adrenal residue which is very rich in epinephrin. There are no experimental data to justify any assumption that the product of the adrenal gland has any lasting effect in raising (or lowering) blood pressure. Nevertheless, clinically, in these somewhat irregular hyperthyroid conditions with *high* blood pressure, especially when the bowels are loose, the adrenal nucleoprotein material will be found very useful. It seems to lower the blood pressure and improve the gastrointestinal functionation and benefit the general condition. Its only ill effect is occasionally an intensification of the feeling of "nervousness." Then it can be stopped. On the other hand this material had been employed in the College dispensary for the treatment of some rather vague cases of "neurasthenia," or general weakness, without any discoverable lesion except a constantly and noticeably *low* blood pressure. The improvement has been accompanied by a rise in blood pressure.

There are many gastric neuroses (occurring chiefly in men) which seem to be closely analogous to the thyroid neuroses (occurring chiefly in women). These disturbances are not generally considered among the problems of organ therapy, yet they are very susceptible to this form of treatment. And there is good reason for it because of the more or less definitely proved functions of the nerve supply of the stomach. Thyroid extracts stimulate the vagus terminals and the adrenal extracts, those of the "check" or sympathetic system. Consequently, adrenal feeding should be beneficial in cases of gastric hyperfunctionation and thyroid feeding in the opposite conditions.

CASE X.—Mr. F., age 44, mechanic, had suffered from epigastric distress for more than a year with, latterly, occasional vomiting (no blood). Has lost 30 pounds in weight. Pain is worse before than after eating, and latterly awakens him soon after midnight. Relieved by sodium bicarbonate. Constipation.

Physical examination: Somewhat emaciated, nervous type; otherwise negative. Test meal showed total acidity 115, free HCl 40. *X*-ray examination reported a probable pyloric ulcer.

Exploratory laparotomy May 28, 1920, revealed no gross abnormality of the viscera. Recovery uneventful. One week later the epigastric distress was nearly as troublesome as formerly. Test meal, June 11, 1920, showed total acidity 110, free HCl 40.

Treatment—Two one-grain tablets, in each 10 per cent. of adrenal nucleoproteins, given every two hours. "House" diet. Patient about the wards.

June 18, 1920. Considerable subjective improvement. Constipation much relieved. Test meal; total acidity 80, free HCl 26. Adrenal nucleoprotein tablets continued.

June 25. Feels quite well. No more gastric distress. Gained 3 pounds. Test meal: Total acidity 58, free HCl 8. Dismissed with the advice to continue the adrenal nucleoprotein tablets indefinitely, and to be careful about fatigue and overwork;.

CASE XI.—Mr. B., age 56, mechanic, has had epigastric distress with belching of gas for several years. No night pain. Poor appetite; some nausea; constipation; has lost about 10 pounds in the last six months; easily fatigued; wakeful. Appendix removed without benefit a year ago. Sent to hospital with diagnosis of gastric ulcer.

Physical Examination.—June 7, 1920. No apparent thyroid abnormality; fair general nutrition; *x*-ray of stomach negative. Test meal showed total acidity 20, free HCl 8.

Treatment.—Rest in bed; "house" diet; and every two hours mxx of thyroid residue by mouth.

June 14. Considerable subjective improvement. Less gas; less constipation. Test meal: total acidity 30, free HCl 14. Up and about the ward.

June 22. No discomfort, but still some "gas." Eats and sleeps well. Bowels regular. Gained 5 pounds. Test meal: total acidity 42, free HCl 18. Leaves with the substitution for the liquid thyroid residue (which easily decomposes) 1 grain tablets containing in each 10 per cent. of the thyroid nucleoproteins,

One month later there were no complaints.

There is another gastric neurosis which gives practically the same subjective symptoms as that accompanied by hyperacidity and pylorospasm. The objective findings, however, are normal except for some hyperperistalsis. This disorder can be relieved by rest, with pancreatic feeding in the form of trypsin, or trypsin combined with bile or bile salts.

As regards pituitary, parathyroid, ovarian, and other organ therapy, case histories could be narrated to show the value of the treatment. But these patients cannot as yet be classified in easily recognizable clinical groups like those who show an excess or deficiency of "drive" in one or more organs. Their symptoms are almost entirely subjective, and the changes induced by the medicament are generally incapable of objective demonstration. Or they occur so slowly as to suggest error in observation and so, for scientific evidence are practically valueless. Hence it is only possible to state didactically that there are many individuals, especially those having or having had some thyroid or gastric abnormality, who suffer from headache. This symptom can sometimes be relieved only by feeding pituitary, parathyroid, or ovarian material, and the nucleoproteins of these glands, as remarked before, will generally be found more efficacious than the desiccated entire organ. The "residue" of the pituitary or parathyroid glands (made like the thyroid or adrenal residue) showed no clinical advantages in our experiments over the nucleoprotein material and was, therefore abandoned. The ovarian "residue" seemed, however, at times to be efficacious when the ovarian nucleoproteins failed.

Some patients, especially those with hypothyroidism and poor general nutrition, who complain chiefly of asthenia, will continue "weak" unless the pituitary nucleoproteins are added to the thyroid medication. The pituitary or the parathyroid also seems helpful when there is an apparent asthenia or "lack of drive" in the small or large intestine. For functional dysmenorrhea, menorrhagia, or amenorrhea the ovarian nucleoproteins, or the (hydrolyzed aqueous) ovarian residue, have seemed preferable to any other form of ovarian medicament. But thyroid, or even pituitary, feeding is sometimes more efficacious, or a combination of thyroid and ovarian, or of pituitary and ovarian, feeding. The indications for and the results of treatment are as yet so vague and variable as to bring the whole matter of organ therapy into disrepute. This is partly due to the hitherto ill-defined symptomatology, and partly to the uncertain and unsuitable character of the medicaments. But there is now reasonably good evidence for believing that the products, at least of the pituitary, parathyroid, thyroid, and adrenal glands, act through or upon the terminal filaments of the involuntary and possibly the voluntary nerves. Hence, at least, some disturbances of function can be traced back to their source. The next problem is to reenforce and not impair the primary weakness, for it is safer to assume from all the available facts some original defective or deficient functionation, either secretory or nervous, rather than a causeless and vicious overactivity. For supplementing an organ's defective or deficient product it is more or less reasonable to administer the nearest available approach to this product, and one that experimentally produces demonstrable effects where theoretically they should occur, is probably better than the crude material consisting of the entire desiccated organ.

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STATE MEDICINE AND THE POETIC DOCTOR.

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A DEFINITION is:—Building a fence of words around a fact which separates it from every other fact. Here are some timely ones.

Order is the harmonious relation of things which exist.

Law is a Rule of Order; it affirmatively specifies that which is right and meet and just and permissible and preservative of harmony and it negatively forbids that which is wrong and subversive of harmony. The Law which governs the harmonious relation of our Earth to the Planetary world is as intangible as the law which governs the conscience of a man, but the law which governs the abuse of that conscience by man in his relations with his fellows proceeds from the minds and hearts of those fellowmen and takes the form of a collective contract or agreement which specifies the rights and duties which may be enjoyed or must be fulfilled; its foundation is what we call a Constitution without which Society or the State, as such, can not exist: Lincoln crystallized this when he asked the second part of the question (*a*) Can a nation continue to exist half slave and half free? (*b*) Can a State, prior to the adoption of a constitution, forbid slavery within its borders?

To provide physical media for the expression of government the collective parties to that Constitution devise the Administrative, Legislative and Judicial Branches of Government and ordain that each shall be separate and distinct, that neither shall usurp the function of the other but that the trinity of function shall *be* the government; and to insure order to themselves and posterity the Collective Contractors reserve to themselves and those who legitimately follow, the right to determine the form of government and the media of its expression: The perfection of such organized government is our own beloved United States of America and its gloriously inspired Constitution. *You* probably know these things, but there are a lot of people who have either forgotten them or deliberately ignored them in their scramble for *uplift*.

THE POLICE POWER OF THE STATE.

Man is weak and prone to error; it would be humanly impossible for every act which proceeds from human impulse to be made the subject of statutory decree, therefore the power, vested in the Judiciary to interpret the meaning of Legislative Acts and their enforcement by the Administration, is made capable of a degree of elasticity to maintain the balance of abstract Justice; in the olden days this liberal interpretation was vested in the

King's Conscience and has come down to us as Courts of Equity or the Equitable Powers of the Law Courts: This supreme function is exercised through what is known as the Police Power of the State, under the doctrine of Public Policy, and it is with the *police power of the State* that we have to reckon in considering the practical operation of such miscalled *welfare* legislation as Compulsory Health Insurance, State Medicine, the National Socialization of Medicine, Coercive Re-Registration Acts under the specious title of "Medical Practice Acts," Administrative Right of Search (Narcotics and Alcohol) with a "tin badge" as authority in lieu of the Judicial Search Warrant, etc., etc., etc.

THE DUTY OF THE INTELLECTUALS.

"All men are created equal," says the Declaration of Independence, but we know that heredity, education and environment modify the social and civic and economic equality and produce classes precisely as one acorn will develop into a sturdy oak while another will produce a delicate sapling which will wither and die. It is the Natural Law, and Sovietization will not change it. Because of this, Public Policy demands that he whose advantages rank him among the Intellectuals shall exercise toward his less fortunate neighbor the highest type of duty; the law defines this as "uberrima fides" and imposes it upon the trustee in his relations with his cestui, the guardian toward his ward, the lawyer with his client, the teacher with his pupil, the doctor with his patient, etc., etc. Medical men as a class have always fulfilled this duty solemnly and seriously; their intimacy with the mysteries of life and death makes them a class apart; the highest sentiments of sympathy and love for helpless, suffering creatures, from the cradle to the grave, make them truly *poetic* in character and that very poetry of human relationship makes them beloved of all men who have sympathy with human suffering while it has earned for them the Rubinow-ski sneer which sees in the "Poetic Doctor" an obstructionist of those schemes of the enemies of social order who would make the practice of medicine a pawn in the game of politics for the special benefit of the "something for nothing lads." It is the poetic character of the medical man which impels a John B. Murphy, of happy memory, to forego his *rights* as an American citizen to patent and commercialize, for his own benefit, a "Murphy button" which changed the mortality record in intestinal surgery almost overnight.

Human nature has a good "forgettery." The glories of the sunlight are taken as a matter of course until a dark and dismal day gives us pause, therefore it is the solemn duty of medical men at this time to keep the public eye focused upon the poetic devotion and self-sacrifice of the doctor in peace and in war so that the public mind may be properly receptive of the warning which it is the duty of medical men to convey, that the citizenry may know the viciousness of hysterical public health legislation of this type and public opinion moulded against it; there are two things which "speak right out in meeting" when the ordinary type of legislator is legislating—Money and Votes. The propagandists of this miscalled welfare legislation have the money, but medical men have the confidence of the people which means *votes* sufficient to smash party solidarity to bits if we go to the people with the facts and ask their support regardless of party affiliations. This is not a theory of a dreamer, it is a demonstrated fact of which the Campaign of 1919-1920 furnished sufficient evidence to prompt the New York State Legislature of 1920 to send to the scrap heap 13 out of 13 bad public health bills which would have made the profession of medicine a piece-working trade and the people of the State the victims of a debased and degenerated type of politically dominated medicine.

IT WOULD BE UNCONSTITUTIONAL.

When I began, in my County, to awaken the medical men I heard, ad nauseam, "Why, Doctor, they couldn't pass such bills, they would be unconstitutional!" Poor, innocent babes! the American people said that about Prohibition and rolled over and went to sleep again, and awoke one fine morning to find that it was the *law* and the Judiciary was impotent to change the situation because, you see, the present day collective parties to the contract called the Constitution had, by their indifference and civic indolence, permitted a little group of fanatics, exhaling an odor of mock sanctity, to impress upon the Legislators of the States and the Nation that *they* were representative of American thought; the minority was organized and the majority was not, and was not even well informed: Now they must take their medicine like little men because *equity* says, "He who will not speak when he may, may not when he will." This is not a nation of drunkards, therefore prohibition affects only the pleasure of the palate and the degree of conviviality of the average American Citizen, as smoking pleasurably stimulates the olfactory nerves and conduces to comfort and contentment; Vicious public health legislation, however, will affect the health and life of the citizenry; Will the public "forgettery" help the work of the forces of unrest to prostitute the agencies of healing or is there enough of the Spirit of '76 left to produce sufficient Paul Revere's to carry, and Minute men to receive and transmit a warning to arouse the American People to a realization of the Fact that this is not the Medical Men's fight for an economic existence, but *was* the precursor and *is* an aftermath of the World War; the Forces of Unrest against the constituted agencies of Order, and False Doctrinaires, the Herr Professors, the Professional Philanthropists and the Busy-body Social Surveyors who constitute the High Priests of the congregations of "worshippers at the shrine of something else than Americanism" against the traditions and institutions of this country, for which the men and women of all generations have given their lives, were the pre-war Kulturists, the war-time pacifists and obstructionists and are the present-day university, magazine, parlor and gutter agitators who abuse the liberty of speech and of the press and are permitted to get away with it.

ORGANIZED KNOWLEDGE IS POWER.

To teach, one must know and it is the duty of medical men to acquaint themselves with the *facts* of this vicious legislative propaganda and with the anti-American attitude and affiliations of the propagandists who see in what they euphemistically label

"State Medicine" a means of accomplishing what they failed to do through Compulsory Health Insurance propaganda, because the people know more about that tricky legislation, now, than the legislators did when they voted for the Davenport-Donahue Compulsory Health Insurance Bill in the N. Y. Senate in 1919. If the propagandists can "put across" State Medicine as a wedge for the subsequent national socialization of medicine, with a Secretary in the Cabinet, and a Federal Department subrogated to the right, title, interest, control and domination (politically) of the agencies of healing, public and private, corporate and individual, then that group of radicals will be content and some professional philanthropists and social surveyors, etc., will retain their jobs and receive their pay from the coffers of some of the Foundations and others through the finance department of the organized forces of unrest.

WHAT STATE MEDICINE IS.

State Medicine always has been and always will be, until organized Government gives place to anarchy, and order is superseded by chaos. Just what *is* State Medicine? It is the practice and application of the principles of medicine by the State, as such. It is properly made manifest through the Preventive Medicine of the Departments of Health and Education and Public Works and as Curative Medicine through the Departments of Charity and Correction and Labor.

It is State Medicine for the Nation, the State, or the Municipality to maintain quarantine against epidemic disease from without or from within.

It is State Medicine to safeguard jealously the food, water, and fuel supply of the people and the sanitation of dwellings and the removal of food waste and other noxious materials from the places of habitation.

It is State Medicine to teach personal hygiene in the schools and forum and through the teacher of teachers—the public press.

It is State Medicine to provide adequate hospital, dispensary and laboratory facilities for the poor and to safeguard the insane, mentally deficient, and epileptics, whether rich or poor.

It is State Medicine to provide Research Laboratories for the study of disease and its relief and for the State to be as "poetic" as the individual Doctor in giving the results to the world.

All these things and more are State Medicine and in the practice of them the domestic privacy, self-reliance, and self-respect of the citizenry is respected and safeguarded by law and labor is not set apart as a distinct and dependent class.

To do these things requires trained medical men and women and materials scientifically dependable, and it is right that the State should provide the best possible and that the work should be made attractively remunerative so as to get the best possible results for the preservation and conservation of Public Health and the personal well-being of its citizens.

It is right and meet and just that the State should do these things generously and well and that every resource of the State should be taxed to do them; it is right that every power possessed by the Administrative, Judicial and Legislative branches of the government should be exercised to accomplish this economic perpetuation of the money and man power of the State and there is not a doctor, worthy of the name, who will not only pay his share, but lend his every effort as an individual and through his class, aye, and spend himself as no other citizen is capable of doing and no other class of citizens has done; the low death rate in this country, which is the envy of the world, is evidence of record of constructive medical citizenship.

WHAT STATE MEDICINE IS NOT.

It is not right, however, that this function of the State or nation should be prostituted to the penalization, by panelization, of the Profession of Medicine, the pauperization of the people, and the profiteering of the politician and professional philanthropist through a policy of inverted economy parading under the specious title of "Welfare" and wearing the cloak of the "Brotherhood of Man" as a Compulsory Health Insurance Act, a State Medicine Act, a National Socialization of Medicine Act, a Coercive Medical Practice (Reregistration) Act, a Drugless Therapy Act, or any group or combination of these Acts until and unless the People who are the heirs to the rights of the collective parties to the Constitution of the State and Nation are afforded a full, free, and frank exposition of the *facts* which the propagandists dare not submit and the medical men *must*, or prove false to their trust. To do this medical men must *know* and *teach* their people, in the home and on the street, in public halls, and in the lay press, by exhortation and in debate and this they can not do unless they organize as citizens in professional Guilds and Associations or by investing their scientific societies with a dual function,—the study and mastery of social as well as physical epidemic disease so that the quarantine against hysterical and vicious public health legislation may be as absolute as against the bubonic plague.

It is not right that the right of distribution of 10.3 cents of every dollar a working person in the State of New York earns should be taken from him, directly, as premiums, or indirectly, as premiums-plus-taxation (to make up the deficit), by writing Compulsory Health Insurance into the Laws of the State of New York at the behest of organizations with high sounding titles whose officer bodies are dominated by men and women in sympathy with the Rand School and the doctrines of the Third Internationale, and the Sovietization of American affairs, and out of sympathy with the traditions and institutions of our Country.

It is not right that a measure like the Sage-Machold Bill (N. Y. Senate Bill 1533), which completely changes the people's plans for the treatment of human ills should be jammed through a Legislature without giving the people an opportunity to learn and judge and decide whether they want the function of salutary *state medicine* expanded to embrace the absorption of the agencies of healing under a political State head operating through political bodies like Selectmen and Supervisors in villages and towns and small cities and such bodies as the Board of Estimate and Apportionment in large cities like New York. That bill was killed in Committee, but will be introduced next session.

It is not right that such political bodies should be vested with power to acquire the control of existing hospitals and other agencies of healing, or to erect others in competition with them in the most approved *trust* fashion of taking over or crippling the independent operator so that he must submit to *panelization* "eventually, so why not now?"

It is not right that a huge political machine, beginning with a State Superintendent of Health taking his appointment from the party in power and extending down through the health officers who take their appointment from the Boards of Selectmen, Supervisors, etc., and passing out through hospital superintendents, internes, and visiting staffs designated by medical boards which are themselves the appointees of lay political bodies, should be constructed, with the health of the individual tax-paying citizen as a pawn in the game and his right of *free choice* of who shall stand between him and death when disease enters the home actually or constructively eliminated and the Poetic Doctor of his family, in whom he has confidence, forced by economic necessity to submit to panelization as part of this gigantic scheme to subordinate the agencies of healing to the State socialization of medicine and to convert the sacred profession of medicine into a piece-working trade or groups of discontented salary workers under the domination and control, in the exercise of their medical faculties, of district foremen for whose medical opinion, in the circumstances of the case, the average self-respecting doctor of today would not give a "whoop in hades." Yet all these things are part of the provisions of the Sage-Machold Bill in its practical operation because the Judicial branch of the Government would be bound to interpret that statute according to the "ordinary meaning of words" which is far different from what the propagandists intend the average man to think they mean; let me give you a startling example:

PROPAGANDA VERSUS OPERATION.

A Medical Practice Act (Kenyon Bill, Assembly Bill 840), was introduced at Albany this year; it is known as the Medical Reregistration Act, and forms an Amendment to the already existing Medical Practice Act, Sec. 164, Chap. 49 (1909), constituting Chap. 45 of the Consolidated Laws under which Physicians now exercise their faculties. The propagandists said (and some of the prominent leaders of medicine in the State actually believed) that the purpose of the Bill was to provide a proper census of the medical forces of the State and check the illegal practice of medicine by transferring the prosecution of such cases from the district attorney of a County to the attorney general of the State: The introducer of that Bill pleaded for its passage on the ground that the State Medical Society Committee had endorsed it; another Assemblyman said it was a bad Bill, that the rank and file did not want it and it was killed. Why? We need a medical census as much as a cat needs two tails; we have one now, and the U. S. Census Bureau has about completed another; the implication that the district attorneys of the Counties in this State select the unlawful and illegal practice of medicine as the channels through which to manifest their betrayal of trust is not warranted by the facts and, even if true, would not warrant this new law because the law under which the District Attorney now exercises his function makes him a *District* Attorney in the *District* which forms part of the Attorney General's jurisdiction and the Attorney General, for cause, may supersede the District Attorney for any county in the State, and through a special Deputy Attorney General conduct any prosecution in which the State, as such, is a party in interest. Again, *why* should this Bill have been killed? Because it resurrected and revivified a part of the original Medical Practice Act which was necessary and equitable in 1896 to provide for the endorsement of diplomas and licenses of those graduating in medicine prior to 1895 (of whom there are not a half-dozen in this State today whose registration of license has not been effected or contains some technical defect which requires remedying); but at this time, a quarter of a century after that section had served its purpose as an enabling clause to permit the Regents to recognize de facto physicians as de jure in accordance with the (then) new law, this section is entitled to remain dead instead of being brought back to life by an alteration in the fee from $25 to $50 for endorsement, without examination, of the diplomas of those graduates *prior to* 1895, (possibly six out of the 15,000 Physicians in the State) and by the additional recognition of an unofficial organization, the *National Board of Examiners*, as an examining body in the process of licensing physicians. The two changes in this Section of the law and the provision for *annual* reregistration and the investiture of the licensing body with discretionary powers and the withdrawal of the moral interdiction of feticide and infanticide and contraception (Sec. 170-d), so materially alters the Medical Practice Sections of the Public Health Law as to make it operative as a legislative entity with the Status of *new law* and in considering the mandamus proceeding of a doctor, graduating *after* 1895 (who was in disfavor because he would "not help make operative the Compulsory Health Insurance Bill if passed"), to command the Reregistering Bureau to accept his two dollar fee and reregister him *without another examination*, the Judiciary of the State would be powerless to grant relief because it would be bound by the "ordinary meaning of words" in the interpretation of that Statute; this Medical Practice Act, if passed, taken with the ruling decision on the *police power of the State* in this connection (Dr. Dent vs. State of West Virginia, 129 U. S. Reports page 114, year 1889), would serve as the fulfillment of the threat of a New York Senator speaking at the meeting of the 11th Assembly District Chapter of the Professional Guild of Kings County, Oct. 31, 1919, during the fall campaign, against Compulsory Health Insurance, when he said: "If you refuse to make operative the Compulsory Health Insurance Bill, if passed, your licenses to practise medicine will be taken from you under the Police Power of the State." In the pamphlet which I had written a few months previous to this threat (The Menace of Compulsory Health Insurance), I had said the same thing in warning (paragraph 36).

"We take our license to practice medicine from the State and *what the State giveth the State may take away;* better that, a thousand times, than that

we should be a party to a plan which debases our sacred professions, endangers the Public Health, increases the death rate and the days-lost-per-year from illness of the people of this State, as it (Compulsory Health Insurance), has demonstrated its capacity to do in Germany where, for thirty-five years, it has rested as a curse upon the body politic, as part of the infamous Kultur inaugurated by Bismarck and carried to ruin by the unspeakable Paranoiac of Potsdam."

WHAT IS BEHIND THIS LEGISLATION?

The same force that exploited Compulsory Health Insurance and inspired that threat is exploiting State Medicine and inspired the other threat of a Vice-President of the American Association for Labor Legislation made at the Kings County Dental Society, Dec. 11, 1919, "If you succeed in defeating Compulsory Health Insurance *you will have to take State Medicine.*"

The same force that has exploited those two vicious types of legislation and the Medical Practice Act as a coercive measure and inspired those two threats against the ancient and honorable profession of medicine is precisely the same force which is exploiting the national socialization of medicine which aims to create a Federal Department, with a Secretary in the Cabinet, to have the same political domination and control in the Nation that there would be provided in the States under State Medicine Bills and to be subrogated to the right, title, interest, control, and domination of all the agencies of healing which such State medicine bills would insure.

The force which initiated this destructive type of legislation is made up of organizations designed to promote legislation, ostensibly for the welfare of the community, but really for the development of a Communism which takes no thought of equity; for example: at the 1920 hearing on the Davenport Compulsory Health Insurance Bill, a man, flat of foot and sharp of speech, said "The Doctors object to this Bill? what do we care? *It is our will*"; he claimed to represent a Labor organization, probably the same one which the State Industrial Commissioner referred to when, at the hearing on the same Bill in 1919, he shook his fist in the faces of the Senate Health and Judiciary Committee, the elected representatives of his employers, the People of the State of New York, and said "There are 700,000 *reasons* why you "gotta' pass the Bill." Rather Bolshevik, don't you think, in the face of the fact that the Menshevik of Labor in this State is 3,300,000 to make up the 4,000,000 workingmen who were supposed to be the natural beneficiaries of that Bill? It is very interesting to note that the official Report of that same Industrial Commission, January, 1920, revealed 600,000 *reasons* who would have been double-crossed had that Compulsory Health Insurance Bill become the law and the inverted economy of the propagandists prevailed.

Those organizations I speak of are supposed to be supported by the "dues-paying members" but derive their resources largely from the moneyed Foundations, the least of whose interest is the advantage these Associations for Legislation afford in providing, at the expense of the Taxpayers of the State, remuneratvie berths for the protégés of those Foundations and the graduates of their Schools of Sociology, Psychology and Philanthropy.

One feature of those organizations is that they are sure to work into their titles the words *American—Welfare*—or *Labor* or *Trade Union* or some combinations of these; they know American psychology and they agree with P. T. Barnum that "The American public likes to be humbugged" for, mark you, their Officer Body, Executive Council, and Administrative Council show the names of such distinguished personages as the President and men and women prominent in Church and State who lend their good American names and contribute good American dollars without thought of the old adage "tell me your company and I'll tell you what you are" and they would be shocked, I am sure, to see their names on such an Association's letter-head blended with some conspicuous characters whose affiliation with the Rand School and parlor and gutter Bolshevik publications and Negro exciting magazines warrants the use of a fine-comb before such an Association may lay claim to the title *American.* Surely the more 100 per cent Americans there are claimed by *any* organization, the less excuse exists for any anti-Americans and "Americans,-but."

I cannot conceive, nor can you, the interests of public welfare or of labor being safeguarded by a policy which limits *free choice* and utterly destroys the personal element between a sick citizen and his agency of healing, which makes him a card-indexed unit and his doctor an impersonal employee of the State under the supervision and control of a political medical foreman in charge of a gang and which sells to labor a depreciated health service and supplies at a wasteful price or binds the State to make good an annual *deficit* of $22.32 per average man or $90,000,000—for the 4,000,000 workingmen in the State. The honest study of the practical application of the provisions of the Compulsory Health Insurance Bill, the State Medicine Bill, and the National Socialization of Medicine propaganda reveals just such inverted economy, just such a waste of the money and man power of the State just at this time when the conservation of resources is so badly needed. This type of public health legislation belongs to the public to kill, and it is only through an aroused public opinion that sanity in public health legislation can replace the hysteria which has characterized it in the past several years.

WHAT STATE MEDICINE SHOULD INCLUDE.

All that State Medicine *is* should be continued and the Legislators should give serious thought to a much more generous policy. "A chain is as strong as its weakest link." It matters not how zealous or competent the visiting medical men of an institution may be; it matters not how faithful the house staff of medical men may be; it matters not how attentive the internes may be, the nurses and orderlies, in the last analysis, are the ones who must apply the "after care" during the 24-hours which constitute each day. $30 or $40 per month and "found" is hardly calculated to attract the highest type of employee, male or female. and the addition of a few extra, high-salaried welfare workers, each with a card-index cabinet and without contact or sympathy with the sick, save through a history card

attached to the file at the foot of a bed, does not improve the conditions. We reprove the small boy who has bitten off more than he can chew and is reaching out for another "hunk", but the present State Medicine is doing precisely that. The Craig Colony, for example, has not a decent *x*-ray equipment, and such advanced aid to diagnosis is of much value in locating the mechanical causes of epilepsy; the cattleization of mental defectives in the experimental stations of this State, where there is a trim social surveyor to every small group of inmates, is one of the sad results of this miscalled welfare legislation which was passed upon a propaganda that "32.5 per cent of the rejectees of the Draft Army in New York State were mental defectives"; the citizen of this State who believes that is either lacking in civic pride or incapable of recognizing a lie; it would be ludicrous, if not so sad, to contemplate the existing fact that the State Hospital Commission, which cares for the insane, while it is competent, through its examiners in lunacy, to determine between sanity and insanity is incompetent (legally) to determine between mental defection and "normalcy" which is made the function of a Commission for Mental Defectives with its own staff of psychologists, sociologists, philanthropists, psychanalysts, etc., etc., and its examiners in mental defection. It would seem that there is a beam in the eye of State Medicine that should be attended to before the State uses the lenses of these precious "uplifters" to estimate the mote in the eye of the poetic doctors of the State.

WHAT THE PEOPLE NEED.

All over this State are Public and Private hospitals and laboratories, with more or less complete equipment for advanced scientific diagnosis, such as *x*-ray, stomach analysis, blood and sputum analysis, etc., etc. It should be possible for an employee (or his employer) upon payment of a just and reasonable fee to any one of those institutions to get just the particular additional diagnostic information that his family physician might need and specify without having the citizen penalized by coming under the medical care of an assigned panel physician to whom he could be only a "case."

A doctor, to-day, may have this work done through private laboratories, to the great advantage of his own grasp of the patient's disease and to the great benefit of his patient and to the economic advantage of the State which shares in the rapid restoration of the sick to health and usefulness. This can and should be organized so that the existing agencies may be made available to the workingman and an equitable standard of fees for such service, based on the cost of material, plus overhead, plus service, plus a percentage margin for depreciation of equipment and reasonable profit, plus a reasonable super-charge to be turned over to the Municipality, part of which to be made into a Public Health Sinking Fund for the amplification of the facilities to meet changing conditions of population and to be available in time of epidemic and a part for the necessary expenses of Municipal supervision and a part to the State for administrative expense.

There are a lot of public school buildings eating their heads off at night for want of use; the Uplifters would remedy that by using them for Community "Lend a Hand" dances and they actually succeeded in having the plans for a new Public School (29) include a *shooting gallery!* Suppose the State Department of Health and the State Department of Education join hands and have them serve as channels of instruction in the simple rules of personal hygiene and disease-prevention which make for health in the community and the State as State Preventive Medicine.

When the calamity visited the City of Halifax, N. S., several years ago I recommended to the then Adjutant General of N. Y. State that he make some provision for emergency assignment of the medical forces of the large cities so that in the event of a catastrophe the medical men and women and institutions would know just what was to be done and who was to do it; we have all that in the Volunteer Fire Department where "running with the machine" is a civic pleasure as well as neighborly duty; the fire drill in schools and on ships and in factories is another phase of this community action in time of danger.

These plans for the legitimate amplification of State Medicine must not be permitted to exclude the unborn, neither must they be permitted to open the door for the dissemination of birth control propaganda. When a group of Uplifters present harrowing statistics of the mortality of pregnant women as propaganda for spending a lot of the State's money for maternity centres, and we find them in sympathy with and engineering the withdrawal of Sec. 170-d from the Public Health Law which exercises a moral and quasi-legal restraint over physicians who might be disposed to ignore the doctrine of "uberrima fides" and preach and practice feticide, infanticide and contraception it puzzles one to decide whether they have a keen sense of humor or a blunted sense of proportion, but we are warranted in believing that the Napoleonic Code should be applied strictly to this type of legislation, lest the control of childbreeding rather than the encouragement and safeguarding of childbearing should be the end result. The women of this State and Nation do not require information on the limitation of offspring but they do sadly need to be educated to the fact that conception initiates a radical change in body chemistry which should be intelligently considered and supervised and that this consideration and supervision should begin early in the pregnancy so that organic disease or functional toxic conditions may not endanger the mother and child. Let us afford expectant mothers opportunities for education along those lines and the medical profession will be happy; attempt to pauperize our people or treat the women of our people as brood-mares under an actual or constructive policy of compulsory maternity supervision and every decent medical citizen, Guild, Association, and Society will try to make such a law inoperative if you pass fifty Medical Practice Acts to "take away their licenses under the Police Power of the State."

This work in its entirety should be entrusted to practical medical scientists and not to theoretical social surveyors, paid professional philanthropists, herr professors and false doctrinaires, or to the political opportunists to whom the advantage of the people of the State count for little and the influence of these impressively titled organizations count for

much; this work should serve as an agency for public betterment and not as an employment agency for the Foundations' Schools of Sociology, Psychology, and Philanthropy. The people of this State and the legislators who represent them should make it their business to judge every piece of legislation bearing the endorsement or initial hall-mark of these professional "Uplifters" by the Napoleonic Code, "guilty until proved innocent" and the Lord knows it is the solemn duty of medical men of this State and Nation, in the light of their experience of the past several years, to educate the public mind to this attitude of suspicion of any group of people, organized or unorganized, that uses deception and trickery to put across this legislation,—like the "24-cents-per-week-per-employer-and-employee-premium" propaganda of Compulsory Health Insurance; the "Correction-of-illegal-and unlawful-practice-of-medicine"-Medical-Practice-Act propaganda; the "bring-the-boys-back-to-the-farm-by-having-a-hospital-community-health-centre" propaganda of State Medicine; or the "efficiency-izing-of-the-agencies-of-healing" propaganda of the National Socialization of Medicine.

Up to this moment it has been the medical men's fight aided by some practical business men who know inverted economy when they see it; the voting public backed us up handsomely last year, but there must be no let up in the campaign of education by the medical men, and the voting public must be kept "on its toes"; the medical man (or Society) who thinks it is "infra dig." to make common cause with his fellows in educating himself and his patients and friends to a realization of the seriousness of this menace will be false to his Order and fail in that "uberrima fides" which reason and the law impose upon him in his relations with his patients and the people of the State whom it is his duty to serve. A stilted Code of Ethics is a curse.

405 UNION STREET.

RECENT PROGRESS IN KIDNEY AND URETERAL SURGERY.*

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ONLY those who have kept pace with the improvements in diagnostic and therapeutic methods employed in Urology can appreciate the vast changes which have taken place during the past ten years. Progress has been along three lines chiefly: (1) In diagnostic methods; (2) in operative technic and the application of nonoperative methods of treatment, and (3) in the more accurate interpretation of certain familiar clinical symptoms such as ureteral colic, pyuria and hematuria.

1. *Improvements in Diagnostic Methods.*—These have been chiefly the result of the perfection of radiography as applied to the urinary tract, the chemistry of the blood as it interests the urologist and the bacteriologic study of renal infections. Let us discuss these briefly in the order named.

(a) Pyelography and Ureterography. Voelcker was the first to show that certain solutions which give a radiographic shadow, will, when injected into the bladder, ureter, and kidney, yield valuable information in regard to changes in the lumen of these structures. Collargol, first employed by injecting it with a syringe into the renal pelvis, was soon discarded because it was found[1] that if too much force was used the substance passed into

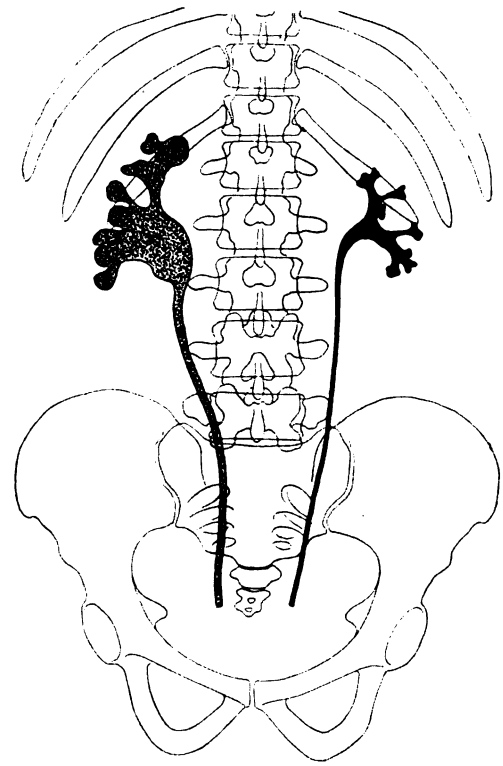

FIG. 1.—Tracing of pyelograms of right hydronephrotic and left normal kidneys, from one of author's cases.

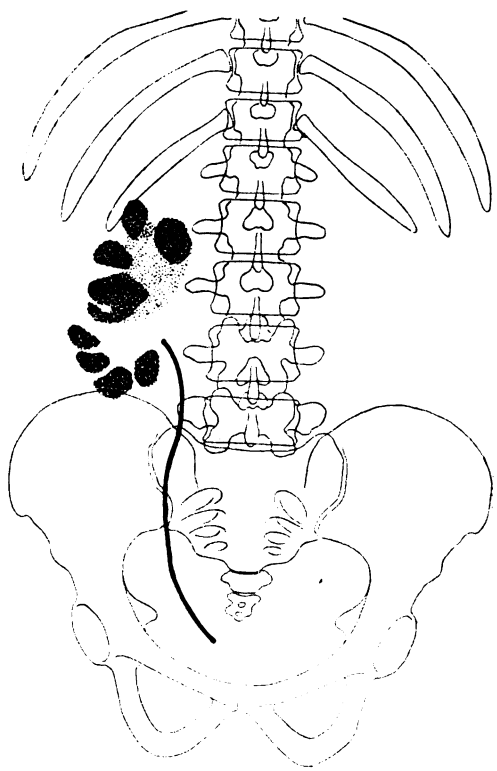

FIG. 2.—Tracing of pyelogram from one of author's cases showing the widely scattered shadows so typical of a pyonephrosis.

*Read at the March 31, 1920, meeting of the Chicago Medical Society, and illustrated by a number of lantern slides.

the systemic circulation and caused death and even if little force was used the drug was rapidly absorbed from the renal pelvis, giving rise to a dangerous and often fatal toxemia. Thorium has been quite generally employed as a substitute, but

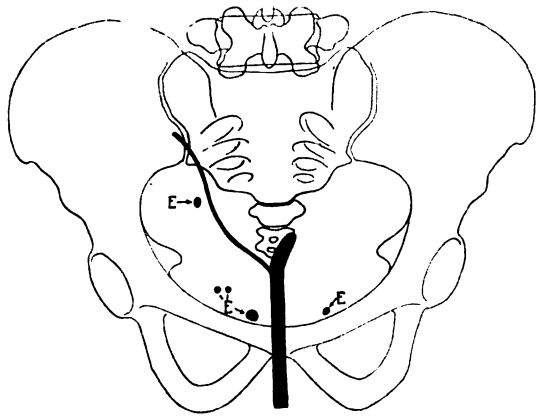

FIG. 3.—Tracing of radiograph of same case shown in Fig. 4 after use of opaque catheter. The calculus was delivered by non-operative methods and one only sees extraureteral shadows (E).

the work of Magoun[3] has shown that this pyelographic medium is rapidly absorbed and may prove fatal as in a recent case reported by Weld.[3] As a result of this experience, we have adopted a 20 per cent. solution of sodium bromide as the least toxic medium for pyelography and allow it to flow through the ureteral catheter by gravity pressure.

The pyelogram of a normal kidney shows in addition to the ampullary portion three major calyces, namely: superior, middle, and inferior, from each of which arise a number of minor calyces.

Variations from the normal pyelogram are not difficult to distinguish so that pyelography is of the greatest assistance in the diagnosis of a number of surgical affections of the kidney. The increase in size of the shadow with widening of the narrow portions of the major calyces and a club-like dilatation of the minor calyces enables us to recognize the presence of an inflammatory or

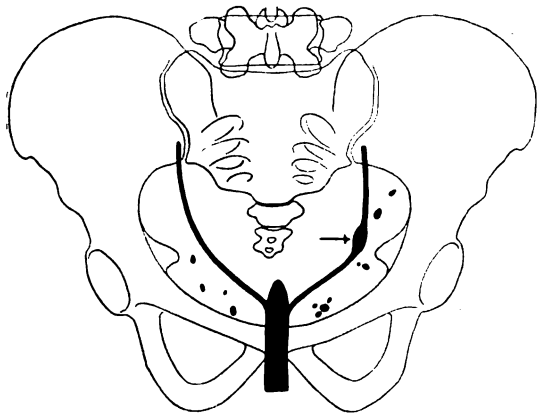

FIG. 4.—*X*-ray tracing of one of author's cases after introduction of argentide into ureter. Note nodular dilatation at location of the intraureteral shadow seen in Fig. 7.

mechanical dilatation (hydronephrosis) of the renal pelvis (Fig. 1).

In renal tuberculosis the eroded appearance of the calyces or the presence of widely scattered shadows (Fig. 2) is very characteristic.

It will be impossible for us to take up in detail the various diseases whose recognition has been rendered a far easier task than before pyelography was employed as a more or less routine diagnostic measure.

Ureterography, the opaque catheter and the employment of stereoscopic x-ray exposures have enabled us to diminish the percentage of error in the differentiation of true (intraureteral) from false (extraureteral) shadows. In a recent article[4] I have called attention to the necessity of the application of all of these methods as a more or less routine procedure.

In quite a number of cases presenting the clinical picture of ureteral calculi, the presence of multiple shadows along the course of the ureter greatly complicates matters. In some of these puzzling cases the opaque catheter alone, with or

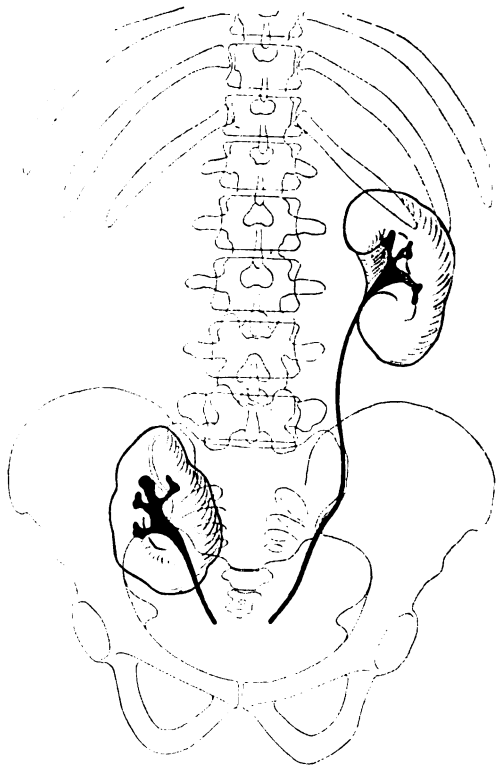

FIG. 5.—On right side the pyelogram is shown as it would be obtained in a case of ectopic (pelvic) kidney. On left side, kidney is normally located and shows a normal pyelogram.

without stereoscopic plates, enables us to decide which shadow is due to a calculus and which other shadow or shadows (Fig. 3) are due to the various conditions (phleboliths, calcareous lymph glands, etc.) giving rise to extraureteral shadows. In other cases it is necessary to employ ureterography which will reveal either a nodular dilatation at the site of the calculus (Fig. 4) or a uniform dilatation of the ureter above the point of obstruction.

In the recognition of the various congenital anomalies of the kidney and ureter, pyelography, and ureterography have rendered service of the greatest value. The condition known as congenital dystopia of the kidney, which represents a persistence of the original embryonic position of the kidney in the true pelvis, the presence of the pyelographic shadow in the pelvis proper or in

the iliac fossa (Fig. 5) causes one to suspect at once the existence of such a congenital malposition of the kidney. At times it is of the utmost importance for us to know whether we are confronted with the conditions known as horseshoe, fused, or solitary or double kidneys. The same is true of the presence either as an acquired or a congenital condition, of both kidneys on one side. Here again pelvography and ureterography enable us to recognize these anomalies before operation and to plan our operative procedure accordingly.

(b) Radiography alone without the aid of the opaque catheter, stereoscopy, pyelography, and ureterography enables us to tell with a fair degree of accuracy the exact location of calculi in the kidney, *i.e.* whether in the pelvis proper, in one of the calyces, or in the parenchyma. In cases giving the typical history of calculus in the upper urinary tract it is often possible to intensify a weak or doubtful shadow by the application of the principles underlying pyelography and ureterography, *i.e.* taking a second picture after impregnating the calculus (through the ureteral catheter) with a solution giving an x-ray shadow.

The differentiation of true intrarenal from false extrarenal shadows, such as calcified glands, gallstones, etc., has been rendered far easier through the introduction of the opaque catheter and the use of pyelography. It is estimated that in from 10 to 15 per cent. of cases of calculi in the kidney there is a recurrence of the calculi after operation. We have no definite information as yet, of the causes of such a recurrence, but renal fluoroscopy as recently proposed by Braasch and Carman[6] will prevent at least a recurrence due to an overlooked calculus.

In renal tuberculosis, radiography alone is of great service in diagnosis when it is impossible or undesirable to catheterize the ureters. The recent observations of Braasch,[6] Colston and Waters[7] have shown that one can readily recognize the more advanced cases of renal tuberculosis by the appearance of the kidney on the x-ray plate.

2. *Improvements in Operative Technique and in the Application of Nonoperative Methods.*—Of chief interest are (a) the study of the anomalies of the renal vessels and (b) the almost general substitution of the operation known as pyelotomy for that of nephrotomy.

The presence of accessory arteries and veins passing directly from the aorta, vena cava, or iliac vessels to the upper or lower poles of the kidneys compels the operator to expose these poles carefully in order to avoid serious bleeding during or after operation on the kidney.

Nephrotomy for the removal of calculi is followed in a fairly large percentage of cases by secondary hemorrhage, hence it is being used less frequently from year to year. The route of election is through an incision in the posterior surface of the renal veins where the danger of bleeding is reduced to a minimum.

The treatment of infections of the kidney involving chiefly the pelvis has been greatly simplified as the result of the direct applications of antiseptics to the renal pelvis when injected through the ureteral catheter. This method, known as pelvic lavage, enables us to cure many a severe case of pyelitis which formerly proved resistant to ordinary treatment. In the study of the bacteriology of the upper urinary tract smears made from sediment obtained after the use of the high power centrifuge have almost completely supplanted cultures or animal inoculation.

The nonoperative delivery of ureteral calculi (Fig. 3) enables us[4] in many cases to avoid operative interference and is a method which should be given a fair trial before operation is decided upon.

3. *More Accurate Interpretation of Certain Familiar Clinical Symptoms.*—I refer particularly to the well known symptoms hematuria, pyuria, and ureteral colics. Inasmuch as this forms the subject of a paper to be published in the near future, I shall only call attention to the fact that none of these can any longer be considered as pathognomonic of any particular condition of the kidney.

Only a thorough urologic study of every case will enable us to make a diagnosis and to avoid pitfalls which lie more frequently in our path in the surgery of the upper urinary tract than that of any other region of the body.

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30 NORTH MICHIGAN AVENUE.

THE INDIVIDUAL FACTOR IN DISEASE *

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IN the interpretation and evaluation of symptoms the patient must not only be considered as a human being, but as an individual. His own peculiar physiological balance or imbalance underlies and modifies his symptoms. While some individuals are in a state of physiological equilibrium prior to the time that they become afflicted with a given disease, many more are in a state of imbalance to start with. The symptoms of disease manifested in organs which previously were in a state of physiological equilibrium may be very different from those shown in organs in which the equilibrium was previously disturbed.

The symptom-complex of a given disease is not a result of a single factor working in a simple direct manner but a resultant of many factors working extremely complexly. The actions of different parts of the body are correlated through the nervous and endocrine systems in such a manner that no impulse can act in one tissue alone; and the higher we

*Read by title at the twenty-first annual meeting of the American Therapeutic Society, held in Philadelphia May 7 and 8, 1920.

ascend in the scale of development the more perfect is this integration of action. My meaning will be made clear by analyzing the forces which operate to produce symptoms in one of the infectious diseases. From the point of localization toxins are given off, which, circulating in the blood stream, irritate nerve cells both of the higher and lower centers. Peripherally, the sympathetic nerves are most markedly stimulated by toxins and these tend to produce the action in tissues which is peculiar to sympathetic stimulation. The sympathetic nerves in turn stimulate certain endocrine glands, particularly the adrenals and thyroid and to a less extent the pituitary. These glands are stimulated to the formation of hormones in amounts greater than normal, and these again affect nerves and other endocrine glands activating some and inhibiting others. Again the hormones may affect the higher psychical centers and there start other chains of stimuli working. At the same time that these general factors are acting, in those diseases which are localized in some particular organ such as appendicitis, gall bladder infection and pulmonary inflammations, the nerve endings in the particular organ are stimulated and reflex action is produced in other tissues, some of which is in harmony with the stimulation already effected by the processes started in motion by the toxins as described above; and some of which is in opposition.

In the final analysis, body cells have but few functions, such as motor, secretory, sensory, and trophic. These functions are normally presided over by and dependent upon nerve cells, and chemical substances which are secreted by the tissues. Whether these chemical substances, which have been designated internal secretions, act independently of or through the nerve cells is not definitely known. But the close relationship must be evident from the fact that at least most secretory, sensory, and trophic properties of cells are positively under nerve control; and the only manner in which these properties of body cells are disturbed is by nerve impulse or hormone stimulation. Motor, secretory, sensory, and trophic changes in body cells, if sufficiently pronounced to be recognized, constitute symptoms of disease. While the changes in the body cells themselves constitute the pathological anatomy of the disease, the changes in their function constitute the pathological physiology, and make up the syndromes met clinically.

Based on these physiological facts we assert that symptoms of disease are produced through either the nerves or the internal secretions. Stimuli which affect function through the nervous system and the endocrine glands may originate either in the physical or psychical systems.

We have now proceeded to the point where we can see that a theoretically, physiologically perfect man must have an anatomically perfect physical body and physiologically balanced nervous, endocrine and psychical systems; and that imperfection of a disturbed equilibrium in one of these systems will disturb the equilibrium of the others. Clinically, such perfect organisms are not recognized. All people have disturbances in physiologic equilibrium in some portion of the body when they are in their usual state of health. If this departure from the normal is marked it may stamp the individual.

Most symptoms of disease are expressed in the so-called involuntary or vegetative structures, those which are not presided over by the will. These are innervated by the vegetative nerves of which there are two divisions, the sympathetic and parasympathetic. When these two divisions innervate the same organ, one activates and the other inhibits action. In other structures action and inhibition of action are presided over by the same division of nerves. In certain individuals there is a departure from the normal in the tonicity maintained in the tissues through these nerves. Sometimes the influence is preponderantly strong through the sympathetics at other times through the parasympathetics. This conception we owe to Eppinger and Hess who have called the former sympathicotonics and the latter vagotonics. In some individuals the tonus is increased widely in practically all tissues supplied by one or the other division; in others it affects only a few organs or systems. Thus a general vagotonia may be present which consists of many of the following symptoms: Contraction of the pupil; widening of the eye slits; increased lacrymation; increased secretion of the nasal, oral and pharyngeal mucous glands, conditions commonly known as catarrh; increased salivary secretion; contraction of the laryngeal muscles such as is met in laryngospasm; increased bronchial secretion such as is met in bronchitis; spasm of the bronchial musculature as found in asthma; hypermotility and hypersecretion of the gastric glands including that of hydrochloric acid; hypersecretion and hypermotility of the intestine, leading to colicky pains and states of either spastic constipation and stasis or diarrhea, depending much on the degree of stimulation and whether the circular or longitudinal muscles are the recipients of the increased stimulation; irritable bladder; incontinence of urine and feces; lymphocytosis and eosinophilia. Sweating is also found in conditions which are accompanied by the above group of symptoms, as well as those belonging to the sympathetic syndromes. A localized vagotonia might express itself in some such syndromes as spasm of accommodation; laryngismus, hay fever, asthma, bradycardia, hyperchlorhydria, or mucous colitis. Sympathicotonia on the other hand would be represented by widespread symptoms such as the following: Dilatation of the pupil; protruson of the eye ball; lessened lacyrmal secretion; lessened salivary secretion; lessened mucous secretion in the nose and throat; lessened secretion in the gastrointestinal tract, showing particularly as a hypochlorhydria and retarded digestion; lessened motility in the gastrointestinal tract, showing as a slowness in emptying of the stomach, contraction of the sphincters of the gut, and a general relaxation of the intestinal musculature leading to the common type of constipation found in the acute infectious diseases; rapid pulse and at times high blood pressure, although vasoconstriction in one area is usually accompanied by compensatory vasodilatation in others; increase in body temperature due to (1) vasoconstriction in the superficial vessels which interferes with the elimination of heat, and (2) an increased production of heat resulting from the increased chemical action; diminution in the amount of urine; alimentary glycosuria; contraction of the ureter; contraction of the uterus;

goose flesh; increased sweating and neutrophilic leucocytosis. Increased adrenal and thyroid secretion also follow sympathetic stimulation; and this in turn produces symptoms varying in degree according to the amount of extra secretion formed. A localized sympathicotonia might be represented by such symptoms as rapid heart, lessened blood supply to a part, an increased blood pressure, pylorospasm, a localized sweating, or goose flesh.

Sympathicotonics and vagotonics react to certain diseases very differently; and, differently from those who are in a state of equilibrium so far as their vegetative nervous system is concerned. In vagotonics, parasympathetic syndromes are precipitated very easily, and in sympathicotonics sympathetic syndromes equally easily.

What is true of the vegetative nerves is also true of the endocrine glands. Hypo and hyper function on their part is very common; and these states cause a reaction different from that in the normal.

A third physiological factor in the production of variability of symptoms is the higher or psychical centers. Man adapts his physical being to his surroundings through his sensory and motor nerves. Sensations which affect the physical man may alsc affect his psychic centers. According to the manner in which the psychic being is able to adapt itself to its physical and social environment will the psychic equilibrium vary. When the psychic state is in a condition of imbalance this is reflected through both its nervous and endocrine systems. Therefore, we find primarily both a physical and psychical basis for variability of stimulation of the nervous and endocrine systems, which in turn govern and produce the common disturbances in physiological action which make up the syndromes of disease.

We must accept, as a basis for studying symptoms, not only the normal nervous, endocrine, and psychic reactions, but the departures in these reactions peculiar to the patient under investigation; for clinical syndromes will vary as these factors vary. Thus syndromes of the same disease will vary not only in different patients; but in the same patient at different times.

A patient with a disease of the gall-bladder or appendix is prone to have more symptoms on the part of the stomach and intestines if he is of a vagotonic disposition than if of a sympathicotonic. During the acute attacks he is more prone to nausea and vomiting; and during the chronic state, suffers more from hyperchlorhydria and spastic constipation. In chronic pulmonary tuberculosis the vagotonic has a slower pulse, suffers more from nausea, vomiting, hyperchlorhydria, colicky pains, and spastic constipation than the sympathicotonic. The vagotonic tuberculosis patient also often suffers from an asthmatic type of breathing and is prone to nasal and pharyngeal catarrh.

Pregnancy and the menopause offer excellent examples of the difference in re-activity according to: (1) the irritability of the vegetative nerves; (2) the activity of the ovarian secretion; and (3) the psychic state. The ovarian secretion expresses its action preponderantly upon the sympathetic division of nerves. This influence is felt throughout the menstrual life of woman and is exaggerated during the latter half of the menstrual cycle. If this secretion is withdrawn, as it is during pregnancy and the menopause, whether naturally or artifically produced, the sympathetic nerves have a stimulus removed from them to which they have become accustomed. If the patient should be normally strongly sympathicotonic, the withdrawal might still be insufficient to disturb the equilibrium of the vegetative system; on the other hand if she should be strongly vagotonic, the withdrawal of the sympathicotropic ovarian secretion would allow the hyperirritable parasympathetics to act with a lessened opposition and the symptoms would be correspondingly severe.

Again, the manner in which a woman adjusts herself to pregnancy or to the menopause depends much upon whether she is strongly hyperovaria or hypoovaria. The patient who is hypoovaria does not miss the withdrawal of the secretion so much, consequently passes through the early weeks of pregnancy with little discomfort while she who is hyperovaria suffers the loss of a strong stimulus to which she can not readily adjust herself. The worst difficulty of adjustment is met in the patient who is strongly vagotonic and at the same time markedly hpyerovaria.

Pregnancy and menopause are often accompanied by serious psychic imbalance and this again reacts upon the vegetative nerves and the endocrine glands and causes most complex reactions. The psychic equilibrium depends much upon the manner in which the patient stands the withdrawal of the ovarian secretion; therefore, it is apt to be most markedly disturbed in the hyperovaria, vagotonic woman in whom it often assumes a complete mental unbalance.

VIVIDIFFUSION WITH INTESTINAL MEMBRANES.*

By G. R. LOVE, B.S.,

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DURING a recent study of some of the substances constituting normal blood it was necessary to employ vividiffusion tubes which were permeable to dissolved colloids. A method was therefore devised whereby intestinal membranes could be prepared for such purpose. The intestinal tubes present such distinct advantages over collodion tubes that we have virtually discarded the latter. The collodion tubes present a very practical disadvantage; namely, if the tubes are made firm and compact they are also brittle, if they are soft and pliable they are also delicate. With the intestinal membranes these difficulties are largely overcome.

The intestines of the cat, rabbit, turkey, and chicken have been employed. However, since the chicken intestines were the most available most of the work was done with them.

Preparation of Chicken Intestines for Vividiffusion Tubes.—The fresh small intestines are used; they may, however, be preserved for a time in 0.1 per cent. $HgCl_2$. The intestines must not be loaded with fat at the peritoneal reflection. The mesentery is cut away 5 to 10 mm. from its reflection on the intestine. The intestines are then cut into 12 to 24 in. lengths and the contents are washed out. The intestines are now turned inside out upon a

*From the Department of Chemistry, Hahnemann Medical College of Chicago.

glass rod or tube. The mucous membrane is removed in a manner similar to peeling a banana. The process is started at one end of the intestine by cutting transversely through the mucosa to the submucosa and gently massaging the incision. The intestines are now re-inverted and removed from the glass rods.

A solution of albumin is heated to boiling and cooled. The intestines are soaked in this suspension for 6 hours or more. They are then fitted on glass rods whose diameters are about two-thirds the diameter of the intestines. Each rod with its enveloping intestine is suspended in a saturated solution of NaCl previously heated to 80° C. The intestine will contract to two-thirds to half of its original length almost instantly. After it has ceased contracting it is placed in a NaCl solution at room temperature for about an hour. The intestines are now removed from the rods and are cut into the desired lengths for vividiffusion tubes.

The purpose of the precipitated albumin is to fill up the capillaries and other small vessels. The rods serve as moulds upon which the intestines are shaped when they contract. The tubes prepared in this manner are strong and very elastic. Sometimes a tube is too elastic. This is reduced by soaking the tube from 20 seconds to an hour in half saturated tannic acid. In assembling the vividiffusion apparatus the tube on the arterial side should be slightly less elastic than the venous tube, because the arterial tube will have a higher internal pressure. The external pressure is maintained just below the systolic blood pressure, so that with each heart beat the tubes will be forced to expand with the systolic wave—and will contract automatically during the diasystole. In fact the heart beats are most distinct when the internal and external pressures are approximately the same.

Hemoglobin and many other colloids will diffuse through these tubes. However, if one does not desire molecules of such size to diffuse, the tubes can be so treated that the diffusion of such substances as hemoglobin is practically stopped. There are several processes for doing this. First, the albumin — NaCl treatment may be repeated; second, the tubes may be soaked in albumin for several hours and then placed in saturated picric acid for 15 minutes; third, the tubes may be filled with oxalated or citrated blood and then suspended in 5 per cent $CaCl_2$ until the blood is full clotted. The tubes are occasionally injured when they are removed from the glass rods and it is advisable to test each tube before attaching it to the diffusion apparatus. This may be done by filling the tube with laked blood and suspending it in clear water. The same precautions are taken to prevent coagulation as are taken with the collodion tubes.

The advantages of the intestinal tubes over the collodion tubes may be summarized as follows:

1. The intestinal tubes are stronger and are less liable to become injured.

2. They are elastic and are therefore more practically suited to vivicirculation.

3. They can be so prepared as to be permeable not only to crystalloids, but also to colloids such as hemoglobin, albumin, toxins, and fibrinogen.

Assistance received from Dr. J. C. Blake in the prosecution of this work is gratefully acknowledged.

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Medicolegal Notes.

Bequests to Hospitals.—A corporation was organized in California in 1862 under the provisions of the act of April 22, 1850, for the purpose of securing to its members without payment, otherwise than of dues, medical and surgical treatment. It established a hospital and employed physicians. The articles of incorporation provided "that the object of said society should be mutual assistance of the members thereof in case of sickness." It is held that the corporation was not a "charitable or benevolent society" within the meaning of California Civ. Code, Section 1313, providing that no property shall be bequeathed or devised to such a society or corporation in trust for charitable uses except the same be done by will duly executed at least thirty days before the testator's decease, although persons not members could be admitted to the hospital on payment of such sum as the directors should exact, and although any white person of good health could be admitted into the society on payment of dues. One of the essential features of a charitable use is that it shall be for the public benefit, either for the entire public or for some particular class of persons, indefinite in number, who constitute a part of the public.—*In re* Doll's Estate, California Supreme Court, 187 Pac. 428.

Requirements of Proof in Hernia Cases.—Claims for compensation under the Colorado Workmen's Compensation statute of 1915, based upon hernia, are governed by the special provision in section 52 as follows: "A workman in order to be entitled to compensation for hernia must clearly prove: (1) That the hernia is of recent origin, (2) that its appearance was accompanied by pain, (3) that it was immediately preceded by some accidental strain suffered in the course of the employment, and (4) that it did not exist prior to the date of the alleged injury." In a claim that claimant "suffered an accidental strain which resulted in an inguinal hernia," the claimant testified, on the first point, that in 1909 he had a double hernia; that he could not tell how it occurred; that he suffered no pain; that it came upon him while he was engaged in the lightest kind of work; that he lost no work as a result of it; that he was operated on and thereafter wore a truss. It was held that with this very unsatisfactory evidence before the commission it was impossible to say that the "recent origin" of the hernia was clearly proven. It was also held the claim was not sustained on the other three points by the evidence. Judgment confirming an award was therefore reversed.—McPhee, etc., Co. v. Commission, Colorado Supreme Court, 185 Pac. 268.

Accident and Sickness Insurance; "Confinement Within the House."—The St. Louis Court of Appeals, Missouri, holds that a nurse who became afflicted with subacute congestion of the conjunctiva, accompanied by iritic irritation and eczema of the eyes and eyelids, calling for exclusion of light from the eyes and exercise in the open and fresh air, was not "totally disabled and confined within the house," within the meaning of that phrase in an accident and sickness policy, where she called for several weeks at her physician's office for treatment, and by his advice went from place to place for change of air and treatment.—Bucher v. Great Eastern Casualty Co. (Mo.) 215 S. W. 494.

Ratification by Corporation of Its Agent's Unauthorized Employment of Physician.—In a physician's action for medical services to an employee of the defendant corporation at the request of the defendant's general manager, who was specially authorized by the corporation to employ first aid medical assistance in case of injury to the employees, received while performing their duties, but not to employ physicians generally, the evidence tended to show that the corporation was informed of the fact that the plaintiff was rendering services beyond first aid and remained silent. Under these circumstances, it was held that the question of ratification should have been submitted to the jury, and that it was error to peremptorily instruct the jury to return a verdict for first aid only, since it is a well-established rule that an employer may ratify the unauthorized acts of his agent by silence and acquiescence.—Baker v. Brown & Hackney, Arkansas Supreme Court, 215 S. W. 578.

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THE PATHOGENESIS OF TRAUMATIC LESION OF THE ORBIT DURING DELIVERY.

AMONG the numerous ocular lesions which have recently been experimentally produced with the basiotribe by Lévy of the Baudelocque Clinic, at Paris, two types of lesions which are almost invariably produced are dislocation of the eye without fracture, and fracture without exophthalmia. To explain the lesions an attempt was made to ascertain what kind of compression was required for each lesion and the mechanism of the lesions.

In a first series of experiments unprepared fetal heads were used, and after compressing them in their various axes they were dissected. Occipito-frontal applications of the instrument were not studied, because in these cases the lesions obtained are the result of a well-known cause, namely, the direct action of the traumatic agent on the ocular globe. But on the other hand, lesions caused by indirect pressure were found to be of the greatest interest. In order to be produced, these orbital lesions having an indirect cause required that the application of the force should be over the petrous region on one side and over the mastoid region on the opposite, or farther forward over the parieto-malar region. In other words the application of the instrument was petro-mastoid or petro-parieto-mastoid. When the application was almost symmetrical with moderate and continued compression, the orbital roof gave way quickly, the fracture occurring the so-called papyraceous area without resulting in exophthalmos. In oblique applications with the same amount of compression an exophthalmia was produced but no fracture. However, in sudden violent crushing it was noted that no matter what the application was the result was invariably a fracture of the orbital vault, but always with integrity of the optic canal and usually of the optic nerve.

In a second series of experiments the mechanism of the production of the lesions was studied. By removing the contents of the orbital and cranial cavities the changes produced in the long walls by compression could be directly demonstrated. In oblique applications—ptero-mastoid—a narrowing of the orbital cavity from the fundus towards the exterior took place. By compression, the bony triangle, thanks to the depressibility of the pterion, moved forward towards the greater extremity of the sphenoidal fissure, causing it to progressively disappear. Therefore, it was possible to conclude that there was compression of the ophthalmic veins passing through the highest portion of the sphenoidal fissure resulting in circulatory disturbances in the vascular system composing the ophthalmic veins. As to the vault of the orbit, it remained intact as long as the pressure made by the basiotribe was progressive and moderate. This compression of the ophthalmic veins could be made very manifest by resorting to an ingenious device consisting in replacing the ophthalmic veins in the sphenoidal fissure by a metal wire covered with an even layer of modeling wax, forming a stem having a diameter such that it could be passed freely into the sphenoidal fissure when no compression was being made on the fetal skull. If while this was being compressed, an attempt was made to withdraw the stem it came away without any wax remaining on the portion which, during the maneuver, had been successively brought in contact with the bony ring. On the contrary, the stem should have only a slight circular depression corresponding to the point of contact with the bony ring if withdrawn from the sphenoidal fissure after the basiotribe had been removed. Therefore, in oblique applications a flattening of the sphenoidal fissure was produced, with strangulation of the structures contained within it. In symmetrical applications during compression the rigid and immovable orbital wings undergo no inflexion, but the very thin orbital vault curves towards the cranial cavity and then fractures, always giving way in the papyraceous area.

From these experiments it becomes evident that both exorbitism and fracture of the orbital vault result from compression of the pteric area and that the type of lesion is the consequence of two factors, namely, the direction of the compressing force and the suddenness of the traumatism. Any sudden trauma generally produces fracture of the orbital vault no matter what may be the direction in which the fetal head is seized in the instrument, but in any progressive moderate pressure the type of the lesion depends upon the grip taken on the head: in symmetrical grips there is fracture of the orbital vault without exophthalmos, in oblique grips the inverse is true.

These data explain the mechanism of exorbitism, which is the consequence of strangulation of the ophthalmic veins from narrowing of the sphenoidal fissure. However, experimental exorbitism obtained on the cadaver is never very marked because the veins are collapsed. In the living subject this strangulation of the ophthalmic veins another factor becomes added, namely, the increase of the blood-pressure in the vascular territory comprising the ophthalmic veins. Therefore it would seem logical to admit—and this is confirmed by clinical observation—that the vessels rupture and create hematomata which, when retro-ocular may continue to increase after removal of the traumatic agent, and consequently increase the degree of exophthalmia to such an extent that the globe may be dislo-

cated forward and may even be forced out of the orbit in some cases, as has been observed.

The increase of the blood-pressure and rupture of the small vessels forming the ophthalmic veins, may likewise explain other traumata having an indirct cause, such as blood suffusions of the conjunctiva and hemorrhage in the anterior chamber, or retinal hemorrhage and glaucoma. As Lequeux has pointed out, the hemorrhages occur all the more readily when some pathologic process has changed the vascular walls, and in this respect one should recall the peculiar predisposition of premature infants who are particularly sensitive to obstetrical traumata of all kinds.

FACIAL PARALYSIS AND WEBER'S SYNDROME.

IN cases which have come to autopsy lesions localized in the cerebral peduncles or involving them have been found, such as hemorrhage, softening, tumors (tuberculomata, gliomata, syphilomata), or traumatic lesions of the base of the skull, but the latter have not been clearly made out. The symptomatology is likewise complex and lesions may exist in a peduncle that are only found at autopsy. Therefore, very precise conditions must exist in order that Weber's syndrome shall be realized. The fibers of origin of the common oculomotor, the pyramidal, and geniculate fasciculi are proximate to each other in the peduncle and consequently may be involved by the same lesion, and if the latter is limited to the pyramidal fasciculus there will be a hemiplegia on the opposite side, since the fibers involved are those which traverse the neck of the bulb for the innervation of the muscles on the other half of the body.

A lesion located at any point whatever on the track of this fasciculus—cerebral cortex, internal capsule, peduncle, protuberance, pyramids of the bulb—that is situated above the point of decussation, will invariably produce a hemiplegia on the opposite side. If the lesion involves the geniculate fasciculus new symptoms will arise. This fasciculus carries the stimulus from the cerebral cortex to the nuclei of origin of the cranial motor nerves — facial and hypoglossus — and the fibers of this fasciculus, entering into the nuclei of these two nerves and after intersecting those of the opposite side, will make their action felt in the muscles of the opposite side. As symptom of the lesion there will be a generalization of the hemiplegia over the entire opposite side including the face and corresponding half of the tongue.

Suppose the lesion involving the pyramidal fasciculus and the fibers belonging to the facial is seated below the intersection of the geniculate fasciculi. At this point the fibers of the facial go directly to the corresponding side of the face; therefore the paralysis on the sphere of the facial will be on the same side as the lesion, and since intersection of the pyramidal fasciculus has not as yet taken place the limbs on the opposite side will be paralyzed or the Millard-Gubber syndrome will be present. The characters of the latter are sufficiently distinct for localizing the lesion in the bulboprotuberential region. On account of the connection between the nuclei of the facial and external oculomotor, there may be a paralysis of the right externus on the same side as the facial, so that all these symptoms differentiate the two syndromes from each other and exactly indicate the part played by the lesions present.

Now, how is Weber's syndrome realized? Whether the lesion of the peduncle at the same time involves the fasciculi of the foot only and the fibers of origin of the common oculomotor, a paralysis of the latter nerve on the same side as the peduncular lesion ensues. In some cases where the damage is extensive, Reil's band may be involved so that disturbances of sensibility became added to those of motility. When the peduncle is totally destroyed the facial will be involved. The arrangement of the nuclei of the common oculomotor explain why in some cases ophthalmoplegia of the third pair is complete, while in others it is simply external or internal or even limited to a single muscle. These nuclei in close proximity, but nevertheless quite independent of each other, give off their own fibers and an insulated lesion of the latter gives rise to isolated paralyses in the sphere of the third pair.

The pupil shows no change but accommodation is disturbed. Conjugate deviation of the eyes and face occurs when the lesion extends to the optic strata. Peduncular hemiplegia has nothing characteristic and Bidon has published three cases of hemichorea due to tumors of the cerebral peduncle. When the lesions of the pyramidal fasciculus are deeply seated, symptoms of permanent contracture appear, due to degeneration of the pyramidal fasciculus and bulbar pyramid. Ataxia is due to involvement of the upper floor of the peduncle, the superior cerebellar peduncle for example.

D'Astros supposes that disturbances of speech are due to a lesion of the geniculate fasciculus which carries the stimulus from the cortex to the facial and hypoglossus and a so-called fasciculus of aphonia has even been described in the foot of the peduncle. But aphonia must not be confounded with difficulty of speech, which is usually due to lesions of the Sylvian artery. The hemiopia mentioned by Joffray in his case was supposed to result from a clot in the posterior cerebral artery which hindered the circulation in the occipital lobe, and in this case Weber's syndrome was only temporary.

Vasomotor disturbances—edema of the paralyzed limbs in Mayor's case — have been encountered when the lesions were extensive, so that a vasomotor localization cannot be suspected to exist in the peduncles. On the other hand, the thermic disturbances can be accounted for, because Ludwig, Thiry, and Schiff place the vasomotor centers in the protuberance and the cerebral peduncles. With all these diagnostic elements at our disposal the symptoms can be unravelled and the presence of Weber's syndrome detected. This having been admitted upon a sure basis, the diagnosis of a lesion of the cerebral peduncle will be made.

THE DIAGNOSIS AND PROGNOSIS OF THE INFECTIOUS ERYTHEMATA OF TYPHOID FEVER.

THE diagnosis of the erythemata arising during the evolution of typhoid fever is usually an easy matter when due to some mechanical cause or from the ingestion of certain drugs. But it is another matter when a diagnosis is to be made between a drug eruption and an infectious erythema. The erythemata of typhoid fever may be mistaken for measles or scarlatina—particularly in children—especially if the symptoms belonging to these diseases are not well marked. However, the evolution of the eruption differs in typhoid from the others, while the absence of a catarrhal process in the ocular, nasal, and laryngeal mucosæ will eliminate measles. The diagnosis of scarlatina might be made especially on acccount of the high temperature, the presence of an angina, and the peculiar evolution of the eruption. The rash met with at the onset of typhoid when the affection is not fully declared, may by its aspect, color, and short duration simulate the rash observed at the period of invasion of variola. But in this disease the erythema is more prone to develop in the inguinal region and upper part of the thighs and is usually preceded by vomiting, lumbar pain, and constipation. Finally, the gravity of the symptoms which accompany the malignant forms of infectious erythemata may, in some cases, lead the practitioner to suspect typhus fever. The principal elements of differential diagnosis will be the essentially epidemic and contagious nature of the latter disease, its sudden invasion, the predominance of nervous phenomena and lastly the peculiar characters of the eruption appearing from the third to the fifth day on the abdomen, flat pink spots or papules, isolated or confluent, soon becoming transformed into petechial areas. Consequently, the infectious erythemata of typhoid fever whose appearance and evolution are irregular may sometimes be confounded with the cutaneous manifestations characterizing certain infectious processes. Usually, however, an attentive examination of the patient will remove all cause for mistake, the essential thing being to remember that typhoid fever may be accompanied by an erythema.

The degree of gravity of these infectious erythemata of typhoid has been variously appreciated by different observers. Some have regarded them as of little importance, without any influence on the evolution of the typhoid fever and some have even gone so far as to maintain that they were a sign of approaching recovery. Chédevergne supposed that the cutaneous congestion appeared to announce the imminence of a crisis, while Raymond and Nélaton in the three cases under their care did not note any unusual symptoms at the time the eruption occurred. On the other hand, Hutinel, Le Gendre, Galliard and others are far from accepting this view on account of the numerous deaths which followed the erythema in the cases of typhoid fever under their observation. The typhoid assumed a very bad course after the appearance of the exanthema. In two cases reported by Pons, of Toulouse, death occurred shortly after the cutaneous manifestation arose. Although there is this diversity of opinion the reason for it can be explained, if these eruptions are divided into two categories, namely, the early benign erythemata and the late severe erythemata, the observers who have met with rashes at the onset of typhoid were dealing with essentially mild types of the exanthemata, while in the second case the exanthemata were observed during convalescence from typhoid and are remarkable for their peculiar severity and aspect. Consequently the prognosis should be based upon the date of the appearance of the rash, and according to circumstances it will be favorable or reserved. It likewise must depend upon the degree of vital resistance offered by the patient. The early appearing rashes do not have an appreciable influence on the evolution of the typhoid; the late ones, on the contrary, are to be regarded as real complications and if the patient recovers the convalescence will be long and tedious.

THE FUNCTIONAL LOCALIZATION OF THE INTERNAL CAPSULE.

THE opinions expressed in most of the classical text books relating to the functional localization of the various parts of the internal capsule in man are far from being as solid as the perusal of these works might lead are to suppose. The only localization which seems clear from the analysis of former anatomoclinical documents is a motor localization. All the others, those of choreiform movements, and disturbances of speech, sensibility, and intelligence, are either uncertain or erroneous. So far as motor phenomena are concerned it is certain that the internal capsule is a route for the passage of the fibers of projection which starting from the Rolandic region of the cortex, go to the muscles of the face and limbs on the opposite side. Generally speaking, the fasciculi destined for the innervation of the face travel through the internal capsule at the level of its genu; those destined for the innervation of the limbs go through the pars occipitalis. But there are some instances of lesions of the pars frontalis which resulted in paralysis of the limbs on the opposite side and lesions of the pars occipitalis which provoked facial paralyses, all of which seem to show that there are individual variations in the arrangement and assumed during their capsular passage, of the various functionally distinct fasciculi, similar to those often existing in other portions of the nervous centers, especially in the intersection of the anterior pyramids.

Paralyses of capsular origin affect, according to the extent and topography of the lesions giving rise to them, the types of pure monoplegia—laryngeal, facial, brachial, crural—associated monoplegias—linguofacio-pharyngeal, brachiocrural — or total hemiplegia. These paralyses are usually permanent and are accompanied by secondary contractures with degenerations of the pyramidal fasciculi. With the paralytic phenomena, which form the principal and almost constant symptom of destructive lesions of

the internal capsule, disturbances of speech, choreiform phenomena, disturbances of the sensibility, emotivity, and intelligence often become associated. The disturbances of speech depending on capsular lesions do not belong to the class of true aphasia. They are symptoms of a purely motor order that compose, according to the degree, the capsula dysarthria or anarthria. Consequently, there is no fasciculus of aphasia in the internal capsule. The choreiform phenomena are observed only when the provocative lesions of the paralyses attain the pars occipitalis, nevertheless it is not possible to distinguish a distinct fasciculus in the pars occipitalis the lesion of which alone can provoke hemichorea without a concomitant paralysis.

The disturbances of sensibility consist either in hemihypoesthesia—decrease of the tactile sensibility to both pain and heat—or total and complete sensitive-sensorial hemanesthesia of the Türck-Charcot type. The latter appears to be due to an hysterical coorganic association. It is impossible to locate the former anywhere but in the motor area of the limbs. Therefore, it is not possible to determine a distinct fasciculus in the pars occipitalis a lesion of which could result in hemianesthesia without a concomitant paralysis.

Certain disturbances of emotivity, especially spasmodic laughing and crying, appear to be susceptible of development in cases of limited lesions of the pars frontalis of the capsule, but so far there exists but one confirmatory case. The disturbances of the intelligence do not assume any special character from the capsular location. They in no way differ from those occasionally occurring with any sort of destructive lesion of the cerebral region, so that there cannot be a capsular intellectual fasciculus. But the data at hand relating to limited lesions of the internal capsule are still so few that new documents are necessary in order to throw light upon the physiology and pathology of this point.

Treatment of Persistent Vertigo With Adrenine.

Vernet writes extensively on this subject in *La Presse Médicale* for July 10, 1920, xxviii, 47. He defines this affection as "labyrinthine disequilibration." At the base of every vertiginous sensation is a labyrinthine phenomenon, vasomotor or toxic, and having a sympathetic or endocrinic point of departure. Therefore if adrenine can be exhibited at the right moment it should be productive of good results. The common association of tinnitus, deafness, and vertigo is due to angiospasm. This the author terms the "syndrome of Lermoyez" otherwise "audible vertigo." It is present in a sense in Ménière's disease in which hemorrhage into the labyrinth initiates the triad of symptoms. Different vessels may be involved on different occasions, the cochlear or vestibular arteries, and with spasm in the territory of the former, vertigo is absent, the other symptoms being present. There are as many causes of vertigo as there are causes of vasomotor labyrinthine manifestations. Here belong the numerous toxic, sympathetic, endocrinic, traumatic, and local causal factors. The author among the great variety of medicaments for vertigo has never seen adrenin mentioned. Yet this substance on theoretical grounds is the drug of which the most should be expected. Naturally it cannot control cases such as vertigo due to tænia which subsides instantly upon expulsion of the worm. But it is a regulator of blood pressure and has moreover a special selective action on the terminal filaments of the sympathetic nerves. Finally it is an "antitoxic" according to the author; although his reasons for such belief seem far fetched. In vertigo he has used this drug for the past four years and with satisfactory results; although at times it has been necessary to give pilocarpine in the capacity of antidote or antagonist. He prefers the buccal route, from five to twenty minims of the 1-1000 solution every two hours for an indeterminate period. It is clearly not given as a emergency measure but to combat a permanent condition.

Influenza and the X-Ray.

Schinz of Zurich sums up the radiology of grippe in the *Schweizerische medizinische Wochenschrift* for July 8, 1920, as follows: One of the most familiar finds is massive, confluent bronchopneumonia which is seated by preference in the lower lobes and causes a massive area of percussion dullness, although made up of innumerable smaller or larger detached foci. Next in order and often inappreciable by physical diagnosis is central bronchopneumonia which is difficult to distinguish from the corresponding type of croupous pneumonia. Third in order is miliary bronchopneumonia; not recognizable clinically but readily visible in radiograms; it is never of single occurrence being always combined with one of the other types. In the fourth place is mentioned the homogeneous pseudolobular type, in which the homogeneous shadows are due to total confluence of hemorrhagic or fibrinous foci; these areas pass by gradation into the massive bronchopneumonic forms. Many *x*-ray pictures have a marked resemblance to tuberculosis. In both diseases we see the same polymorphism. But in grippe there are no cavities, not old peribronchitic processes, nor apical involvement. But tuberculosis, mostly of one lung, may sometimes develop in a subject with pneumonic foci in the lower lobes. Other radiological finds concern pleuritis and empyema and in this connection spontaneous pneumothorax is an important complication which may arise in at least four ways—as a result of rupture of the lung from coughing, rupture of interstitial emphysema vesicles, perforation into the pleura of a subpleural pneumonic focus, and rupture inwards of an empyema. These are not theoretical types for the author exhibited cases under each form.

Eserine in Sympathicotonus.

Cheinisse mentions in *La Presse Médicale* for July 10, 1920, xxviii, 47, a recently published volume by Guillaume on the sympathetic. This is fruitful in suggestion for the French must confess that they have been irresponsive to the newer literature of vagotonus and sympathicotonus. Vagotonics re-

spond strongly to pilocarpine and atropine while sympathicotonics are susceptible to the action of adrenalin. As is well known there are mixed syndromes. Recently Moutier has published an article on "solar crises" and their treatment by eserine. These crises are closely akin to sympathicotonus, a condition in which we encounter tachycardia, vasomotor instability with hot flashes, dilation and atony of the stomach, vascular hypertension, epigastric hyperesthesia, mydriasis, etc. In the solar crises Moutier lays emphasis on the epigastric pulsation of the aorta. Since atropine is the remedy indicated in vagotonia, it occurred to him to test eserine in these sympatheticotonic crises. Mougeot had already tried it out in tachycardia—hypodermics of an oily solution of the salicylate or sulphate. An Austrian, Kaufmann, had some years ago independently recommended physostigmine in tachycardia, this being an echo of the use of this alkaloid in postoperative ileus by Von Noorden in 1901. The remedy appears to be able to cut short paroxysmal tachycardia, at times in association with strophanthus. Moutier has recommended the buccal use of eserine or physostigmine in increasing doses for sympathicotonic phenomena. In but one case was too much of the alkaloid given, but there were no serious consequences. Loeper, a modern writer on drug action, is opposed to eserine as being uncertain and unstable, but he has apparently not used the salicylate which has given good, dependable results in Moutier's hands.

Physical Exercise and Physiology.

Gymnastics has for the most part been an empirical study but several important works have appeared especially of recent years which have sought to place physical exercise on a sound physiological basis. Of the older writers Lagrange is the best known, his book on the physiology of physical exercise going back to 1889. The most recent book in this field is that of Bainbridge, 1919. In the *Giornale di medicina militare* for June 1, 1920, Angelucci contributes an important study on the physiology of physical education, which is of added interest because he shows that Mercurialis, one of the greatest of practitioners of the XVIth century, was the pioneer in this field. Born in 1530, he held the chair of practical medicine in three of the Italian Universities and was knighted by Maximilian of Austria, whom he had cured. He wrote pioneer works on the diseases of women, the diseases of children—and although the author does not mention it, diseases of the skin—on the pestilences, poisons, hydrophobia, etc. But his *magnum opus* was "De Arte Gymnastica" which went through three editions in Venice besides several translations. It is said that he adhered too closely to Galen for a man of his century. He followed the latter's classification of gymnastics by repudiating athletics as an end in favor of medical gymnastics or in other words physical education. He also borrowed from Avicenna who wrote extensively on the subject. The illustrations in his book have as subjects activities of the Greco-Romans as seen in the Olympic games, etc. But Mercurialis was justified in quoting the ancients freely in a subject in which they were so preeminent, and the knowledge and practice of which had long been ignored; and his activities here are strictly pertinent to the period of the Renaissance which witnessed the revival of learning in Europe.

Organotherapy in Froehlich's Syndrome.

The old pronouncement that organotherapy is valueless in affections due to compression of the hypophysis is evidently only partly true, according to experience in two cases of De Quervain in (*Schweizerische medizinische Wochenshrift*, July 15, 1920, i, 29). The first case was in a boy of ten known to have hypophysis tumor. The left eye had become quite blind, with vision impaired in the right. There was headache and very large sella. Diabetes insipidus was marked. The appearance was typical of Froehlich's disease with intelligence intact. Neither hypophysis nor thyroid tablets gave material relief. Surgical intervention after some years was apparently limited to decompression. The *status quo ante* returned with death under symptoms of compression. Autopsy revealed a calcified epithelioma of the duct with destruction of most of the hypophysis. The second patient was a girl of twelve who at the age of seven began to evolve the picture of Froehlich's disease. The sella appeared to be normal. At the period of complete evolution the child resembled a fat woman at the menopause. Hypophysis extract was begun, alternating the anterior and posterior lobes and tablets and fresh substance over a long period. The subject began to lose weight while she began to increase in height. The gain was over 12 cm. in one year as against 10 cm. in the preceding four years. While there have been remarkable changes for the better it is yet possible to recognize the Froehlich case in the physique. The menses have not yet appeared. The treatment appeared to show that injury of the posterior lobe will cause fat deposit and that the same lobe also plays a rôle in skeletal growth, although recently this has been assumed to be associated with the anterior lobe only.

News of the Week.

Medicinal Springs in Japan.—Japan is making an investigation of her natural springs, with a view to making a national asset of them. There are said to be 601 cold springs and 1,103 hot springs, many of which are mineral springs having valuable medicinal qualities.

Relief for Chinese Famine Sufferers.—The American Red Cross has appropriated $500,000 with which to fight the famine in the Pekin, China, district.

Typhus on Liner.—A case of typhus fever in the steerage caused the Holland-America liner *Noodans*, arriving at New York from Rotterdam last week, to be held at Quarantine.

Forty-one Millions Spent in Near East Relief.—The Near East Relief has spent forty-one millions and saved more than half a million lives, according to Charles V. Vickrey, secretary of the Executive Committee, who recently returned from a tour of inspection in Armenia and Syria. The committee now occupies more than 300 buildings as hospitals, schools, and orphanages. In June

there were 54,600 infants in orphanages and 110,000 children living in their own homes were under the care of the committee. Not one penny of loss, it is stated, has resulted from dishonesty.

Dysentery in Vienna.—An epidemic of dysentery, afflicting thousands daily, according to press news, is attributed to spoiled cornmeal used in making bread.

Woman Leper Nurse Decorated by France.—Mlle. Safino, who for twenty years has directed the lepers' institution at Manankavaly, Madagascar, has been awarded the Cross of the Legion of Honor by the French Government.

Death Claims Paid by War Risk.—The Bureau of War Risk Insurance announces that the sum of $1,154,911,719 has been paid out in death claims, and $29,577,540 for disabilities, during and since the war. Up to August 31 the bureau had issued $40,000,000,000 in war risk insurances.

Occupational Therapy for Tuberculous Ex-Service Men.—Reports from the Government tuberculosis sanatoria of the United States Public Health Service to the Surgeon General just made public, demonstrate conclusively the great value of occupational therapy as an adjunct in the treatment of discharged and disabled soldiers. In fact, as carried out by the experienced reconstruction aides of the U. S. Public Health Service, occupational therapy, consisting of mental work and manual handicraft for curative and diversional purpose, promises much in the medical care and treatment of discharged and disabled soldiers now being cared for by this service. According to this report, out of 392 patients admitted to one sanatorium, 263 took occupational therapy and 129 did not. Of the former only two patients left the hospital against the advice of physicians in charge. On the other hand, of the 129 who did not take occupational therapy, 83 either deserted or left the hospital against the advice of the physicians in charge. This is less than 1 per cent. among the former, as against 65 per cent. among the latter class of patients. The Public Health Service operates the largest unit now engaged in occupational therapy and physiotherapy, over 300 expert aides, mostly women being employed.

Extension of Red Cross Work.—The American Red Cross has announced the establishment of a Department of Health Service and an extension of its nursing service. The organization now has 36,000 nurses on its rolls working in more than 15,000 communities. In order to increase the number of qualified public health nurses 288 scholarships have been established and 67 loans have been made from the national fund to public health nursing. In addition approximately 250 scholarships have been awarded by the various chapters and funds have been given to various universities. Development in class instruction in home nursing has increased threefold during the year, the number of women taught having increased from 34,033 to 93,093.

Automobile Deaths in New York City.—During the month of September there were 89 persons killed by motor vehicle accidents, 49 of whom were children under sixteen years of age, according to the National Highways Protective Society. The number for the entire State was 202, the largest number ever recorded for one month in this State.

Typhoid Fever in Adirondacks.—An epidemic of typhoid fever at Conifer, a lumber hamlet in the Adirondacks, is reported to have caused several deaths, while scores are ill. The State Board of Health has sent a unit of nurses and physicians to the town.

New York State War Service Hospital.—Governor Smith has appointed Dr. Thomas W. Salmon of New York City as the medical representative on the commission which is charged with the construction of the hospital for the care of the World War Service men suffering from mental diseases. The extraordinary Legislature appropriated $3,000,000 for the purpose.

Dr. Jacques Loeb of the Rockefeller Institute for Medical Research will deliver the first of the Harvey Society Lectures at the New York Academy of Medicine, Saturday evening, October 16, 1920. His subject will be "The Proteins and Colloidal Chemistry."

Dr. Jacob Rosenbloom has removed his office to 120 West Seventieth Street.

Dr. Jacob Diner has removed his office to 344 West Eighty-fifth Street.

Dr. Robert Abrahams has removed his office to 260 West Seventy-second Street.

Dr. Abr. L. Wolbarst has removed his office to 792 Lexington Avenue.

Miss Abby Henrietta Campbell, founder of the Faith Home for Incurables in Brooklyn, died recently after a long illness, at the age of eighty-four. She had been superintendent of the institution for more than forty years. The home is at present caring for seventy inmates.

Obituary Notes.—Dr. ANNA FORREST ROWE of New York City, who died recently, was the founder of the Lucretia Mott Dispensary, the first complete hospital and dispensary for women in Brooklyn. Dr. Rowe was graduated from the Women's Medical College for the New York Infirmary for Women and Children in 1880.

Dr. EDWARD J. CARROLL of Brooklyn, N. Y., died Oct. 2. He was graduated from New York University Medical College in 1882, and was at one time physician to St. Catherine's Hospital.

Dr. ADOLPH GEHRMANN of Chicago died Oct. 4 at the age of fifty-two. He was graduated from Northwestern University Medical School in 1890. He was professor of bacteriology and hygiene at the College of Physicians and Surgeons, and at one time was superintendent of bacteriology for the city of Chicago. Dr. Gehrmann was a member of the American Medical Association, the American Public Health Association, and State and local societies.

Dr. FREDERICK CLARK of New Brighton, Staten Island, died Oct. 5 at the age of seventy-two. He was graduated from the College of Physicians and Surgeons, New York City, in 1873. He was one of the founders and a life member of the Richmond County Medical Society.

Dr. HENRY STEWART, retired naval surgeon, of Canandaigua, N. Y., died at Clifton Springs Sanitarium Oct. 4, at the age of seventy-three. He was graduated from the New Orleans School of Medicine in 1868.

Correspondence.

LONDON LETTER.

(From Our Own Correspondent.)

LONDON, September 17, 1920.

Some of the Work of the Ministry of Health.—The first annual report of the Ministry of Health has recently been issued and in it the multitudinous activities of the local authorities are comprehensively and statistically reviewed. It supplants the reports hitherto annually sent out by the Local Government Board. Matters affecting the public health are exhaustively, critically and, of course, intelligently discussed by those who know well whereof they speak. It is a valuable and interesting document and proves conclusively that the hearts of the officials are thoroughly in their work. As a survey of the health conditions of England and Wales it is splendid, and undoubtedly if the ministry were not handicapped in many ways, financially for instance, and if there were not so many immense problems to solve, great headway would soon be made. But at the present time Great Britain like all European countries, although perhaps, to a less extent, is rent by internal strife and domestic questions must be largely left in abeyance until some sort of settlement is made. In the meantime the Ministry of Health must mark time waiting for those happier days. As said before, the report is full of meat and moreover should provide almost as interesting reading to American as to British medical men. The work of the Ministry is outlined in detail. Up to March 31, 1920, the Ministry and their predecessors had approved 395 dispensaries for the treatment of tuberculosis, of which 362 had been provided by local authorities. There were also 388 approved residential institutions with 15,781 beds, which is an addition to the available accommodation of 2,258 beds during the year. Up to the same date proposals had been submitted to the Local Government Board and the Ministry for the provision of 9,830 additional beds, including 1,263 for the use of patients in the County of London. Local authorities were responsible for the greater part of the increases. Up to March 31, 1920, capital grants amounting to £893,999 had been definitely promised in aid of the provision of institutions in England for the treatment of tuberculosis, and of this sum £445,433 had been paid. This represented an increase of £444,461 in the total amount promised, and of £81,663 in the total amount paid as compared with the previous year. The total number of notifications of pulmonary tuberculosis for 1919 was 67,123, and other forms 17,775, as compared with 79,025 and 20,215 respectively for 1918. Deaths from pulmonary tuberculosis during 1919 numbered 36,662, and from other forms 9,650, the respective figures for 1918 being 46,077 and 11,996.

In connection with consumptive ex-service men it is stated that the difficulties which will arise in the absorption of these men into industries are considerable, and probably the only method by which many of the men will be able after training to earn a livelihood for any prolonged period, without frequent relapse and ultimate permanent breakdown, is by being placed under such special conditions and in such surroundings as will afford shelter from the full stress of competitive industry by enabling them to live in a village settlement or an industrial colony established on lines especially designed for these purposes. The Ministry are accordingly in communication with the Treasury on the whole question of the establishment of village settlements and other kindred arrangements under which the tuberculous patient would, after training, be able to be employed under specially sheltered and favorable conditions. Of 57,361 samples of milk analyzed during the year 11.1 per cent were found to be adulterated, the percentage in London being 7.7. The comment is made that "although several successful prosecutions are recorded which resulted in large fines being imposed, there is evidence that difficulty is frequently experienced in obtaining convictions." Referring to the fact that during 1919 infant mortality reached the record low rate of 89 per 1,000 births, the report states that while this record is no doubt due to a variety of causes, including the favorable climatic conditions, the comparative prosperity of the wage-earning classes and the continued depression of the birth rate there can be no doubt that maternity and child welfare work has materially contributed to its reduction and the low rate is a substantial encouragement to further efforts in the same direction.

The housing problem is one that still remains to be solved and under present conditions it seems almost to be unsolvable. When workmen's houses in agricultural districts cannot be built at a less cost than £700 the question is who is to pay the rent which will amount to £50 a year or thereabouts. Although the agricultural laborer now earns about £2.10., or so, a week he cannot afford to pay such a rent and maintain a family at existing prices of all the necessaries of life. Half the rent is the utmost that he can pay, so that out of his own pocket he cannot hire the cottages that are being erected. But they are built expressly for him and as there are no others available he must live in them. The Ministry of Health have proposed that the remainder of the rent should be paid out of the rates, which means that the overtaxed middle class must make up the deficiency. Among the methods favored by the Ministry of Health for the reduction of the cost of building is the use of substitutes for brick and mortar and of these the hollow concrete blocks are perhaps the favorites. A bungalow made of these materials can be built for £300, largely with unskilled labor, but the trade unions would step in and prevent this. So it comes about that no one can either afford to buy bricks or to do without them. Some time ago the Ministry of Health proposed to medical officers that the housing section of their annual reports should be issued separately. As the *Lancet* of September 11, in its Housing Notes points out, Dr. Herbert Jones, medical officer of health for the Herefordshire Combined District, has complied and in the annual report, 1919, issued August 20, 1920, makes a comprehensive survey of present housing conditions. In half the

parishes more houses are needed, and the schemes submitted to the Government, even were they now completed, would not meet the need. Regarding the standard of accommodation, Dr. Jones would have each house built on a quarter-acre plot and contain parlor, kitchen, wash-house, scullery, bath, and three bedrooms. By discussing the question of "women's institutes" and other organizations he has discovered a unanimous opinion in favor of both parlor and bath. The Ministry of Health are pledged to deal with the housing question first, and as said before it appears almost impossible of solution.

Extensions to Hospitals.—In the first week of September the Duke of Northumberland opened the Orthopedic Hospital extension of the Royal Victoria Infirmary, Newcastle-on-Tyne, for the treatment of disabled ex-service men and civilians. The hospital has been actually in operation twelve months under the Ministry of Pensions. There are 540 beds, and 1,563 patients have been treated. The sum of £8,000 raised as a memorial to the late Duke of Northumberland was given to the fund, to which workmen also contributed generously. The Duke said the building cost £160,000, and nearly all had been raised from contributions. Were it not for the progress of the science of orthopedics, half the men on whose behalf the King was appealing would have been unemployable. The results of reconstruction had been somewhat disappointing but too much had been expected. Consequent on Mr. Seymour Berry's gift of £10,000 important temporary extensions to Merthyr General Hospital have been commenced.

Research in Tropical Diseases.—Recently new laboratories for research into the origin and treatment of tropical diseases were opened at Liverpool. The laboratories are named after Sir Alfred Jones, the Liverpool ship owner, who took a great interest in the work done in the investigation of tropical diseases at Liverpool, and made provision in his will for the erection of a laboratory. The chairman, Sir Francis Danson, said at present they were investigating yellow fever in the laboratory which they had established at Manaos, and they had also obtained from the Colonial office the long lease of a site for another laboratory at Sierra Leone. They were expanding in Liverpool, and having obtained from the university the necessary land, they had erected this new building.

Postgraduate Study for General Practitioners at St. Andrews.—A short course of postgraduate study for general practitioners will be given at the Clinical Institute, St. Andrews, under the direction of Sir James Mackenzie, commencing on October 11. The course to which only a limited number of members will be admitted will consist of lecture demonstrations dealing with the symptomatology of disease in its early stages, and will be supplemented by demonstrations on matters of clinical interest in anatomy, physiology, chemistry, bacteriology, ophthalmology, and radiology.

Industrial Blindness.—The returns of the civilian after-care department of the National Institute of the Blind show Lancashire to have 4,202 sightless persons as compared with 2,593 in Yorkshire. This difference is largely due to the character of the industries carried on in the two counties. Mining and steel industries are two highly dangerous occupations, especially with regard to the eyes of the workers. In spite of the attention given by the local authorities to the prevention of injuries of this nature, it appears that the number of those who have lost their sight from industrial causes has increased during the past ten years. On the other hand, the compulsory notification of ophthalmia neonatorum has resulted in a great diminution of infantile blindness.

Some Medical Aspects of the National Health Insurance Act.—A memorandum on this subject by Sir James Mackenzie is published as an appendix to a report of the Inter-Departmental Committee appointed to consider and report upon the form of medical record to be prescribed under the terms of service of insurance practitioners. It begins by pointing out that the purpose of the National Insurance Act is to provide for the prevention and treatment of ill health accruing among the industrial classes of the community. This purpose is effected for the most part by the employment of those who have under their care the sick and injured, i.e., through the agency of the general practitioners of the country; and the success of the act depends upon the degree of efficiency with which these agents can carry out their work, especially in the diagnosis and treatment of the ordinary disabling diseases which affect the industrial community. 2. Legislation on matters of health depends upon the state of medical knowledge at the time and as medical knowledge is not complete or stationary at any one time, but is defective and transitionary, it follows that the regulations must be drawn up in such a way as to enable them to be adapted to advances in medical knowledge, and also to provide and encourage opportunities and efforts for progress in medical science. The present defects in medical knowledge are fully apparent only to those who are actually engaged in the work of general practice. Sir James Mackenzie goes on to state that the memorandum has been drawn up with a view to indicate the principal defects in medical knowledge which exist at the present time and which impair the success of the act, and also to indicate some steps which can be taken to remedy them. The memorandum is too long to quote in its entirety so a summary will be given and a condensed account of the methods pursued at the St. Andrew's Institute for Clinical Research, which was inaugurated and is directed by Sir James Mackenzie. This is the summary: (1) The present phase of medical knowledge is defective, because the classification of disease is largely based upon pathological changes discovered after death, which bear little or no relation to the clinical manifestations of ill-health and no relation to the early symptoms of disease which occur before structural changes can be recognized, (2) Advance in knowledge along the right lines can only be effected by making use of the opportunities of the panel doctor. (3) Encouragement must be given to the panel doctor to make use of his opportunities for improving medical knowledge, (a)

by encouraging him to keep brief records of his cases and of the symptoms presented on the lines indicated; of the effect of treatment upon them, and of the continuous history of his cases. (b) By issuing to him from time to time notes upon the mechanism and significance of symptoms. (4) By improvements in medical education in affording some instruction on clinical medicine as studied and treated in general practice apart from its study under hospital conditions. (5) In view of notes of cases kept by a practitioner as indicated, certificates of fitness or unfitness for work should be accepted apart from a definite diagnosis in the numerous cases in which a true diagnosis is not as yet obtainable. 6. By the coordination of workers, clinical and laboratory, the progress of medicine can be favored, and the more skilful treatment of panel patients facilitated. The methods pursued at the St. Andrew's Institute are as follows: (1) Each clinician has a private room in the institute. This is reserved from 11 to 1 on Mondays, Wednesday, and Thursdays for research cases. During the rest of the day each practitioner may use the private room as a consulting room. The panel practitioners who do so have the advantage of the use of the scientific departments whenever required. An index file and cards are provided in each room upon which brief notes are kept of each private or panel patient. These cards will, in time, form records of the life history of each patient. In the event of a patient removing to another district these notes can be sent to the new attendant. (2) Cases for research are selected from his own practice by each member of the clinical staff. These are, in the first instance, seen by him, and he is at liberty to consult Sir James Mackenzie or any colleague at any stage of the case. If any special investigations are required, these are carried out by the staff of the special departments. (3) On Tuesday afternoons some special subject, arranged beforehand, is discussed by a general meeting of all members of staff. (4) On Friday afternoons the whole staff discuss the cases seen during the week and any suggestions for investigation of any case made at that meeting are proceeded with and added to the record. The principle upon which Sir James Mackenzie proceeds is prevention of disease by means of early diagnosis and efficient treatment, so that the malady does not gain a firm foothold, but he recognizes, as indeed do all discerning medical men, that the general practitioners, who alone have the opportunity of observing early symptoms, must be trained in the diagnosis of such symptoms ere they are able to detect them or appreciate their significance. He also points out that there exists among the medical profession a defective knowledge of drugs and a defective knowledge of prognosis. He has founded the St. Andrew's Institute with a view of remedying these defects as far as is possible, or rather of showing how they or, at least, some of them can be remedied. The work, of course, is largely experimental, but there is no doubt that it is a move in the right direction and if successful will almost revolutionize the practice of medicine throughout the world.

Progress of Medical Science.

Boston Medical and Surgical Journal.

September 30, 1920, clxxxiii, 14.

1. Remarks on the Therapeutics of Essential Epilepsy. L. Pierce Clark.
2. A Plea for the Early Diagnosis of Epilepsy. Edward A. Tracy.
3. Prostatic Obstruction. Arthur H. Crosbie.
4. Enlarged Mesenteric Lymph Nodes. Howard M. Clute.
5. Treatment of Vascular Nævi with Radium. Douglass W. Montgomery and George D. Culver.
6. Medical Judgments. H. W. Marshall.

4. Enlarged Mesenteric Lymph Nodes.—Howard M. Clute states that the symptoms of enlarged mesenteric glands vary with the pathological condition of the glands, with the age of the patient, and with the relation of other organs to the glands involved. In both children and adults they constitute one of the causes of abdominal pain, which may give no hint as to its origin before an exploratory laparotomy is done. In the early stages of the disease in children there is often a history remarkable for its vagueness, with little pointing to the real source of trouble. Adequately treated, the prognosis in enlarged mesenteric nodes is good. No deaths and no recurrence of symptoms after the removal of the nodes have occurred in the two cases that formed the basis of this study. The principles governing the treatment are the removal of the focus of disease and the care of the general health of the patient postoperatively. Conservative hygienic treatment may well be tried first in cases of this nature. Conservative measures failing, however, operative removal is indicated.

New York Medical Journal.

October 2, 1920, cxii, 14.

1. The Influence of the Color of Urine on Readings of the Phenolsulphonephthalein Test. Victor Cox Pedersen.
2. The Urea Output as a Practical Kidney Function Test. Stephen H. Blodgett.
3. The Clinical Status of Gonorrhea. Joseph M. Cadwallader and Alexander A. Brown.
4. When Is Gonorrhea Cured? Maurice Meltzer.
5. The Treatment of Specific Urethritis. Robert H. McNair.
6. Views on Surgery of the Prostate. John X. Jones.
7. The Intensive Administration of Arsphenamine. Herman Goodman.
8. The Reactions Following the Intravenous Administration of Arsphenamine. Albert A. Strickler.
9. Fatal Postarsphenamine Jaundice. Albert S. Hyman.
10. The Venereal Disease Problem. Hon. William Renwick Riddell.
11. Medical Men in the American Revolution. (*Concluded.*) Louis C. Duncan.

4. When Is Gonorrhea Cured?—Maurice Meltzer answers the question asked in the title of this paper as follows: 1. A cured patient should present no morning drop or urethral secretion at any time of the day. 2. Microscopical examination should show no pus or gonococci in the urine, prostatic, or seminal vesicle smears. 3. The urine should be clear, though in some cases small noninfective desquamating shreds may persist. 4. The urethral lumen should be free from any narrowing or stricture formation. 5. The complement fixation test should be negative in conjunction with the other findings. 6. In doubtful cases the secretions from the genitourinary organs should be cultured to prove the absence of gonococci on suitable culture media. 7. Cystourethroscopic examination should show the urethra free of lesions.

7. The Intensive Administration of Arsphenamine.—Herman Goodman bases this contribution on the intensive specific therapy in eighty hospitalized syphilitic negro patients, the cases being divided among the syphilitic periods as follows: Primary syphilis, 28 cases; silent generalization, 23 cases; secondary syphilis, 16 cases; latent tertiary, 4 cases; active tertiary, 9 cases. In primary cases the diagnosis was made by the demonstration of the *Spirocheta pallida* where the diagnosis was at all doubted clinically. The intensive arsphenamine treatment in these cases was administered as suggested by Pollitzer. The clinical results were immediate in all uncomplicated syphilitic manifestations. The infectiousness of the patient was reduced thereby much more quickly than with the same amount of the arsphenamine introduced intravenously by the so-called intermittent method. The changes in serology were

most encouraging, but no attempt is made by the writer to base conclusions on them. With no further precaution than that taken for the administration of arsphenamine intermittently, the eighty men were given this intensive form of treatment with excellent results. He does not hesitate to recommend the procedure for more general use by those especially skilled in the application of arsphenamine as generally administered. The public health value of this method is emphasized. The period of hospitalization of infectious syphilitic persons is much reduced thereby, which is an important consideration in the prophylaxis of syphilis by treatment.

9. Fatal Postarsphenamine Jaundice.—Albert S. Hyman, in a review of several thousand doses of arsphenamine given at the Venereal Clinic of the Long Island Hospital, was able to demonstrate seven cases of toxic jaundice which were undoubtedly due to this specific drug. All but one of the patients recovered. This case is reported.

Journal of the American Medical Association.

October 2, 1920, lxxv, 14.

1. Protein Sensitization in Eczema of Adults. Howard Fox, Jr., and J. Edgar Fisher.
2. The Value of Prophylaxis Against Venereal Diseases. Joseph Earle Moore.
3. Development of the Bactericidal Power of Whole Blood and Antibodies in Serum. J. H. Black, Kenneth Fowler and Paul Pierce.
4. The Segregation of Pneumonia. Thomas S. Southworth.
5. Lactic Acid Milk. Dewitt H. Sherman and Harry R. Lohnes.
6. Diagnosis of Chronic Intraocular Tuberculosis. H. H. Stark.
7. Ethylhydrocuprein in Diseases of the Eye. Arthur J. Bedell.
8. Epilepsy and Certain Types of Epileptiform Attacks. Daniel D. V. Stuart, Jr.
9. The Complement Fixation Reaction in Tuberculosis: Reporting Six Thousand Five Hundred Reactions. W. Warner Watkins and Clarence N. Boynton.
10. Venipuncture in the Treatment of Certain Diseases of the Skin: Its Value as an Occasional Adjuvant. Jerome Kingsbury and Paul E. Bechet.

4. The Segregation of Pneumonia.—Thomas S. Southworth expresses the view that the obligation is imperative to anticipate the day, which he considers not far distant, when the movement to control the scourge of pneumonia may make the retention of such cases in a general ward as repugnant to the medical sense of propriety as the retention of an open case of pulmonary tuberculosis.

9. The Complement Fixation Reaction in Tuberculosis.—Watkins and Boynton make a statistical report of 6,500 reactions, discussing briefly the two or three fundamental points in dispute regarding this test. They found the Miller antigen serviceable, practicable, and efficient for the complement fixation test in tuberculosis. The reaction is specific for tuberculosis, and, when positive, should be interpreted as indicating tuberculosis of some degree of activity. When the Wassermann and tuberculosis fixation reactions are both positive, they should be interpreted without relation to each other. The positive fixation reaction can be interpreted as indicating tuberculosis, either active at the time, or recently active. The focus may or may not be of clinical significance, which fact must be determined by other means. The negative fixation reaction indicates either absence of infection, excessive activity of the disease, exhausting the antibody, or arrest of the disease with spontaneous disappearance of antibody no longer required.

10. Venipuncture in the Treatment of Certain Diseases of the Skin.—Kingsbury and Bechet believe that venipuncture is of occasional value in certain cases of psoriasis, erythema multiforme, and dermatitis herpetiformis. It is of great value in the treatment of urticaria, and in their hands afforded more relief in severe cases of that disease than any other therapeutic method.

The Lancet.

September 11, 1920, cxcix, 11.

1. Lumelian Lectures on the Clinical Experiences of a Physician During the Campaign in France and Flanders, 1914-19. Lecture I. Sir John Rose Bradford.
2. Hospital Treatment of the Psychoses and Psychoneuroses. Suggestions for Bringing Them Within the Scope of a General Scheme. Edwin Goodall.
3. Lobar Pneumonia. A Clinical Analysis of 558 Consecutive Cases. Adolphe Abrahams.
4. An Experimental Study on the Origin of Idiopathic Nephritis. H. B. Day. With a Note by J. K. Clarke.
5. The Uselessness of Antimony in the Treatment of Filariasis. George C. Low and A. L. Gregg.
6. Notes on the Treatment of Recurrent Malaria by Novarsenobenzol. J. Norcott d'Esterre.
7. A Case of Acute Encephalitis Lethargica Followed by Myoclonic Movements. A. Cecil Alport.
8. Three Cases of Arthroplasty. C. D'Oyly Grange.
9. Public Health in Soviet Russia. (*To be continued.*) L. Haden Guest.
10. Health Teaching in the United States: Professor Sedgwick's Lectures at Cambridge. Sir G. Sims Woodhead.

4. An Experimental Study on the Origin of Idiopathic Nephritis.—Day and Clarke detail observations which involved experiments with renal substance; investigation of urine; characteristic organisms; injection of cultures into animals; experiments with other organisms; and trial of vaccines. From these investigations the following summary is drawn: 1. From the urine of patients with "idiopathic" nephritis and from the kidney of a case of fatal nephritis, bacilli of intestinal type have been isolated in pure culture. 2. Injection of these cultures and subcultures into animals provokes acute nephritis. 3. From the kidneys of these animals in the earlier stages of nephritis the bacilli injected have been recovered in pure cultures. 4. Injections of cultures obtained from animals infected with these bacilli have reproduced the disease in other animals. 5. The nephritis induced runs a somewhat prolonged course, and is accompanied by acute degeneration of liver cells and an enlargement of the spleen in the early stage. 6. In human cases of nephritis treatment with appropriate vaccines has caused rapid amelioration. 7. In some cases of nephritis a secondary or an independent infection of the urinary system may be present and obscure the original cause.

6. Notes on the Treatment of Recurrent Malaria by Novarsenobenzol.—J. Norcott d'Esterre assigns the following reasons for using novarsenobenzol in recurrent malaria, twenty cases of which so treated are reported: 1. Because it has been conclusively proved that the malarial fevers are protozoal infections, infecting the red corpuscles of mammals, reptiles, and birds. 2. Because the organic compounds of arsenic in its trivalent form are more potent in action upon protozoa. 3. Because it is known to destroy the *Spirochæta pallida*, the balance of opinion now being distinctly in favor of the *Spirochæta pallida* being a protozoon.

British Medical Journal.

September 11, 1920, ii, 3115.

1. The War Physical Census. Sir James Galloway.
2. The Place of the Radiologist in Medicine. Alfred Ernest Barclay.
3. The Place of Electricity in the Diagnosis and Treatment of Nerve Injuries. H. S. Souttar.
4. The Value of Electricity Testing of Nerves at Operation. Noel H. M. Burke.
5. Condenser Tests in the Diagnosis and Prognosis of Nerve Injuries. Cecil Worster Drought.
6. *X*-rays in the Diagnosis of Tumors of the Thorax. Robert Knox.
7. The Diagnostic Value of the Renal Outlines. S. Gilbert Scott.
8. *X*-ray Therapy in "Oriental Sore." J. Goodwin Tomkinson.
9. The Melted Paraffin Wax Bath. F. Howard Humphries.

6. *X*-Rays in the Diagnosis of Tumors of the Thorax.—Robert Knox holds that radioscopy is most useful in a preliminary investigation because it offers a great deal of useful information. The patient should be screened in as many positions as possible, and all variations in size and shape noted. Pulsation should be most carefully looked for because it is so very valuable in the differential diagnosis to know that the tumor pulsates and whether the pulsation is direct or transmitted. On this point alone a diagnosis can often be made. Negatives should always be taken as a final step in the technique, and it is often well to take these in several positions. Consideration of a number of negatives from different angles will afford valuable aid when one must sum up and give an opinion on the nature of a shadow.

7. The Diagnostic Value of the Renal Outlines.—S. Gilbert Scott summarizes as follows the method of de-

termining the relation of abnormal shadows to the kidney: (1) The outline of the kidney must be seen. (2) An abnormal shadow lying *outside* this cannot be in the kidney. (3) If the shadow lies inside the limits of the outline, then it is necessary to compare the plate taken at full inspiration with one taken at full expiration. The respiratory excursion of the kidney is first measured, and the respiratory movements of the shadow under discussion are then compared. The direction of the movement of each is also noted. If the respiratory excursion and direction of the kidney and abnormal shadow are the same, the latter must be in connection with the kidney. A rule, therefore, can be formulated that if an abnormal shadow or shadows, no matter how small and insignificant they may be, lying inside the renal outline, move to the same extent and in the same direction as the kidney, they must be connected with it. This rule will apply to one or several shadows, and in this way it is quite easy to pick out from a number of shadows those that are of renal origin. In some cases the kidney may be fixed, and no respiratory excursion obtainable. If, however, it be possible to demonstrate that the shadow under discussion has moved in some direction or other, while the kidney has remained unaltered, the shadow must be outside the kidney. Once having diagnosed the presence of a stone in the kidney its correct position in the organ itself can be given, and a rough estimate made as to its size. Scott considers this method of localization invaluable where the shadow is extremely indefinite and doubt is felt as to its nature.

Indianapolis Medical Journal.

September, 1920, xxiii, 9.

1. Pathology of Abdominal Visceral Tuberculosis. Elmer Funkhouser.
2. The Action and Use of Eserine. Joel Whitaker.
3. Anesthetic Notes. Arthur E. Guedel.

1. Pathology of Abdominal Visceral Tuberculosis.—Elmer Funkhouser states some of the fundamental principles involved in the pathology of tuberculosis of the abdominal viscera, and discusses some of the lesions.

Archivio per le Scienze Mediche.

xliii, 1-2, 1920.

Relations Between the Temperature of the Expired Air and the Cutaneous Temperature.—Viale has undertaken to prove or disprove the conclusions of Galeotti and others to the effect that the temperature of the expired air depends on the vasomotor conditions of the lungs, and that there is a correlation between cutaneous and pulmonary vasomotor phenomena, both regions undergoing vasodilation and vasoconstriction at the same time. The measurements were made in mountain air with an altitude of 3,000 meters, the ambient temperature ranging from 8.5° shade to 13° sun. The author found the expired air to be at a constant temperature of 35° C., slightly higher than some figures of other experimenters. In another set of experiments the subjects were alternately clothed and nude. In the clothed body the expired air was always warmer than in the nude body, the difference being relatively small — in the neighborhood of 1° C. The differences in cutaneous temperature between the clothed and nude surfaces were very slight, but the former were always warmer. The author's figures agreed fairly with those of others. The effects of sun and shade and of the temperature of the circumambient air on cutaneous temperature and expired air temperature were also measured. When the body passed from sun to shade the temperature of the skin as well as that of the expired air fell, to rise again when the body passed back into the sunlight. The author therefore concludes that Galeotti's discovery is genuine.

La Riforma Medica.

July 10, 1920, xxxvi, 28.

Radiation of the Hypophysis for Bronchial Asthma.—Ascoli and Fagiuoli mention the possibility of radiation which can stimulate as well as retard endocrinic activity. The latter property of the rays is well known in comparison with the former. In raying a subject with dystrophia adiposogenitalis, after a certain amount of benefit had been derived from opotherapy, the rays being directed to the hypophysis, a distinct benefit accrued, so that the subject seemed on the way to recovery, but there is no mention of asthma or its relief. In a second patient with scleroderma there were evidences of a pluriglandular syndrome, but no improvement followed opotherapy. The authors then rayed the hypophysis and thyroid as well as the cutaneous lesions, with the result that some of the symptoms which pointed to hypophysis insufficiency improved. A patient with Graves' disease improved under radiation of the thymus and one with eunuchoidism under radiation of the hypophysis and testes. The hypophysis was next rayed in five cases of bronchial asthma. In none of these cases is there any mention of symptoms pointing to the hypophysis, nor of any motivation for the asthma. After the failure of adrenalin and pituitrin, the hypophysis was rayed with more or less benefit, and one might speak of cure in some of them, although attacks may of course reappear. In one case at least the combined adrenalin and pituitrin was of value equal to radiation in effecting the cure. The idea of raying the hypophysis for asthma came primarily from the improvement in asthmatic symptoms after raying the hypophysis for diabetes insipidus; and in part also, perhaps, because the good results of adrenalin suggested the pituitrin might also be of value.

Le Bulletin Médical.

September 11, 1920, xxxiv, 44.

Neurasthenics and Nosomaniacs.—Gallois would not use the term neurasthenic from the sufferer from imaginary ailments as visualized by Molière's comedy. Neurasthenia is a definite condition, having its causes and symptoms which distinguish it from other affections. The nosomaniac, on the other hand, has not been exposed to the causes of neurasthenia. He is usually wealthy, with nothing to take up his mind; he therefore becomes introspective and slight ailments are magnified through lively play of the imagination. But there are hybrids, and the true neurasthenic may become nosomaniac. The former has obsessions which interfere with the ordinary activities of life. He reads a page, but his reading has been automatic, and he fails to remember what he has read; he goes to the theater and can obtain no diversion. The nosomaniac can be readily diverted as a rule. The neurasthenic is troubled with insomnia and is therefore prevented from throwing off his obsession. He suffers much with helmet headache and in time becomes indifferent to everything—eating, walking, games, etc. There may be agoraphobia or asthenopia, which aggravates the difficulties of reading and walking. The nosomaniac has an entirely different mentality and is more of a nosophobic, always fearing that he has or will have some disease. He gets worked up about high blood pressure, failure of sexual power, and a score of other common conditions, and goes about from one specialist to another—he has made the fortunes of specialists. He is a comic figure in the world, while the true neurasthenic is a tragic figure. The nosomaniac may be tricked into a cure by suggestion, but the author does not sanction such a resource and would disabuse the patient of false conceptions by enlightening and convincing him of the unreality of his troubles.

Pancreatic Infantilism.—De los Torreros regards this condition as acquired and due to some one of the infectious diseases of childhood. Pancreatic infantilism is a pluriglandular syndrome and akin to others in which the thyroid or other organ predominates. The leading phenomena are emaciation from failure to utilize carbohydrates, status lymphaticus, leucopenia and mononucleosis. There is a special tendency to contract contagious diseases. In addition there are the evidences of pancreatic insufficiency in the stools. This syndrome has no connection with pancreatic diabetes. —*La Presse Médicale.*

Book Reviews.

DIAGNOSTIC METHODS, CHEMICAL, BACTERIOLOGICAL, AND MICROSCOPICAL. A Text-book for Students and Practitioners. By RALPH W. WEBSTER, M.D., Ph.D., Assistant Professor of Pharmacological Therapeutics and Instructor in Medicine in Rush Medical College, University of Chicago; Director of Chicago Laboratory, Clinical and Analytical. Sixth Edition, Revised and Enlarged, with 37 Colored Plates and 170 other Illustrations. Philadelphia: P. Blakiston's Sons & Co., 1920.

THE fact that this work has gone through six editions points to the appreciation with which it has been received. All care has been taken to include processes of investigation which are of proved value; mention is made of some which have not proved certain in the author's hands, while the references and bibliography enable a more searching scrutiny to be made. The volume is really a practical dictionary of clinical laboratory methods of research, and should prove of great aid to the general practitioner as well as to those who have the resources of a laboratory at their command.

It is to be hoped that the author will in a future edition collate the findings of Biochemistry and Pathological Chemistry and the effect of the colloids on solubility of excretory substances. If it be not hypercriticism to say so, more might be added to the section on the excretion of the chromogens in the urine as guides to the relative functions of liver and kidneys in intestinal stasis and toxin formation; and in the section on the blood no mention is made of Gruner's work on the morphology of the blood as an early indication in carcinoma and also in tuberculosis. Such careful work as the author has performed could only be enhanced by applying these diagnostic methods to the very early recognition of disease, and so bring to light such preventive-medicine efforts as are being tried clinically on Sir James Mackenzie's suggestion at St. Andrews. But for its present aim of diagnostic methods this volume is up to date and leaves little or nothing to be desired.

FORESTS, WOODS AND TREES IN RELATION TO HYGIENE. By AUGUSTINE HENRY, M.A., F.L.S., M.R.I.A., Professor of Forestry, Royal College of Science, Dublin. New York: E. P. Dutton & Company, 1919.

WHILE the major portion of this interesting volume is local in its application, pertaining to the afforestation of pit mounds and water catchment areas in the British Isles, the first four chapters have a more or less universal bearing. These chapters deal, respectively, with the influence of forests on climate; the sanitary influence of forests; forests as sites for sanatoria; parks in towns and municipal forests; trees in towns.

The book is particularly timely, for, as the author says in his preface, one effect of the war has been to bring home to thinking people the extreme importance of afforestation. For this reason the concluding chapters are devoted to a study of the afforestation of the extensive gathering grounds, from which so many centers of population obtain their water supply. Forty-nine illustrations and maps add interest to the text.

SIMPLIFIED INFANT FEEDING. With eighty illustrative cases. By ROGER H. DENNETT, B.S., M.D., Associate Professor of Diseases of Children, New York Post-Graduate Medical School; Attending Physician of the Children's Department, New York Post-Graduate Hospital; Assistant Attending Physician at the Willard Parker Hospital and Pediatrist to the New York Lying-in Hospital. With 14 illustrations. Second edition revised and enlarged. Philadelphia and London: J. B. Lippincott Company, 1920.

THE second edition is substantially the same as the first with a few minor additions. The author is greatly impressed with the value of boiled milk and advises its use, although the large majority of authors advise against the use of boiled milk. Cane sugar and malt sugar are advised rather than milk sugar which is advocated by so many American pediatrists. One is permitted to guess as to what the author means on page 19 where he states: "add one-fourth ounce sugar to the feeding" without specifying the kind of sugar to be used.

Of the new material in this edition, nine pages are devoted to dry milk. The laudations of this patent food could be excused if all the statements made were true. Careful clinical observations show that dry milk is excellent as a temporary expedient, but continued use of the same produces catarrhal alvine discharges. Concerning cereals on page 320 we find: "All cereals should be cooked *at least* three hours a day," and on page 322 we find the same advice: "Cook cereals three hours a day. It has been repeatedly proven by chemists that the large majority of cereals require but one hour of cooking, and the frequently used farina requires but one-half hour cooking.

The chapter dealing with caloric requirements of infants is well written. We find the caloric reckoning applied to most all of the clinical cases reported in the various portions of the book.

A MANUAL OF PHYSICAL DIAGNOSIS. By AUSTIN FLINT, M.D., LL.D., Late Professor of the Principles and Practice of Medicine and of Clinical Medicine in Bellevue Hospital Medical College, etc. Eighth edition, revised by HENRY C. THACHER, M.S., M.D., Assistant Attending Physician, Roosevelt and Lincoln Hospitals, New York. Illustrated. Philadelphia and New York: Lea and Febiger, 1920.

THE appearance of a new edition of this book is a welcome sign of the times. There has, of late, been a tendency to rely too much on laboratory work and on complicated instruments, and as a result, physical diagnosis has been neglected. The first edition of this work appeared some thirty-five years ago; for many years it was the favorite book on diagnosis; and, even now, with many larger and more pretentious books in the field, it holds a place of its own as a clear and concise guide to physical diagnosis. Students of to-day would do well to look at this classic of a quarter of a century ago.

ADVANCED LESSONS IN PRACTICAL PHYSIOLOGY FOR STUDENTS OF MEDICINE. By RUSSELL BURTON-OPITZ, S.M., M.D., Ph.D., Associate Professor of Physiology, Columbia University; Professional Lecturer in Physiology in Teachers College and the Extension Department of Columbia University. Illustrated. Philadelphia and London: W. B. Saunders Company, 1920.

THIS volume can be used either as a companion to the 'Text-Book of Physiology" by the same author, or independently. In either case it will be found a satisfactory guide to the laboratory work in Physiology now demanded of medical students in all the best schools. The volume contains about 200 pages, and it is divided into fifty lessons, covering the whole field of Physiology in so far as it lends itself to laboratory demonstration. The book is of a convenient size, is amply illustrated, will lie open at any given page, and contains numerous blank pages on which the student can add notes of his own work.

MASSAGE AND EXERCISES COMBINED, A Permanent Physical Culture Course for Men, Women, and Children. Health-giving, Vitalizing, Prophylactic, Beautifying. A New System of the Characteristic Essentials of Gymnastic and Indian Yogis Concentration Exercises Combined with Scientific Massage Movements, with 80 Illustrations and Deep Breathing Exercises. By ALBRECHT JENSEN, Formerly in charge of Medical Massage Clinics at Polyclinic Hospital and other Hospitals. New York: Albrecht Jensen, 220 West Forty-second Street, 1920.

THIS book contains very full and clear descriptions of fourteen movement exercises, without apparatus, combined with self massage. The exercises are quite simple and are very easily performed and can be gone through methodically in the course of ten or twenty minutes. The massage movements are more than the mere rubbing of the skin, tapping, stroking and pressing being brought into action. Combined with the movements and massage are certain breathing exercises. Altogether the author presents a system of health culture that cannot fail to benefit all who will take the short time and the slight trouble to master and to practice it.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON SURGERY.

Stated Meeting, Held May 7, 1920.

DR. SEWARD ERDMAN IN THE CHAIR.

Foreign Body in the Right Lung for Five Years: Removal, Recovery.—Dr. JOHN C. A. GERSTER presented a young man who had been stabbed with a file just below the angle of the right scapula on December 8, 1913, in Portland, Ore. The patient was in a hospital for thirty-seven days and after that was detained in jail for seventy-two days as a witness. Then for four years he worked in the west as a lumberman and finally came to New York, where he was drafted, sent to Camp Upton (308th Inf.), and finally overseas with the 77th Division. On September 8, 1918, he was wounded in the right forearm by a machine gun bullet at the crossing of the Aisne Canal, and later was returned to Fox Hills Hospital, Staten Island. From there he was sent by the War Risk Insurance to the Clinic for Functional Reeducation for the treatment of his incapacitated right forearm. He complained of pain in his right thorax and an *x*-ray taken showed a foreign body embedded in the lung. (The man who did the stabbing said he had pulled the file out, but the *x*-ray proved the contrary). The file fragment lay in the right lung almost impinging upon the diaphragm; in front it almost touched the pericardium. Because of the thoracic pain, cough and expectoration, on October 29, 1918, five years and ten months after the stabbing, an intercostal incision was made in the eighth interspace, under intrapharyngeal anesthesia. The foreign body could be felt higher than where the *x*-ray seemed to indicate it was located consequently the rib above the intercostal incision was resected. This afforded sufficient space so that the hand introduced into the thorax could grasp and rotate the file so that its posterior end covered by lung tissue presented and could be cut down upon, seized, and extracted. A catgut stitch closed the hole in the lung tissue. Layer suture of the thoracic wound was made, with a small drain at the center of the suture line. An empyema developed which was treated by Dakin's solution for eighty-two days, when the wound closed. Since closure of the empyema sinus the patient had had two colds and one attack of influenza. Thoracic pain persisted for some time but had now entirely subsided. The *x*-ray plates showed a distinct halo about the file, three-quarters of an inch away from it. The file was embedded in thick fibrous tissue to which it was densely adherent; no abscess cavity was present. *X*-ray plates taken three months later showed persistence of the halo. The specimen was a three-cornered file 5¾ inches in length. Recent *x*-ray plates which were exhibited showed the lung perfectly aerated. The patient stated he now felt perfectly well.

Dr. EDWARD WALLACE LEE asked Dr. Gerster what the condition of the patient's lung was at the present time; whether there was any consolidation.

Dr. GERSTER replied that there was no evidence of consolidation, although there surely were adhesions as a result of the empyema.

Gastrectomy with Reconstruction of Physiological Rapports Between Stomach and Intestines.—Dr. A. L. SORESI presented this patient, operated upon on March 5, for the purpose of demonstrating the absolutely physiological functional results that were obtained by his method. Dr. Soresi said all the cases operated with his method confirmed his contention that the operation was physiological because they showed the formation of a new antrum pylori. The carcinoma removed in this case was very extensive and about four-fifths of the stomach was removed. The series of *x*-ray plates showed the gradual, almost normal, emptying of the stomach, the emptying time being between three and four hours; this time might be considered normal, given the small size of the stomach. The patient had gained about twenty pounds since the operation, and ate all kinds of food.

Dr. Soresi recommended the following technique for gastrectomy: Complete removal of all adhesions from the field of operation; separation of the omentum from the colon; ligation and division of about 6 cm. of the gastro-colic and gastro-hepatic ligaments around the pylorus; tying the blood vessels as they presented themselves. The duodenum was caught with strong forceps at about one centimeter from the lesion and sutured with special through-and-through stitches at a distance of about 3 mm. from the forceps, it was then severed between the suture and the forceps; the stump of the stomach and the forceps closing it are then covered with gauze, and the stump of the duodenum was inverted with a sero-serous suture. The stump of the stomach is now raised up and the gastro-colic and gastro-hepatic omentum ligated up to the point of the stomach that the surgeon intended to resect, at the same time the posterior surface of the stomach was freed from any adhesions and the blood-vessels were ligated. Strong forceps were placed on healthy tissue of the stomach, and the same stitches used for the duodenum was employed to suture about two-thirds of the stomach at about 3 mm. from the forceps, beginning from the cardiac side, leaving about 4 cm. unsutured; Doyen forceps were placed on the unsutured portion, and the portion of the stomach to be resected was cut away along the forceps. The through-and-through suture was covered with a sero-serous suture. The jejunum was located and severed at about 5 cm. from the Treitz's ligament and the proximal stump covered with gauze and temporarily abandoned. The distal stump was passed through a split in the mesocolon and sutured along side the unsutured portion of the stomach, with a sero-serous suture made with parallel stitches, using two needles; it was then severed longitudinally with an incision of the same length as the unsutured portion of the stomach. A special through-and-through suture then approximated the cut edges of the stomach and the jejunum in such a manner that it resulted in a kind of antrum; the sero-serous suture was then continued all around, half with each needle. Silk was always used for the sero-serous and catgut for the through-and-through suture. The split in the mesocolon was sutured around the jejunum, and the proximal stump of the jejenum was implanted in the distal stump with a termino-lateral anastomosis. The advantages of the method were: The operation was easier because every step was helped by the preceding one, and each was made in the open; there was no danger of hemorrhage, of infecting the operating field, or of injuring important structures, such as the middle colic artery; trauma was reduced to a minimum; the operation was carried on every rapidly and safely, less than an hour in uncomplicated cases; finally, the function of the stomach after the resection was physiologically correct, because the bile and the pancreatic juice did not enter the stomach but followed the physiological route; the anastomosis between the stomach and jejunum was both safe and rational, forming a kind of antrum pylori.

Empyema Treated by Author's Method.—Dr. A. L. SORESI presented five patients from his service at the Greenpoint Hospital for the purpose of demonstrating the results obtained with a new technique which he had devised the principles of which were delayed operation, and negative pressure in the pleural cavity from the beginning, while pus was completely drained out at the same time. Dr. Soresi advised late operation, because he claimed that the pus found in the pleural cavity represented a means of defense of the organism which should not be removed until such defense was not necessary, that was, until the acute symptoms have subsided. The direct treatment must not be uncomfortable for the patient, must drain the pus and favor early progressive expansion of the lung, and must not be the cause of immediate or late complications. Dr. Soresi used local anesthesia, incision between the ninth and tenth ribs, but without rib resection, along the scapular line. The point of the incision must, however, be determined by exploratory aspiration, and must be made where pus could be obtained freely. Drainage of the pus and lung expansion was obtained by the use of a new instrument, which was a cannula composed of two halves which were easily introduced into the pleural cavity, cannot slip in or out, and formed a large oval opening which was

covered with a special valve and a cap. The valve prevented the entrance of air into the pleural cavity and the cup drained the pus into a bottle, so that no dressing was necessary and the patient was never disturbed for any reason, and could rest comfortably and get about very early. The cannula was left in place on an average of from ten to fifteen days. In one case presented it was removed on the seventh day, and the patient left the hospital two days later, that was, nine days after operation. *X*-ray pictures from the patients presented showed conclusively the beautiful results obtained by this method, which has been applied successfully in numerous cases.

Case of Pyloric Ulcer with Symptoms that Might Be Ascribed to an Existing Epigastric Hernia—Pylorectomy.—Dr. LEO B. MEYER presented this patient, a man 60 years of age, as a part of the symposium on gastric and duodenal ulcers, and also because of the statement frequently made that an epigastric hernia associated with gastric ulcer symptoms meant that the hernia was responsible for the gastric symptoms. While this was often true this case proved the necessity of carefully ruling out a definite gastric lesion before assuming an epigastric hernia to be the sole cause of gastric symptoms. This patient was also of special interest in connection with Dr. Lewisohn's statement that it was advisable to exercise an ulcer in view of the frequency with which ulcer recurred and the possibility of its becoming malignant. The patient was admitted to Beth Israel Hospital four weeks previous with an indefinite gastric history. The *x*-ray examination was negative except for a six-hour residue; there was no evidence of a filling defect. The patient had a distinct epigastric hernia. The diagnosis of ulcer was made on the basis of the six-hour residue. This was one of those cases in which an operation for the epigastric hernia would have produced no results. There was an indurated, contracted ulcer on the posterior aspect of the pyloric ring; though there were no enlarged glands or evidence of carcinoma it seemed advisable in view of the man's general appearance and age to remove the ulcer. A resection was therefore performed with a suture posterior gastroenterostomy.

Resection for Carcinoma of the Stomach (Four Years Ago).—Dr. RICHARD LEWISOHN presented this patient, a man 55 years of age, who was admitted to Mount Sinai Hospital on August 15, 1916, complaining of weakness, belching, vomiting and loss of weight. No definite mass could be palpated in the epigastrium. Gastric analysis showed a marked residue, blood, lactic acid, and no hydrochloric acid. *X*-ray examination showed a marked pyloric obstruction. The operation revealed a large carcinoma at the pyloric end of the stomach, with extensive adhesions to the pancreas. The tumor was resected and a button gastroenterostomy performed. The microscopical diagnosis showed it to be a colloid adenocarcinoma. The patient began running irregular temperatures two weeks after the operation and developed an empyema. At that time he was in such a poor condition that we simply drained the pus by an intercostal incision under local anesthesia. He then made an uneventful recovery. He has gained 85 pounds since his operation and was in perfect health. It was well known that cures following a resection of carcinoma of the stomach extending over two years were rare. However, they did occur occasionally. For this reason we ought to be very radical in our operative indications. The size of the tumor and adhesions to surrounding organs were certainly not contraindications. This case was distinctly on the borderline of operability and yet now, nearly four years after operation, this patient was strong enough to daily fulfill his arduous duties as a street car conductor.

Penetrating Ulcer of the Posterior Wall of the Stomach.—Dr. RICHARD LEWISOHN presented this case. He stated that the patient, 23 years of age, was admitted to Mount Sinai Hospital, on March 13, 1920. He had complained for the last five years of epigastric pain, which was relieved by food. There was a distinct periodicity present, there being an absence of symptoms during the summer months. He had been vomiting during the last few weeks previous to his admission. Palpitation revealed an indefinite epigastric tenderness. The *x*-ray showed a penetrating ulcer at the lesser curvature of the stomach, at the junction of the horizontal and vertical portions. The duodenal bulb was somewhat irregular. The operation revealed a penetrating ulcer of the posterior wall of the stomach, densly adherent to the pancreas, which formed the base of the ulcer. The pylorus and duodenum were normal. The irregularity of the bulb shown in the *x*-ray picture was evidently caused by reflex spasm. A number of large, hard glands, surrounding the ulcer and extending upwards on the lesser curvature, suggested the possibility of malignancy. However, preferring to give the patient the benefit of the doubt he performed a subtotal gastrectomy and button gastroenterostomy. The patient made an uneventful recovery. The specimen showed a large crater ulcer about one inch away from the lesser curvature. A careful microscopical examination failed to show any suspicion of malignancy. The *x*-ray picture, although absolutely pathognomonic as to the diagnosis of penetrating ulcer, was rather deceptive as to its situation. The barium meal pulled down the movable part of the stomach and this brought the ulcer, which was adherent to the pancreas, to the top level. It thus gave the impression that the ulcer was situated at the lesser curvature. The ideal procedure for these cases was partial gastrectomy, the local excision in connection with gastroenterostomy gave fair results though the permanent cures were not so frequent as those following gastrectomy. Simple V excisions and sleeve resections for secondary hourglass formation should not be used. A simple gastroenterostomy was an illogical procedure for ulcer of the lesser curvature or posterior wall of the stomach. If removal was impossible a temporary jejunostomy might give very good results. One of the most difficult questions to definitely decide by palpitation was whether the ulcer was benign or malignant. Large glands, as in this case, might be purely inflammatory. It was therefore advisable to give these patients the benefit of the doubt and to perform gastrectomy, if this procedure was technically possible.

Gastrojejunal Ulcer (Two Cases).—Dr. RICHARD LEWISOHN presented these patients. The first patient, he said, was admitted to Mount Sinai Hospital on January 28, 1919. He had been operated on three and one-half years previously for duodenal ulcer. The operation consisted in gastroenterostomy and pyloric exclusion. He was perfectly well up to six weeks ago. Since then he had been suffering from severe pain, belching, and eructations; but no vomiting. The *x*-ray department found that the jejunum for about two inches beyond the stoma was considerably dilated and resembled a small accessory pouch. This pouch emptied rapidly. There was tenderness over the entire gastric area. None of the food was seen going through the pylorus. The stomach was dilated, the peristalsis exaggerated. A considerable residue was present after six hours. The diagnosis of obstruction of the jejunum, probably due to adhesions, was made. Operation, February 1, 1919, revealed a gastrojejunal ulcer at the anterior and left aspects of the stoma. The ulcer was hard and indurated. The site of the exclusion represented a narrow opening only large enough to permit the passage of fluids. In this case the transverse mesocolon was separated from the site of the stoma and the stoma was opened. The ulcer and the indurated area were excised, leaving the posterior suture line intact. The opening was then closed with chromic gut sutures after widening of the stoma by lengthening openings in the stomach and jejunum. In order to force feedings immediately a temporary Senn jejunostomy was performed and a tube inserted. The patient was fed through this tube for thirteen days. The tube was then removed. The opening closed in a few days. The patient left the hospital three weeks after the operation and has been perfectly well since then. The Pagenstecher linen thread had been blamed very frequently for the causation of gastrojejunal ulcers, but Dr. Lewisohn stated that he had never found rests of suture material among his personal eight cases of gastrojejunal ulcers. However, non-absorbably material could undoubtedly cause this trouble. It was therefore wise to use chromic gut for outer and inner suture of a gastroenterostomy. The technical procedure in the removal of gastrojejunal ulcers was very much simplified if, as in this case, the posterior suture

line could be preserved. In cases of large indurated ulcers with extensive invasion of the mesocolon, a temporary jejunostomy was the proper procedure. This method set the stomach at rest for some weeks and would thus cure the ulcer, even though its radical removal was out of the question on account of insurmountable technical difficulties.

The second case was that of a man, 29 years of age, who had had four operations during the last six years. He was operated upon six years ago for epigastric hernia. However, this operation did not relieve his symptoms. He was therefore reoperated in the following year for pyloric ulcer, a gastroenterostomy being performed. Ulcers of the pylorus or duodenum were often overlooked in the presence of an epigastric hernia. Every case of epigastric hernia with stomach symptoms ought to have an *x*-ray taken before the operation if there was the slightest doubt of an intra-abdominal lesion the abdomen ought to be explored thoroughly. The small incision for epigastric hernia ought to be more and more abandoned in favor of thorough exploration, just as we had learned that the small appendicular incision was not the ideal procedure in many cases. This patient was brought to Beth Israel Hospital one year after his second operation suffering from an acute perforation of a pyloric ulcer. Dr. Goodman operated immediately and closed the perforation. It was interesting to note that the ulcer suddenly perforated one year after the performance of a gastroenterostomy. The patient felt fairly well up to about six months ago, when he returned to Beth Israel Hospital with a large ventral hernia and severe epigastric pain. The *x*-ray showed that they were dealing with a gastrojejunal ulcer. The operation which Dr. Lewisohn performed on March 28 consisted of division of extensive adhesions, excision of a gastrojejunal ulcer, and a Mayo herniaplasty. The patient made an uneventful recovery.

Rhinophyma.—Dr. JAMES FRANCIS GRATTAN presented his patient, a man 43 years of age, who dated the initial change in the tip of his nose to his tenth year, when the end of his nose was severely lacerated by a dog bite. At the age of 11 or 12 years he had a facial erysipelas, and during his youth received several bad blows and falls involving his nose. Two and a half years before coming under the speaker's observation he had had a second attack of erysipelas. There was a globular tumor on the tip of his nose about 1¼ inches in diameter, almost a perfect sphere with a base almost as broad as the diameter of the mass and extending upward on the anterior surface to the junction of the middle and lower thirds of the nose, and laterally to the alæ nasi. Chronic acneform lesions dotted the skin over the entire tumor. The operation was as follows: A U-shaped flap was made above, beginning at each alæ and including about one-half inch of the skin on the superior surface of the tumor mass. An inverted U-shaped was made on the inferior surface of the nose, including the skin of the entire inferior surface of the tumor. The ends of the two U-shaped incisions were made to meet at each alar crease. The flaps thus outlined were dissected off the tumor, and the tumor dissected in a wedge-shaped manner from the underlying nasal cartilage. There was considerable fibrous tissue in the tumor and no distinct differentiation between the tumor and nasal structure. The dissection was rather difficult on account of the conditions. The lower flap was rolled up over the edge of the nose so that the suture line ran directly across the anterior surface of the nose from ala to ala. The upper flap was very difficult to adapt to the new contour, as it had stood out at right angles to the anterior nasal line during the long period that it had covered the upper surface of the tumor. The adaptation was begun by fastening it at its center to the center of the lower flap and then adapting the sides by trimming and scoring the edge, fitting and refitting until the best approximation was obtained. In this way a rather well-shaped nose was moulded out of very discouraging material. Interrupted sutures of fine silk were used. The tension was relieved by sterile adhesive straps. The wound healed by primary union and the patient left the hospital on the tenth day. Aside from the slight redness and the prominence of the sebaceous gland orifices the nose had the appearance of a normal organ. The problem of improving the condition of the skin was discussed with Dr. Fred Wise, who suggested the use of 50 per cent. trichloracetic acid, applied periodically, until the higher prominences of the skin were leveled. The treatment was repeated until all the areas of the nose had been smoothed out, and the result was most satisfactory. Four applications were made in all. Subsequently exposures to the roëntgen ray at three week intervals were given with the idea of further improving the condition of the skin and keeping in abeyance any tendency to recurrence of growth in the tissue treated. This case, Dr. Grattan said, demonstrated the desirability of attempting something for the improvement of conditions of this type. It was impossible to estimate the good effect of the result on the patient's mentality and outlook on life, to say nothing of the physical betterment.

Dr. STEWART ERDMAN asked Dr. Grattan if it was not unusual to find a rhinophyma so distinctly pedunculated as this one, and whether it would be possible to apply his method of operation to a growth more generally disseminated.

Dr. GRATTAN replied that if the enlargement was more general it might be necessary to do a sectional resection, and that would probably not be as easy as this had been.

The Results of Operation on Gastric and Duodenal Ulcers.—Dr. GEORGE WOOLSEY presented this contribution which was based upon 109 cases operated on mostly during the last five or six years, up to December, 1919. This did not include perforated ulcers. Seventy-nine of these operations had been done since January, 1916, at which time the follow-up system was inaugurated on the 2nd Surgical Division of Bellevue Hospital, and late records have been obtained in 75 of these cases. Those who had no gastric symptoms were classed as excellent; those having occasional vague symptoms, not those of ulcer, were classed as satisfactory; while the remaining class of unsatisfactory results included those who complained of a considerable amount of discomfort. Naturally the largest group was that of duodenal ulcer, 58 cases. Of these two died after operation, one of pulmonary embolism and one of heat prostration. Records of 45 of the remainder showed that the immediate results were excellent in 75 per cent.; satisfactory in 15.9 per cent., and unsatisfactory in 9 per cent. The later results were satisfactory in 64.4 per cent.; satisfactory in 26.6 per cent., and unsatisfactory in 8.8 per cent. Combining the excellent and satisfactory results it was found that they had what might be called good results in over 90 per cent. of the cases. In a series of 20 cases of duodenal ulcer, the writer employed pyloric exclusion by a strip of fascia from the rectus sheath, according to the Wilm's method in addition to gastro-jejunostomy. Later he discontinued it thinking it made no difference and added to the time of the operation. He found, however, that the cases with exclusion gave the best results as shown by the figures in this group. Suspicion of a simultaneous chronic appendicitis led to the removal of the appendix in 16 out of 48 cases. Appendectomy at the same time with gastro-jejunostomy did not appear to favorably influence the final results in the patients so treated in this series. In one case symptoms of ulcer recurred twenty-one months after operation and all forms of diet and treatment had no effect. At operation two years after the first operation, about three inches of silk or linen thread was found hanging from the inside of the anastomosis. There was no jejunal ulcer. Since that time he had used no non-absorbable sutures; they were probably the commonest cause of jejunal ulcer. In the group of gastric ulcer treated by gastroenterostomy he had included all that he had private records of, going back to 1902, as the group would be otherwise too small. There were 18 cases in this group, with no post-operative deaths, making a mortality of 2.6 per cent. for all cases of peptic ulcer for which a gastroenterostomy was done. Several of these cases showed that at least some chronic gastric ulcers could be treated by gastroenterostomy alone. In several cases a retrocolic anterior gastroenterostomy was performed, mostly for carcinoma, and had always given satisfactory results. In this series of gastric ulcer treated by gastroenterostomy, the late results were known in 14, being ex-

cellent in 8 and satisfactory in 3, making 78.5 per cent. good results. In the few more or less recent cases of this group the ulcer was situated at or close to the pylorus, and in five cases a pyloric exclusion was done, proximal to the ulcer, to encourage its healing but without affecting the final results very favorably. He was inclined to think that most of these later cases the results would have been better if resection had been done by the Polya-Reichel method. The best results obtained by gastroenterostomy in the gastric ulcer group had been in chronic pyloric stenosis with dilatation of the stomach. Seven gastric ulcers were treated by excision. The writer felt convinced that excision alone was a poor operation for gastric ulcer. It seemed to interfere with gastric motility and did not relieve hyperacidity. Combined with gastroenterostomy, excision, or better perhaps the Balfour cautery operation, might give good results. Excision came into competition with mesogastric resection, but though the postoperative course of the latter had been very smooth the final results had not been so good, so that his early enthusiasm for this operation had somewhat diminished. In the group of gastric ulcers treated by resection of the stomach there were 26 cases of which four died, a mortality of 15.3 per cent. The Billroth 11 method was used in these four fatal cases; they were, however, poor operative risks. Of the remaining 22 cases, 15 had reported the late results. Of these, five gave an excellent end result, seven a satisfactory result, and three were unsatisfactory, making 60 per cent. of good results. One of these cases was later operated on with good results, increasing the percentage of good results to 86.6 per cent. In gastric ulcers situated at or near the pyloric end Dr. Woolsey said he did resection, preferably by the Polya-Reichel technique. If the antrum was normal and the ulcer was three to four inches or more proximal to the pylorus he had done as mesogastric resection. Where the ulcer was so far from the pylorus as to make this operation quite difficult, an excision or the Balfour-cautery method, with a gastroenterostomy was preferable. This group included eight mesogastric resections with no death. At first he was strongly in favor of this method, which had the advantage of not requiring a gastroenterostomy, but he had been disappointed with its results. The satisfactory results comprised only 60 per cent. Many of these cases presented the worst type of chronic ulcer in unpromising specimens of humanity. Five out of the eight were situated posteriorly, adherent to, and sometimes penetrating the pancreas. Excision and cautery was not suitable in these cases and a complete resection involved the removal of a large segment of the stomach. In such cases adherent posteriorly, he believed the mesogastric resection was indicated. Four cases operated on by the Billroth 11 method, and two of the cases gave good results, one satisfactory, and one excellent. It was a striking fact that in the four cases of gastric ulcer in which this method was employed, on account of adhesions posteriorly, the end results had been excellent in all in which it was known. The Polya-Reichel method was used in nine cases with 100 per cent. of good results. This operation had given much satisfaction. It saved time as compared with the Billroth 11 method, and, according to the voluntary testimony of the house staff the postoperative convalescence was smoother and more satisfactory. In the majority of the 109 cases (71.5 per cent.) the ulcer had not been removed or cured by the operation. The latter merely put the stomach in such a condition mechanically and chemically, that the healing of the ulcer was favored. In addition, then, these patients should have a dietetic cure and the postoperative period offered ideal conditions for this régime. In a given case of gastric or duodenal ulcer one could not guarantee a good result from operation, but one could assure such patients that in a very large percentage of cases, 85 to over 90, suitable operation offered good results, both immediate and lasting. This held good where medical cures had been tried and failed.

Fluoroscopic Diagnosis of Duodenal Ulcer.—Dr. ARTHUR L. HOLLAND presented this contribution in which he said that the statement that duodenal or postpyloric ulcer could be diagnosed or excluded by any method or combination of methods in 90 per cent. of the cases sounded extravagant. That this was possible they had demonstrated in the New York Hospital, and further they had demonstrated that by the fluoroscope alone, disregarding the findings of the history, gastric analysis, feces analysis, and physical examination, they could in 90 per cent. of the cases and more accomplish this end. This percentage had been practically duplicated in the Cornell Surgical Division at Bellevue Hospital. In 52 cases diagnosed duodenal ulcer at the New York Hospital and Cornell Clinic and in private practice, 47 had been confirmed at operation. In the remaining five cases no lesion of the duodenum was observed at the operation, but in most of these cases there were extragastric lesions, such as adhesions, gallbladder disease or chronic appendicitis, no doubt causing some spasm of the cap which had been mistaken for evidence of ulcer. In 38 cases operated for other conditions, in which a negative diagnosis for duodenal ulcer had been made flouroscopically by them, in one instance only was an ulcer found, and this was a very small apparently healed affair. The object of the paper was to emphasize the importance of the flouroscope in this field and to suggest a technic for making observations and interpreting the findings. The observer should not approach the case prejudiced by a knowledge of the history, physical examination, or laboratory findings. He should protect himself with heavy lead-impregnated rubber gloves, as it was impossible to use the fluoroscope to advantage without considerable manipulation of the abdomen. Unless one became proficient in the art of manipulation and fearlessly proceeded he had much better rely on plates. Wooden spoons and other substitutes for the hands were clumsy and inefficient. The time of actual exposure of a patient during one week should not be over twenty minutes to one-half hour. The usual five inch gap and five milliampères were employed. The patient required no special preparation except that the meal previous to the observation be omitted. If the patient was habitually constipated the usual laxative might be given, but strong cathartics such as castor oil were contraindicated as a false impression of the motility of the tract was apt to result. The patient should always be examined in the vertical position. It was essential that the opaque meal should be of heavy gravity and much more thoroughly mixed than usual. The most satisfactory mixture was one of eight ounces of barium sulphate, one-half ounce of sweetened condensed milk and twelve ounces of water. Buttermilk was not satisfactory as a menstrum as the resulting shadows were not uniform and clear-cut. After quickly scanning the shadows of the heart and lungs, the patient was placed in the right anterior oblique position and the shadow of the meal passing through the esophagus was watched for evidences of stricture, spasm, or dilatation. The mode of entrance into the stomach was noted, as the patient was again turned to the antero-posterior position, also the course the meal took to the lower part of the stomach. When the stomach was full a diagnosis of the shape, size, position and tone was made at once. The patient should be observed both antero-posteriorly and in the right anterior oblique position. In about 50 per cent. of cases a spasm of the antrum was an early occurrence, but as the temperature of the meal was brought to that of the stomach this subsided in a few minutes except in the cases in which the spasm was secondary to some pathology further along in the tract or in adjacent organs. After allowing for the proper filling of the antrum and going over the outline of the stomach from all angles the examination could be discontinued for five or ten minutes. On resuming the enamination, if the antrum had not filled pressure at the fundus would usually accomplish this end. If when filled it presented a clear-cut shadow of triangular shape, or rather the Indian arrow-head shape, and viewed from all possible angles retained this shape, one could be quite sure that there was no pathology present in that part. Of the difficulties in these observations, the shadows in the descending duodenum obscuring a clear view of the cap were the most troublesome. These were overcome by the observer holding aside through the abdominal wall the descending duodenum. It was here that the fluoroscopist scored an advantage over the radiographer. Where there was incomplete spasm of the cap, the opaque meal might spurt through without distending the bulb and and filling the descending

duodenum, leaving a gap between the antrum and the descending portion. Hasty opinion should not be given because of this, but a persistent effort made to fill out the bulb by pressure. A small ulcer might give the shadow the appearance of a large filling defect and *vice versa*. If one found a clear-cut filling defect that did not show some little change from time to time one could be fairly sure that the ulcer was not active and was probably a healed affair. In the writer's experience, filling defects occurred most frequently on the greater curvature surface of the cap near the pyloric interval, or base of the cap. The next most frequent site was on the lesser curvature of the cap somewhat near its apex; a combination of these two types frequently occurred. Healed prepyloric ulcers causing partial obstruction were better treated surgically than medically, as sooner or later complete obstruction usually took place. On the other hand, the definite, clean-cut filling defect on either curvature of the cap, without very marked deformity, was a medical problem until frequent recurrences made surgery more attractive and less expensive. In addition to the diagnosis of post-pyloric ulcer in this region there were other things to consider. Adhesions or pressure from without might distort the outline of a perfectly normal cap. Then, too, there were folds on the greater curvature of the surface of the cap that were very similar to the defects of an ulcer. The essayist described how these were to be differentiated by pressure properly applied by the observer. A cap that was too freely movable, and this did sometimes happen, might become distorted through its own weight, but this could also be filled out by pressure applied from below. A small cap might tell of obstruction at the pylorus. On the other hand, an unusually large cap might be due to obstruction beyond the cap, particularly at the junction of the descending and transverse duodenum where a kinking might cause back-tracking. Dilatation of the right side of the cap under the fluoroscope where operation had been performed had demonstrated some pathology on the left side or posterior surface of the bulb, the dilatation simply being a compensatory process. One frequently heard of clinicians and surgeons who had abandoned the use of the *x*-ray in gastrointestinal work, arguing that ulcer at least could be diagnosed by ordinary clinical methods in a large percentage of cases, but they all knew that there was an irregular type of the disease that knew no laws and that these were frequently the most dangerous and too often made emergency surgery necessary. Furthermore clinical methods did not place the lesion, and this to the surgeon was most important. Still further there was always the danger of cancer supervening in gastric ulcer, while this danger was not present in post-pyloric ulcers, so that diagnosis as to location was most essential. One could also tell quite accurately by the fluoroscope whether duodenal ulcer was responding to medical treatment. Dr. Holland also described a method that they had employed in a few selected cases that were difficult to observe because of persistent pylorospasm or spasm of the cap itself. This consisted in passing a duodenal tube into the duodenum and introducing through it a small quantity of opaque meals. In this way they could see not only the cap, but the descending and transverse duodenum permitting their relations to be studied to much better advantage.

Dr. JOHN F. ERDMANN said that he spoke purely from the surgical standpoint. In regard to the presentation of the patients he was particularly impressed by the fact that surgeons were getting more revision operations. He had had three patients come back upon whom he had operated himself and a number upon whom others had operated. He had come to the conclusion that certain people had the habit of reproducing ulcers and he thought that a status of this type should be taken more into consideration. He had had patients in whom he had had to operate two, three, or four times in the course of five, six or seven years. The recurrence of ulcers in this way seemed to be a habit or thus something was wrong with the diet. The type of operation did not seem to make any difference as to the recurrence. Some of these patients were kept under observation on simple diet and this did not seem to prevent recurrences. Patients with recurrence usually complained of pain in the hypochondrium and lumbar region. In reference to ulcers in the pyloric zone, exclusion of the pylorus had never been satisfactory in his hands. For six or seven years he had been devoted to excision of the ulcer, but now he did an excision and a gastroenterostomy in addition, if demanded. Dr. Erdmann expressed himself as much gratified and pleased to hear Dr. Holland's paper because he had been rather skeptical of the fluoroscopic diagnosis. Dr. Holland is to be congratulated on his high degree of diagnostic ability with the fluoroscope.

DR. JOHN ROGERS said that Dr. Erdmann's remarks about the post-operative recurrence of gastric ulcer prompted him to some reflections upon the origin of the disease. In the great majority, if not in all, of the cases it occurred in "nervous" subjects. That was, in people who by their responsiveness to environmental influences were peculiarly subject to fatigue. They reacted to nervous or mental, as well as purely physical stimuli, with more than the usual vigor, and hence were peculiarly subject to fatigue. This always affected first the nerve terminals and thus impaired their function. In the stomach, the vagus apparently activated, or "drove," this organ, while the sympathetic inhibited or "checked" it. If the functions of the involuntary nerves were at least partly "trophic," then suspension or interference with this function as the result of fatigue should lead to "trophic" disturbances and ulcer could develop wherever the circulation was most impaired. It was certain that the most constant element in the clinical history of these cases was a so-called "nervous" fatigue. This meant a psychological activity which involved mental inhibition. There always seemed to be a simultaneous visceral inhibition which was exerted through the sympathetic or "check" nerves. If the latter became fatigued, as there was every reason to believe they would, all the subjective symptoms of gastric ulcer appeared and could be avoided only by the relief of the fatigue or by mental and physical rest.

DR. EUGENE H. POOL said he had not intended to enter into the discussion, but a word was due from some one on the staff of the New York Hospital in regard to Dr. Holland's paper. He had followed the work from the start, and though in the beginning he was very skeptical he had been carried away by the results Dr. Holland was getting. He felt convinced that Dr. Holland had understated rather than overstated his claims for the flouroscope. If it came to a question of giving up *x*-ray plates or the fluoroscope it would be safer to give up the plates. An important feature of the flouroscopic examination was the way in which a man who had had as much experience as Dr. Holland when the bismuth meal was in the stomach could manipulate it and press it up against the pylorus, and then empty the pylorus, and by these manipulations could demonstrate any filling defect that might be present. In this way he had not only demonstrated ulcer but also a diverticulum on one occasion. Dr. Holland's findings had been almost uniformly demonstrated at operation, so he felt that in his modesty, Dr. Holland had understated his figures.

DR FENTON B. TURCK brought out the point that the fact that cases of gastric and duodenal ulcer failed to recover under both medical and surgical treatment emphasized the necessity of a further study of the etiology of ulcer, not only for the sake of finding the cause of ulcer but of determining what happened as a result of these broken down cells in the body. In his feeding experiments in animals both pyloric and prepyloric ulcers had been produced in various ways reported in the literature, but the most significant thing was that he had been able to produce ulcers by the injection of burnt tissue. These ulcers were not produced merely because the tissue was burnt but because it was dead tissue; if one simply allowed tissue to autolyse and then injected it the same results would ensue. There were various methods of causing tissue necrosis, and one method was by deficiency feeding from which there resulted a breaking down of the animal's own tissue which produced the same results as the injection of necrosed tissue. The reason ulcer occurred more often in the pyloric region and in the duodenum was because there was more erypsin in these localities and hence a more rapid breaking down of tissues. Reactions from burns occurred more often in the upper than in the lower in-

testinal tract and the same was true of shock. By adding extracts of beef and the ordinary intestinal flora which interfered with the proper utilization of food elements a breaking down of the animal's own tissue occurred. Ivy had recently reported similar experiments in the *Archives of Internal Medicine* (January 15, 1920) in which he had obtained precisely the same results. Stewart and West (*Jour. of Immunology*) attributed the formation of ulcers in Dr. Turck's experiments to acidosis, but acidosis he had shown was a result and not a cause. It was well known that after perforation of ulcers, there were seldom recurrences, and this was explained on the ground of the perforation resulting in autovaccination and the production of antibodies, and finally, immunity. In this same way Dr. Turck said he had produced immunity in animals by injecting autolyzed tissue into a horse, and at the end of the year had produced a serum which would produce immunity to ulcer in animals. A serum made with human antigen had been used in the cure of peptic ulcer in patients. Recurring ulcers after operation and cases of ulcer not operated on, had been cured as demonstrated by *x*-ray and the disappearance of all symptoms. He recommended such a procedure for the purpose of preventing the recurrence of ulcer in human beings.

DR. WOOLSEY, in closing the discussion, said that gastrojejunal ulcer was often a very difficult proposition when it came to operation, but he had seen relatively few ulcers of this type. In that connection he thought the Roux operation had rather an unsavory reputation, and Dr. Soresi's operation appeared from the diagrams to be similar to it. As he looked at it one of the objectionable characteristics of this operation was the segment of jejunum leading from the stomach to the point at which the duodenal contents entered it and neutralized the acid chyme. However, the problem of jejunal ulcer was much less serious since the use of non-absorbable sutures had been abandoned or else only interrupted silk sutures used. He thought most jejunal ulcers were due to non-absorbable sutures. Dr. Woolsey also added his testimony to the efficiency of the very beautiful results obtained by Dr. Holland in his fluoroscopic work. He had watched Dr. Holland fluoroscope a good many cases previous to being operated on by him at Bellevue and operation had always confirmed the findings.

SECTION ON MEDICINE.

Stated Meeting, Held May 18, 1920.

DR. CARY EGGLESTON IN THE CHAIR.

THE program of the evening was contributed by the Second Medical Division (Cornell) of Bellevue Hospital. **Bronchial Asthma: Response to Pilocarpine and Adrenalin.**—Dr. HARRY L. ALEXANDER and Dr. ROYCE PADDOCK made this presentation by invitation. They stated that the apparent causes and factors responsible for bronchial asthma varied widely among different individuals. The paroxysm itself seemed to be the one factor relevant to the condition that was common to all. During the past winter a series of twenty patients with bronchial asthma was studied in detail with the hope of correlating the symptoms and signs which all, or nearly all, might present. From these patients careful histories were obtained, physical examinations made with reference to lesions of the nose and throat, signs of vagotonia, status lymphaticus, cutaneous reactions to foreign proteins, *x*-ray of the chest, and, when indicated, of the paranasal sinuses and the intestinal tract, blood counts, sputum examinations, response to pilocarpine and epinephrin. Although most cases showed emphysema as well as abnormal nasal conditions, and many an eosinophilia in the blood and sputum, a low systolic pressure and increased lung markings in the *x*-ray plates, the outstanding feature was the increased sensitiveness to pilocarpine. Pilocarpine evoked a response in organs innervated by certain branches of the vagus as well as in the sweat glands, the salivary glands, and in the vasodilators of the head, which many authors thought belonged to the "extended vagus" or automatic system. Stimulation by adequate doses of pilocarpine, therefore, might lead to salivation, sweating, flushing, moisture of the eyes, and asthma, for the circular musculature of the bronchioles was also innervated by the vagus. Most investigators recommended 0.01 mg., or about 1/6 gr. of the drug to bring out these reactions, but as this dose evidently gave a marked response in many apparently normal individuals, the writers deemed it wiser to use smaller doses, and in this series 0.003 mg. or 1/20 of a grain, was employed. To this normal people gave very scant or no response, whereas vagotonic patients, with or without asthma, gave varying degrees of reaction which appeared within twenty minutes. In this series the asthmatic attacks and the incidence of these signs, as compared with those in the control series, was of such frequency as to support the contention that a large proportion of these cases might be considered as vagotonic. In this series of 20 cases positive adrenalin reactions were obtained in 13 cases, some of the most pronounced reactions occurring in those who gave the most marked reactions to pilocarpine also, and who presented other distinct evidence of vagotonia. Charts were shown demonstrating the response to adrenalin in an apparently normal individual, the dose being 0.5 c.c. adrenalin chloride solution 1/1000 subcutaneously; in some cases of bronchial asthma with low blood pressure, and in some with normal blood pressure. Physical examination revealed no evidence of hyperthyroidism in these individuals. An analysis of the series showed an interesting relation between the adrenalin response and blood pressures, namely, that adrenalin response occurred only when the blood pressure was low, while no reaction occurred when the blood pressure was approximately normal. In those patients with low blood pressure and bronchial asthma obviously the two factors, bronchial constriction and peripheral vasodilatation occurred. It was an interesting observation that in many of these patients very small amounts of adrenalin sufficed to relieve asthmatic paroxysms, as contrasted to the asthmatic patients with normal blood pressure, who gave no adrenalin response; in the latter group it required larger doses to attain the same results. Similarly, the sensitive cases reacted to the drug tests where 0.5 c.c. of adrenalin chloride 1/1000 was employed with distinctly unpleasant symptoms and often with exorbitant rises of blood pressure and pulse, whereas these symptoms were absent in the latter group. It was obvious that the habitually larger therapeutic dose of this powerful drug, as used in bronchial asthma, might be greatly in excess of the requirement. Caution was therefore urged against the promiscuous use of adrenalin in asthma. Their results were not in accord with the work of Eppinger and Hess and of Frank, who claimed that in bronchial asthma epinephrin had little effect on blood pressure. It was suggested that in subjects with bronchial asthma who were sensitive to adrenalin, the increased vagus tone might be merely relative, due to epinephrin insufficiency. It might be reasonably assumed that an excessive reaction to adrenalin ought not invariably to be interpreted as due to an increased tonus of the true sympathetic system. The writers stated that this study by no means implied disregard for many successful measures employed in the treatment of bronchial asthma, such as specific protein therapy, attention to nasal conditions and other rational methods.

Dr. ROBERT A. COOKE said it seemed to him the chief interest in this work lay in the fact that it demonstrated that bronchial asthma was merely the outward clinical expression of a widespread constitutional defect. The asthmatic individual had bronchial asthma as the chief clinical manifestation, but in over 50 per cent. of the cases a careful clinical history would disclose some other form of hypersensitiveness, such as urticaria, angioneurotic edema, or vasomotor rhinitis. And further, as had also been brought out in the paper, these people were subject clinically to a great many different forms of vasomotor disturbance, such as fainting, blushing, hyperidrosis, and other manifestations of vagotonia. It was a very interesting fact that such a large percentage responded not only to pilocarpine, but reacted to adrenalin as well. It seemed that in Dr. Alexander's series something like two-thirds responded to pilocarpine and at the same time gave an adrenalin response. This, it seemed to him, indicated

an irritability of the autonomic nervous system. Dr. Cooke said that personally he had not made many observations of this sort, but in a few instances he had found that these cases of bronchial asthma responded not only to pilocarpine and adrenalin, but also to atropine. The symptoms of overdosage with an allergen were those of vagotonia and sympatheticotonia, and indicated that they were dealing with a vagotonia, and a sympatheticotonia, in other words, with an abnormal irritability of the entire autonomic system. In such individuals it was an interesting question whether there was any causal relation between their vagotonia and protein hypersensitiveness or whether this was simply a concomitant condition, or whether as a result of their repeated hypersensitive reactions to certain proteins they had developed this irritability of the entire autonomic system. He did not think this question could be answered to-day, but the result of observations made thus far suggested that these individuals who had hypersensitive reactions over a long period developed a nervous mechanism that was rendered extremely irritable to all substances that acted upon the automnomic system.

A Study of the Metabolism and Heat Regulation in Pulmonary Tuberculosis.—WILLIAM S. MCCANN and DAVID P. BARR contributed this paper, in which they stated that in 1908 Prof. Irving Fisher presented data before the Sixth International Congress regarding the dietary given tuberculous patients of ninety-five of the leading sanatoria of the world, showing a wide divergence of opinion as to the food requirements of such patients. The average daliy calories fed varies from 5500 to 2140. The proportion of calories from protein varied from 10 to 25 per cent of the total calories. From the summary of the data Professor Fisher concluded that forced feeding should be abandoned and that the proportion of nitrogenous food should be reduced. With this opinion clinicians had shown an increasing tendency to agree. Dr. Fisher himself had said that no science ever made progress which centered on opinion. The only tribunal in true science was the tribunal of facts, carefully arranged and sifted. With this need of facts the present work was undertaken. After referring to the methods of others in determining the toxic destruction of protein in tuberculosis the writers stated that they had determined the "wear and tear" quota of nitrogen, or the minimum to which the protein metabolism might be reduced by the reduction of the nitrogen intake at the same time maintaining sufficient nonprotein calories. In this way it appeared that the protein metabolism could not be reduced to the same low level in the tuberculous as had been observed in normal men by Thomas, Siven, and Chittenden. In comparison with similar experiments made in typhoid fever by Kocher it appeared that the wear and tear quota was somewhat less in tuberculosis, and that a low level of protein metabolism might be attained at the expense of much less carbohydrate. Loss of nitrogen in the sputum must also be taken into consideration, and since this existed for the most part in the cellular elements of the sputum, it would bear about the same relation to nitrogen balance as nitrogen lost in the hair, nails, and epidermis. The material upon which this study was based consisted of 14 tuberculous patients upon whom 26 observations were made, which varied in duration from one to four hours in the Russell Sage calorimeter, using the methods of direct and indirect calorimetry. Charts were presented showing the detail of the work. In additions to the estimations of the toxic destruction of protein and the observations on heat production, in two cases the specific dynamic action of protein was observed, and in both cases the behavior had differed in no way from that of the normals they had studied so far on the same protein-containing meal. This work showed briefly that the basal heat production of the cases studied had been found not markedly increased. The evidence adduced showed that the protein metabolism might be kept at a fairly low level. Hence from the practical standpoint it appeared that the super-alimentation of bygone days was entirely unnecessary, if not harmful, and that patients might be well nourished on diets relatively low in protein with a very moderate excess of nonprotein calories above the basal requirements of the patient.

Dr. WARFIELD T. LONGCOPE said that he had not had an opportunity to study carefully the feeding in cases of tuberculosis, but that he was familiar and sympathetic with the recent tendency to reduce the forced feeding which was considered, previously, absolutely essential in the treatment of tuberculosis. Though the tendency was to reduce the number of calories in food for tuberculous patients, the exact reason for this had not previously been accurately determined. The studies which Dr. McCann had presented here were of the greatest value in determining the exact caloric needs in chronic tuberculosis, and it could only be through such observations that rational dietaries could be formulated for these patients. These studies immediately suggested the value of similar determination in other types of chronic and subacute infections and through such painstaking investigation it would be possible to determine the proper proportion of food and total calories to be administered to other types of infection. The earlier work on the feeding of typhoid had shown that the progress of this disease could be materially changed by a proper dietary and the same thing was undoubtedly true of such prolonged infections as chronic purulent pleurisy and some types of subacute local infections.

Dr. ORRIN S. WIGHTMAN said he did not know when he had heard a more scientific discussion of the protein bases and of nitrogen balance than the one just presented. There was, however, another factor to be taken into consideration and that was the mineral waste. He had been informed that as a result of what they had learned during the war the French were trying to replace calcium lost from the tissues. He had received calcium and magnesium in ampoules for intravenous injection. It did seem that the calcium and magnesium had a fixed value in bodily metabolism. The calcium need merely supplied the fuel, but did not give any anchorage or control in the bodily economy. In other words, the bodily need was not confined to protein and carbohydrate, but must take into consideration the mineral constituents of the body.

Dr. H. O. MOSENTHAL asked whether any attempt was made to determine whether the fats or the carbohydrates were more efficacious in sparing the nitrogen.

Dr. MCCANN, in closing the discussion, said that in regard to the mineral requirements he had no data whatever. He would suggest, however, that if these patients were getting the required number of calories in a well-balanced diet the mineral constituents would be well taken care of. In reply to Dr. Mosenthal's question, he had no data as to which was the more efficacious as a protein sparer, fat or carbohydrate.

Disorders of the Respiratory Function in Cardiac Disease.—Drs. JOHN W. PETERS, JR., and DAVID P. BARR made this presentation, consisting of a study of the causes of dyspnea in cardiac decompensation, particularly with respect to those defects in the respiratory system that might be termed mechanical, namely, the defects in the lungs and their effect on the discharge of carbon dioxide, with special reference to the low alveolar carbon dioxide tension. It had long been recognized that the alveolar carbon dioxide was usually low in cardiac dyspnea; but the degree of this reduction and its meaning had remained doubtful, and some suspicion was entertained as to the value of the methods employed for the determination of the alveolar carbon dioxide. In 1917 one of the writers had studied this phenomena by the coincident use of the Fridericia method for the determination of the alveolar carbon dioxide and the Van Slyke method for the determination of the plasma bicarbonate. It was found that the alveolar carbon dioxide was always much lower than one would have suspected from the carbon dioxide combining power of the plasma. In the normal person at rest these bore a definite relation to one another, since carbon dioxide output, arterial and venous carbon dioxide tension, and arterial and venous carbon dioxide content varied within narrow limits. In cardiac dyspnea most of these relations were suspected or known to be disturbed. The first object of their studies was to find out whether the normal relations of dead space (the nose, mouth, pharynx, larynx, trachea, and bronchi) and alveolar air existed in cardiacs, and whether samples obtained by the Haldane method represented the effective respiratory air. If they did and

the carbon dioxide concentration in this air was low, it was obvious that in order to effect the same carbon dioxide elimination, the cardiac must exchange a larger total volume of this air than the normal did. This meant that his respiratory mechanism must be less efficient as a means of excreting carbon dioxide. The Haldane method had found little clinical application because of a popular feeling that it was difficult to eliminate subjective errors and that it was only reliable when applied to highly trained subjects. After considerable work with this method the writers had come to the conclusion that the observer needed more training than the subject, and patients with cardiac dyspnea proved no exception to this rule. After having established to their own satisfaction that the Haldane method gave consistently low alveolar carbon-dioxide values in cardiac dyspnea, they next tried to find out whether the samples so obtained were samples of the true alveolar or effective respiratory air. Slides were shown in which the graphic records were arranged according to the magnitude of the expiration, with the corresponding carbon dioxide opposite each. It was evident that in no case did the expirations and carbon dioxide bear any definite relation to one another. It had been shown by Haldane and others that when a person rebreathed air the alveolar carbon-dioxide tension and the ventilation increased as the carbon dioxide in the inspired air rose. When the alveolar carbon dioxide had risen to a certain extent the carbon-dioxide accumulation in the blood became so great that the patient became extremely dyspneic and uncomfortable. If the alveolar carbon dioxide was low in cardiac dyspnea at rest it seemed reasonable to suppose that it should also be relatively low after rebreathing to the point of intolerance. Their observations confirmed this supposition. The results showed that normal persons and compensated cardiacs who had normal alveolar carbon dioxide at rest tolerated an increase to 7 or 8 per cent. The cardiacs with dyspnea, on the other hand, did not rise above 5 to 7 per cent. The height of the alveolar air after rebreathing bore a rough relation to the height of the resting alveolar carbon dioxide. This seemed additional evidence that the low carbon dioxide observed was correct and represented the true carbon dioxide tension of the effective respiratory air. They had employed one other indirect method of approach. According to Haldane and Henderson, the dead space might be calculated in the normal resting person from the carbon dioxide output, the volume of each respiration, and the alveolar carbon dioxide. They had applied this formula to a number of subjects, employing the observed alveolar carbon dioxide and the carbon dioxide calculated from the combining power of the plasma. This also forced them to the conclusion that the alveolar carbon-dioxide tension determined by the Haldane method must be essentially correct. They were led to the further conclusions that this effective respiratory air was entirely comparable, from the functional standpoint, to the alveolar air of normal persons. Such a reduction of the alveolar carbon dioxide demanded an increase in the pulmonary ventilation to effect the normal carbon dioxide output. Any increase in carbon-dioxide production would demand a relatively greater increase in ventilation. They had purposely avoided any mention of the relation of alveolar carbon dioxide tension because parallel studies which they had pursued indicated that it was an entirely different problem.

Dr. WILLIAM S. STADIE said that Dr. Peters had presented some very interesting aspects of respiration in cardiacs. Of particular interest was his conclusion in regard to dead space. Different views had been held on that subject. He reviewed those of Haldane and Henderson and of Pearce, who had shown that the dead space remained fairly constant so that one need only study the total ventilation without making dead space determinations in cardiacs and pneumonias. He was particularly interested in the response cardiac patients made to the increased carbon dioxide content and in the finding that these patients could not stand as high a percentage of carbon dioxide as normal individuals without becoming uncomfortable and dyspneic. He had found that 3½ to 4 per cent. of carbon dioxide was sufficient to cause discomfort in this class of patients. It was important to correlate physical findings with the respiratory exchange. For example, in pneumonia, the inability of the oxygen to reach the blood was quite directly related to the "wetness," so to speak, of the lungs. One could predict the extent of cyanosis or râles on the basis of the alveolar carbon dioxide, or, conversely, on the basis of diminished breathing and cyanosis, one might predict with considerable accuracy the amount of carbon dioxide in the alveolar air.

Dr. PETERS, in closing the discussion, said that the assumption of a constant dead space, as suggested by Pearce, could be made a basis for conclusions only in a large number of individuals, in whom it fell within certain limits on the average. They had tried to correlate the total ventilation to the carbon dioxide in the inspired air. It seemed to them the total ventilation was not a proper measure of the alveolar ventilation in these cases because there was frequently an increase in rate with little increase in tidal air. The presence of signs in the lungs was not necessary for the production of a discrepancy between the alkaline reserve in the blood and the carbon dioxide tension of the alveolar air.

Experiments with the Influenza Bacillus.—Dr. RUSSELL L. CECIL presented this communication, in which he stated that previous efforts to transmit influenza to man by inoculation with the influenza bacillus had been for the most part unsuccessful. These failures might have been due to one or more of several causes: (1) Natural or acquired immunity on the part of the subject. (2) Insufficient dose of culture. (3) Loss of virulence in culture used. In the experiments reported by the author, six healthy volunteers were inoculated in the nose and throat with a strain of *B. influenzæ* freshly isolated from a clinical case of influenza. Preliminary cultures showed that only one of the volunteers was a *B. influenzæ* carrier, and he denied having ever had the disease. Three out of the six volunteers gave a history of influenza during the epidemic of 1918; the other three denied having had influenza at any time, though they admitted frequent exposure. Two of the volunteers received washings from chocolate blood agar slant cultures of *B. influenzæ* (½ to 1 slant) in each nostril. Two others received the peritoneal exudate from a monkey with *B. influenzæ* peritonitis (0.1 c.c.) in each nostril. The last two received a six hour chocolate blood broth culture of *B. influenzæ* (0.5 c.c.) in each nostril. Five out of the six volunteers developed definite signs of infection, premonitory symptoms appearing four to six hours after inoculation. Headache and general malaise were soon followed by rhinitis, pharyngitis, and mild conjunctivitis, and in three instances by tracheitis. Backache was present in two cases; general muscular aching in two. Definite leucopenia was noted in three cases; in the other three the leucocytes were unaffected. Fever was absent in all five cases. Two of the patients were confined to bed for twenty-four to forty-eight hours. Symptoms lasted two to four days, except in one of the tracheitis cases where symptoms presisted for ten days. Strange to say the *B. influenzæ* carrier developed signs of infection, but ran a mild course. Smears from the nasal discharge and from sputum of infected cases showed pus cells and influenza bacilli, sometimes in large numbers. Cultures gave influenza bacilli, often in practically pure culture. In several cases influenza bacilli persisted in the secretions two weeks or more after inoculation. None of the volunteers developed pneumonia.

Dr. HANS ZINSSER said that it was difficult at the present time to discuss the etiology of influenza with anything like conclusiveness. Dr. Cecil's experiments on man as well as his work on monkeys unquestionably proved that the Pfeiffer bacillus could cause an upper respiratory catarrh, but whether this was truly influenza or not was still uncertain. It is impossible to correlate all the literature at the present time because of its size, since few physicians who had seen cases during the epidemic had failed to write some kind of report. During the early part of the influenza epidemic in France and other countries, many observers failed to find influenza bacilli, but this was unquestionably due to the fact that the technique was defective. We had now learned to manipulate this organism more perfectly, and with improved technique better results were obtained. In a large number of

examinations in various parts of the world the influenza bacillus has been found, if not as the predominating organism at least present in large numbers, the percentages ranging from 50 to 80 per cent of the cases examined. In a considerable number of cases it had been found in pure culture in the lungs, especially in children dead of bronchopneumonia. It has rarely been found in the blood stream. All experiments to produce influenza in human beings with pure Pfeiffer cultures had thus far failed. MacCoy and Rosenau had utterly failed to produce the disease in man with pure cultures, with nasopharyngeal mucus, and filtrates, using a large variety of methods. Their failures, if they did nothing else, showed us that negative experiments with pure cultures of influenza bacilli should not be taken to disprove their etiological significance, since MacCoy and Rosenau had used the combined material of the nasopharyngeal mucus of active cases, with negative results, and if one were to draw the most extreme logical conclusions from these experiments one would have to conclude that the disease was not conveyed by the respiratory secretions at all, a conclusion which of course is out of the question, and showed only the great difficulty attending such experiments and the great importance played by other conditions, such as the susceptibility factor, etc. Filtrable virus experiments had been done by a large number of men, and in some cases, as in the experiments of Yamanouchi, with apparently unqualified success. At least three observers in Germany claimed not only to have proven filtrable virus, but to have seen minute coccoid bodies either in culture or in sections of the lesions. Attempted serological proof of the relationship of the influenza bacillus had led to confusion. The experiments of Park and his coworkers had shown a remarkable variation in agglutination reactions of strains isolated from the same family during the epidemic. In Dr. Zinsser's own experiences during the early parts of the epidemic in France he and MacNeal found influenza bacilli in the throats of all of a small group of cases examined. The question could not be briefly discussed, therefore, because of the volume of confusing evidence. So far none of the filtrable virus experiments could be accepted as proven, and the association of the cases with the influenza bacillus was at least so strong that one could not exclude this bacillus until much more work has been done. Experiments such as those of Dr. Cecil were in the right direction, and he seemed to have produced a condition somewhat simulating influenza. However, Dr. Zinsser's idea was that the catarrhal inflammations such as those produced by Dr. Cecil, could very properly be regarded not as true influenza, but as one of the complications since true early cases often showed no catarrhal inflammation whatever. Dr. Zinsser asked whether the afebrile conditions produced with the cultures could be regarded as true influenza.

Dr. CECIL, in closing the discussion, said that as for demonstrating the cause of the pandemic, the only way to do that would be by producing another pandemic experimentally, and certainly no one wanted to do that. Dr. Zinsser asked if the experimental infection was similar to the disease as seen clinically, with fever, prostration, etc. In reply to this question he might say that there was some difference in the severity of the two diseases. Whereas it had been common to find extreme prostration in the pandemic, in the experimental infections the prostration was comparatively slight. Dr. Cecil said he would hesitate before pronouncing the experimental disease pandemic influenza.

The Electric Chorea of Dubini and Lethargic Encephalitis.—Sicard and Litvak cite the disease which occurred in Milan in 1846, described by Dubini as electric chorea. Other observers who reported cases were his pupils, Pignacca, Trua and Rommasi. The sleeping component was at first attributed to exhaustion due to the repeated cloni. The mortality was very high and of the thirty-eight known cases all but three ended fatally. Pupils of Dubini continued to keep track of the disease for nearly twenty years and in brief time the sleeping tendency was looked on as an essential phenomenon. There was no thought of transmission from man to man. As far as known the disease was not seen outside of Lombardy. Study of the cases causes the authors to uphold the view that the disease was encephalitis lethargica.—*Le Progrès Médical.*

Therapeutic Hints.

"Colds."—H. Laveson gives the following as the most effective general remedy in the treatment of "colds":

℞

Liquor potassii citratis
Liquor ammonii acetatis
Spiritus aetheris nitrosi āā.....3vi
Sodii benzoatis 3ii
Syrupi acidi citrici qs.....ʒiii
Misce.

Signa: A teaspoonful in water every two hours.
—*Indianapolis Medical Journal.*

Dissolved Sulphur in the Treatment of Psoriasis.—Louis Bory, who has been studying the remarkable action of injectable sulphur in psoriasis, has modified his original formula and now uses the following:

Pure precipitated sulphur	1 gr.
Guaiacol	5 gr.
Camphor	10 gr.
Eucalyptol	20 gr.
Sesame Oil q.s. to make	100 c.c.

He begins with injections of 6 c.c. as a minimum dose and 10 c.c. as a maximum, an average dose being 8 c.c. The febrile reaction is seldom well-marked, and is not more durable than with the infinitesimal doses originally employed. The initial treatment of the outbreak of psoriasis comprises four or five injections, at a week's interval. He usually waits until after the second injection and until the eruptive elements have begun to pale before inaugurating the local treatment. The most effective local treatment is to paint the elements with coal tar every other day. With this treatment two injections of sulphur will often suffice, and nearly all psoriasis patients are discharged from the hospital within three weeks.—*Medical Press and Circular.*

Constipation.—Roy Upham, in discussing the dietary treatment of constipation, gives the following formula for a special bread which he has found advantageous:

Two cups of wheat bran.
One cup of flour.
One teaspoonful of salt.
One and a half teaspoonfuls of baking powder.
Three tablespoonfuls of molasses.

Mix bran and flour, baking powder, salt, and molasses. Then add enough milk to make a dough. Various fruits, such as raisins, figs, and dates, may be added if desired. Bake the dough in the form of a loaf, or gems to vary the monotony. This same dough can also be steamed as a pudding and served with honey or other syrup.—*New York Medical Journal.*

Whooping Cough.—T. E. McMurray reports satisfactory results in the treatment of whooping cough by the use of benzyl benzoate. The dose given was from five to thirty minims every four hours. In some cases decided improvement was noticed from the smaller dose, in other cases larger doses were employed. In almost every instance the treatment determined subsidence of the paroxysms. The effect usually made itself felt within forty-eight hours, and as a rule the relief was immediate and complete.—*New York Medical Journal.*

Miscellany

The Visit of Laennec to Bordeaux in 1824.—According to the *Journal de Médecine de Bordeaux* for May 10, 1920, xci, 9, Professor Ollive of Nantes recently gave a very circumstantial account of a visit of the celebrated Breton physician to Bordeaux in the year 1824. The author is himself a Breton and has had special opportunities for historical research along these lines. Laennec himself was for a time a student at Nantes, where his paternal uncle resided, before finishing his education at Paris. The distinguished student was known as "little Laennec," for he was not only short in stature, but poorly nourished. He was already fighting the malady which was so soon to destroy him and had to make several trips home with this intent. During his short life he fought consumption as he fought those of the faculty who opposed his discovery. Two years before his death Laennec visited Bordeaux professionally. He proceeded directly from Quimper in Brittany to Langoiran near Bordeaux to examine a rich Spaniard by his newly discovered technique. The fee was 1000 pistoles, which then amounted to between 10,000 and 11,000 francs—about $2,000. He improved the opportunlity to visit the Saint-André Hospital at Bordeaux, where for two whole forenoons he demonstrated the use of his stethoscope to the Bordelais physicians. Some one, thought to have been a student, made a sketch of the visitor which still exists and shows in its reproduction in the *Journal* a short, thin man with a large head, wearing spectacles and clutching a stethoscope in both hands. It is thought that the caricaturist was aware of the fact that Laennec was skilled as a flute player and his attitude suggests that the stethoscope was a musical wind instrument. It is recorded of this hospital visit that Leannec was treated with studied politeness, but was unmercifully rallied or "joshed" about his new instrument. The better to illustrate the fallibility of human judgments it is added that in the notes of a consultation held about this time by the savant the entire modern treatment of tuberculosis was anticipated. The visit of Dr. Ollive had as an immediate outcome a movement to recognize the genius of Laennec in an appropriate way by Bordeaux physicians. It may be added that not a few members of the medical faculty are of Breton origin—Pousson, Denucé, Abadie, and several others.

The Perfume of the Human Body.—De Blasio writes briefly of this subject which, while a familiar one, seems to be continually enriched with data hitherto unpublished. There are racial and individual odors for consideration and the author excludes merely offensive excretions from certain regions of the body. The racial odor of the African is merely one of many racial smells. Explorers early placed on record the odor of the Caribs and Peruvians, Tartars and Arabs. The American aborigines were repelled by the odor of the Europeans, and the Peruvians even had words to indicate the odors of the latter and of the negro. The Japanese are distressed by the odor of the Europeans, and bad smelling individuals of their own race are refused for military service, while women with offensive axillæ have trouble in getting husbands. The number of distinguished men and women who exhaled aromatic odors is quite large, although in many articles on human odors but few examples are given. Not a few ecclesiastics, including saints, belong here and the subject borders on that of the "odor of sanctity," and may stand in some association with ascetic living. In none of the cases cited is the odor likened to any of the known perfumes. But it is otherwise with certain famous women favorites of monarchs, for Agnes Sorel gave off the odor of violets, Diane de Poitiers of amber, and Mme. de Maintenon of musk. The author has personal knowledge of a woman of middle age who exhaled the odor of violets. She was poor and an invalid and the scent was apparent when she entered the hospital for bronchitis. It was an inconvenience to her and had first been noted when she had a convulsive attack at the beginning of puberty and was more marked after emotional crises of a painful character. It could be traced to the left axilla. These aromatic odors are comparable to the bouquet of wines and doubtless proceed from the formation of certain aromatic ethers.—*La Riforma Medica*, 1920, xxxvi, 29.

Landmarks in the Treatment of Cancer of the Uterus.—We note in the May 15 number of *El Siglo Medico*, lxvii, 3466, two articles which bear from widely different angles on the same subject. One is the death notice of Wertheim of Vienna, which event occurred in February last, and the other is an account of the lecture delivered at Paris by Recasens, dean of the Madrid faculty, on the treatment of uterine cancer, he being one of the leading radium experts among gynecologists. The name of Wertheim is synonymous with the surgery of uterine cancer, and as his death took place at the early age of fifty-six surgery has sustained an incalculable loss. He began his medical career as a physician and his *chef d'œuvre* before he took up surgery was a monograph on the blood in leucemia. One year later he was operating under Chrobak in the gynecological clinic in Vienna. For seven years he was at Prague, where he worked especially at gonorrhea in the female and hysteropexy. Not until his return to Vienna in 1899 did he begin his work on cancer surgery and the radical operation which bears his name. In reference to Professor Recasens it is regarded by his Spanish colleagues as a great honor to Spain that he was invited to lecture at the Tarnier hospital on the treatment of cancer. His visit caused the greatest interest among the French gynecologists and was of international importance, even the diplomatic corps being represented. The subject, as already implied, was radium in uterine cancer, over which the speaker was enthusiastic. Other forms of radiation do not appear to have been touched on. Twenty-four per cent of cures were claimed by the speaker, who also asserted that the treatment of uterine cancer had been revolutionized. His remarks were received with the greatest enthusiasm and some of his auditors were affected to the point of tears. He received an ovation of singular warmth and many felicitations from his audience.

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Original Articles.

MAMMALOGY—AN ANATOMICAL AND TAXONOMIC CONSIDERATION OF THE GROUP TO WHICH MAN BELONGS.

BY R. W. SHUFELDT, M.D., C.M.Z.S., ETC.,
WASHINGTON, D. C.
MEMBER AMERICAN SOCIETY OF MAMMALOGISTS.

(*Concluded.*)

AN anatomical monograph upon any species of mammal, as a cougar or an opossum, makes a volume of very considerable proportions. To write out the complete morphological account of a shrew or field mouse takes quite as much space and labor as it does to furnish a similar history of the anatomical structure of a monkey or a man. It is evident, then, that in such an article as we now have in hand, only a very limited amount of space can be devoted to such a large subject as the anatomy of the Mammalia, and even the structure of our game mammals would furnish material for a series of volumes of no mean proportions. Still, the main anatomical points of mammals may here be pointed out, as well as the bearing that mammalian morphology has upon the classification of the class.

Mammals, instead of being more or less thickly clothed with feathers like birds, are furnished with a coat of hair, and no mammal is entirely without this hirsute modification of the epidermis or skin. Hairs have even been found upon the body of various species of whales, those huge and typically aquatic mammals of the great seas. Hair in mammals varies in a very marked degree, not only on the different parts of the body of the same individual, but in different species. These different kinds of hair may be seen in the soft and velvet-like coat of the common mole; in the tail of the horse; in the quills of the Canada porcupine; in the various kinds of ordinary fur; in the whiskers (*vibrissæ*) and eye-lashes (*ciliæ*) of all mammals; in the bristles of the peccary, and in the wool of the sheep. Often the stronger variety of hairs are, individually, controlled by a muscle in the skin, and the part of the coat thus endowed may be elevated or lowered more or less at will or when acting under the exhibition of certain of the emotions, as anger or fright. The bristling of the porcupine and the pig, for example, is thus explained. Again, other animals are furnished with scales (*Manitæ*), or with an exoskeleton (Armadillo); or scutes in certain regions, as under the tail in *Anomalurus*, or another form of them covering the tail of the beaver. Then others exhibit certain bare spaces or callosities, as on the inner side of the limbs of horses, on the sternum of the camel, and on the tuba ischii of apes. Many mammals develop horns and antlers of various kinds, but these have been touched upon more fully in another article.

It is among the cetaceans alone that we do not find the distal ends of the terminal joints of the digits of the limbs sheathed in epidermic coverings, or armed with dermal plates, constituting the nails (*unguis lamnaris* and *unguis tegalaris*), claws (*fulcula*), and hoofs (*ungula*) of mammals. And, among the *Monotremata*, there is a perforated spur attached to the posterior limb, on either side, in the males, having a special secreting gland in connection with it, the contrivance forming the weapon of offence.

Cutaneous and other glands also form a part of the anatomy of all mammals. Representing the former, we have the well-known sebaceous glands and the sweat glands, the former being universally distributed, while the latter, according to Dr. Claus, are absent only in a few cases, as in certain whales, mice, and moles (*Cetacæ, Mus, Talpa*). It is with hair follicles that the sebaceous glands are invariably associated, although they are often, too, found in the skin, where it does not support a hirsute growth or is entirely naked. They secrete a fatty substance for the purpose of keeping the skin pliable and soft. On the other hand, the sweat glands continuously secrete the sweat or perspiration, a function of great physiological importance. In certain parts of the body this may exhale a peculiar odor that, in some instances, excites the sexual instincts. It is, however, the larger glands of mammals that are thus, in numerous species, especially endowed. Other glands have no such function, while still others secrete fluids that, when discharged, are a mode of offence or defence, as in the case of the skunk. Sometimes these odorous substances secreted by the larger glands have for their object the recognition of the presence of the individual, usually of the opposite sex. Among the mammals to be treated in the present work, our deer and antelope possess such glands, and in addition thereto a suborbital gland of crumen. In the peccary we also find a lumbar gland, and a preputial gland in the beaver; a caudal gland among foxes, and interdigital glands among some of the ruminants. Many of these structures are well known and have been described at length; but they cannot detain us here, as my space forbids their discussion.

All mammals possess a perfectly developed bony *skeleton*, constituting a framework for the support and protection of the various tissues and organs of the body. The study of this part of their anatomy, from the earliest stages of fetal life up to and including the osteology of the adult, is one of extreme

interest, not to say importance. The study of the minute or histological structure of bone tissue itself is equally so. Then the wide and varied differences to be seen in the skeletons of the representatives of the several mammalian groups and families furnish material for other extensive studies, all of which can here be but barely suggested to the reader.

In all mammals, except in the armadillos and their extinct allies, the skeleton is completely internal, and for the convenience of description is divided into an *axial* and an *appendicular portion.* The first comprises the skeleton of the head and the trunk, and the latter that of the limbs. Few exceptions exist in this division, and they consist of the presence in some mammals of an *os cordis* and an *os penis.* Still more definitely we may say that the skeleton of the head comprises the skull and the bony parts of certain organs of sense, as for example those of the tongue (*os hyoides*) and the ear (*ossicula auditus*), while the teeth do not belong to the skeleton at all but to the tegumentary system, in common with the hair and other appendages of the skin. Passing to the axial skeleton, it is to be noted that, apart from the skull, it comprises the spinal or vertebral column which, posteriorly, is prolonged into the tail, the sternum, and, finally, the ribs.

During fetal life and in all sub-adult individuals among the mammalia, the various bones of the skull are independent; but when the animal has become fully adult, they, with more or less firm union, fuse together, leaving free only the lower jaw or mandible, the little bones of the middle ear, and the hyoid bone. This fusing together of the elements of the skull varies in different species and individuals, and becomes more complete with age and time. At all stages, however, we recognize in the skull the bones of the cranium and the bones of the face, the former being the osseous capsule protecting the brain, the latter the bony foundation upon which the features are moulded, and in and upon which not a few other parts and tissues find support and protection. Taken together, there are over twenty bones in the cranium and face; they have all received special names, and been described in a number of species, as the dog, man, cat, and the like, with the utmost detail and with various objects in view, as developmental, anatomical, or physiological, or to fulfill the requirements of comparison.

The *spinal* or *vertebral column* consists of a chain of separate bones called *vertebræ.* These vary in number and in their morphology in the various genera and families among the mammalia, but in all their general structure and characters are the same. In number they vary from about 26 to 40, and the length of the tail has not a little to do with it. Where the hinder limbs are fully developed, two or more vertebræ fuse together to form the so-called sacrum of the pelvis; while in armadillos and in certain whales some of the cervical or neck vertebræ fuse together. As in the case of the numerous bones of the skull, the various parts, processes, and characters of the mammalian vertebra have been described in works on anatomy and elsewhere with no end of detail. As a chain of bones we commonly divide it into several regions, as the cervical vertebræ or the bones of the neck; the dorsal vertebræ or those of the back—they being the ones to which the ribs are articulated; the lumbar vertebræ or those of the small of the back; the sacral vertebræ or those completing the pelvic girdle to assist in forming the bony framework for the support of the hind legs or pelvic limbs; and, finally, the caudal vertebræ or those found in the tail. When articulated together *in situ,* these bones are held in their normal relations by a series of ligaments, by the attachment of certain muscles, and by other tissues.

Through the entire chain, even to include a greater or less number of the anterior caudal vertebræ, passes a tubular viaduct for the transmission of the spinal cord, which finds its starting point in the base of the brain, and usually terminates somewhere in the tail. Along the entire tract of this *spinal canal,* each vertebra takes part in its formation. The interarticulation among the vertebræ is by the more solid anterior portion of these bones, technically called the body of the vertebra, and by certain vertebral processes. These projections or processes of the vertebral bones furnish the necessary surfaces, to which ligaments, the tendons of muscles, and muscles are attached. A material known as the *intervertebral substance* connects the bodies of the contiguous vertebræ. This material is elastic and more or less dense and tough, its purpose being not only to unite the vertebræ, but to insure their constant normal relations to each other after every act affecting the movements of the spine through muscular action. Opposite this intervertebral substance, we find, in the skeleton of the tail of some mammals, beneath the vertebræ, certain V-shaped bones called *chevron bones.*

In the middle line in front, placed longitudinally, is found another bone, or, in many instances, a series of bones, singly or collectively called the *sternum.* With it the *ribs* articulate upon either side, and thus connect it with the dorsal vertebræ of the spinal column. The form of the sternum varies greatly among the mammalia, though it is absent in none of them. Its anterior segment is called the presternum or *manubrium sterni;* all of its middle portion, whether composed of several pieces or one, is the "body" or mesosternum; while the posterior or distal end is called the xiphoid, xiphisternum, or the ensiform process. As with the other bones of the skeleton, the *ribs* vary greatly throughout the Class Mammalia; they vary in the matter of form, number, and their articulations. The "true ribs" join the vertebral column with the sternum; the "false ribs" pass from the vertebræ as the true ones but do not meet the sternum; they serially articulate with each other by their ventral ends. More posteriorly we may have a few ribs that are still shorter with free ends, these bones being designated as "floating ribs." Free ribs may also be attached to the distal one, two, or three of the cervical or neck vertebræ. The vertebral ribs of the dorsal region do not of themselves reach clear around to the sternum, for their circuits are completed by the "sternal ribs," and when these latter do not ossify, they are known as the "costal cartillages," which is their normal state in man and other mammals. The characters and morphology of the ribs have been described in great detail in works devoted to comparative osteology.

Turning next to a brief consideration of the *appendicular* part of the skeleton, we find it, as already stated, to consist in two pairs of limbs, an anterior and a posterior pair. The latter may be rudimentary in character, as in the whales, while the anterior pair is always present and fully developed. When enjoying complete development in both pairs, the limbs are joined to the axial skeleton by means of bony girdles. In the case of the anterior limb it is the *shoulder girdle,* and in the posterior or pelvic limb, the *pelvic girdle,* in many mammals existing only in a more or less rudimentary condition, or at least much modified as compared with other vertebrates. The monotremes form an exception to this. With respect to the pelvic girdle it is complete in all mammals save the cetaceans, in which group it is found to be exceedingly rudimentary. When fully complete, the shoulder girdle consists of three bones: the *scapula* or "shoulder blade," the *coracoid,* and the *clavicle* or the "collar bone." The first of these is always well developed, the collar bone may be absent in many, as for example in the bears; and it is only in the *Monotremata* (Duck-bill, etc.) that we meet with a complete coracoid. In most mammals this is reduced to a simple process. A consideration of the shoulder girdle throughout the mammalia is a very interesting study and a very important one—a statement that applies with equal truth to all parts of the appendicular skeleton. Here we can bestow upon it but the briefest notice possible.

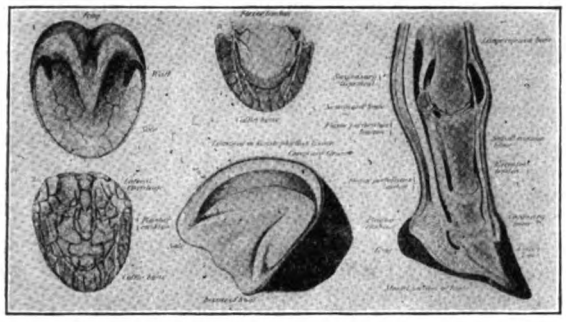

FIG. 9.—Anatomy of foot of horse. Photo by the author. Haines, del. ad. nat. et pinx.

The anterior or pectoral limb (arm in man and the apes; fore or front leg in the horse and many others), is made up of three segments. The upper segment, or the one that articulates with the shoulder girdle, has but the one bone: the *humerus* (brachium); in the next there are two: the *radius* and *ulna* (antibrachium; forearm); then follows the *carpus* composed of a number of small bones, and finally the bones of the hand or manus. This limb exhibits the greatest amount of diversity among the mammalia. To offer a hint as to the extent to which this may be carried, we may note that the ulna may become quite rudimentary in character and fused to the radius (bats); the number of digits, phalanges or fingers (never more than *five* in mammals) vary in the most remarkable manner. Extremes in this particular may be seen in the hand of a man and the hand of a horse, there being *five fingers* in the first instance and but one in the last. Similar and wide variations occur in the osteology of the carpus or "wrist joint." Normally it consists of two principal rows of bones, there being three in the proximal row and five in the distal with a central one. There are usually two additional ones called *sesamoids.* All of these small bones have been named, and even bear a number of names given to them by anatomists of different countries and at different times in the history of the science. Their number is often reduced in mammals, and they vary greatly in form throughout the Class.

The number of joints in the fingers of certain whales sometimes far exceeds what we meet with in the rest of the mammalia. This applies especially to the second and third fingers. In this group the hand is reduced to a paddle completely covered by a common integument. Bats have their fingers greatly elongated to support the flight-membrane. Indeed, the modifications presented on the part of the hand among mammals is well-nigh endless, it having in time become modified, in order to be adapted to the various uses to which it is put.

Much that has just been said above about the anterior limb applies with equal truth to the pelvic one.

The *pelvic girdle,* although fulfilling the same purpose with respect to the hinder pair of limbs that the shoulder girdle does with the anterior pair, differs from the latter entirely in form and in other particulars. Among the principal differences it must be noted that, when completely developed, it firmly articulates with the spinal column. In front the bones unite without the intervention of any bone corresponding to the sternum (pubic symphysis); and it differs in other points. This pelvis has two lateral halves each called an *os innominatum,* either half being composed of three bones, namely, an *ilium,* an *ischium,* and a *pubis* or pubic bone. They have their union in the hip-joint or socket termed the *acetabulum* for the articulation of the proximal bone of the limb, the *femur.* This latter corresponds to the bone of the arm (*humerus*) which, in some mammals, is the largest and heaviest long bone of the entire skeleton. It is the single segment that constitutes the thigh; while in the "leg," as in the forearm with which it corresponds, there are two bones, the *tibia* and the *fibula,* corresponding respectively to the radius and the ulna. Very often the fibula is more or less rudimentary in character and considerably reduced. In front of the articulation of the femur with the bones of the leg we find, in all mammals, the well-known sesamoid bone, popularly called the "knee-pan" or "knee-cap"; it is the *patella.* In passing we may note the two bones found in front of the pelvis

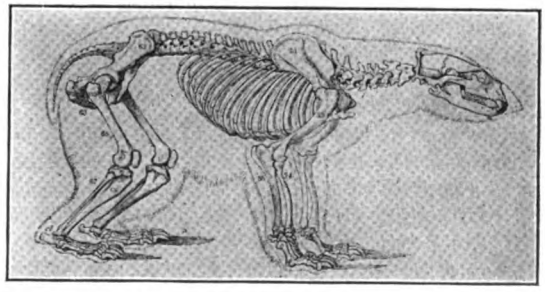

FIG. 10.—Skeleton of polar bear (*Ursus maritimus*). By the author after Owen. C, cervical vertebræ; 51, scapula; 53, humerus; 54, radius; 55, ulna; 62, pelvis; 63, pubis; 65, femur; 66, tibia; 67, fibula; *cl,* calcaneum or os calcis.

in marsupial mammals and in the monotremes. They articulate with the pubic and are known as the *epipubic* or *marsupial bones*. Our common Virginia opossum is the only animal possessing them in the United States fauna. Other small sesamoid bones are found about the knee-joint in certain mammals. They occur on its posterior aspect, and are technically known as the *fabellæ*.

There is much in the *foot* (pes) of a mammal to remind us of what was found in the distal segment of the fore-limb (hand, *manus*), it also being divisible into three parts: the *tarsus*, composed of more or fewer small bones like the carpus; the *metatarsus*, composed of a series of longish bones, as in the case of the metacarpus of the hand, and, finally, the phalanges of the digits or toes.

The arrangement and number of bones of the tarsus in mammals are not disposed to vary to the extent that they do in the carpus. Two are always found in the proximal row, and there may be as many as five others—four in the distal row, and the central one (*naviculare centrale*). Besides these, there may be certain sesamoids present, usually one on one side of the foot and one on the other, the one on the outer side being less often present. They occur principally among rodents and some of the carnivores, a third one being found among the Armadillos.

No mammal has more than *five metatarsal bones*, and, as in the case of the metacarpals of the hand, they may be greatly reduced in number. In the typical foot there are also *three* joints in each toe, except the big one (hallux), it having but *two*. This is likewise the numerical rule in the hand, where, too, the thumb (*pollex*) has but two phalanges.

The study of *the muscles* constitutes the science of myology of anatomy. Throughout the mammalia we find the muscular system to be very well developed; indeed, it is among mammals that it arrives at its greatest degree of perfection. In athletic men and women of the highest types, the muscles, perhaps, reach their limits of refined development. Very considerable variation exists in the myology of mammals, but their general plan and functions are the same throughout the class. They have been exhaustively studied in only a few species and genera, and they have by no means received, at the hands of morphologists, the comparative treatment that their importance warrants. There may be as many as 150 pairs of muscles in a mammal, and a number of unpaired or azygos ones. In the vertebrata, they constitute the flesh of any particular animal, while among cattle they are the lean of the meat, apart from the fat.

Muscles control the movement of the various parts and organs of the body, the majority of them being under the control of the will; while others, of a different histological character, are not so, as the muscles of the heart or of the intestines. These are called voluntary and involuntary muscles. Muscles vary in their action; in the fixed points of attachment to the skeleton or skin or other structures, and in their form, size and other characters.

As a rule, the *origin* of a muscle is its most fixed point, its proximal end, and nearest the central axis of the body; the other, or its distal extremity, is called its *insertion*. Frequently, they are *inserted* by means of *tendons*, and the bones to support the proper surfaces for these often develop spinal processes and tuberosities, as the "spine of the vertebræ" for the insertion of some of the muscles of the back.

The British anatomist, the late St. George Mivart, who paid very considerable attention to vertebrate myology during his life-time, said, in his *Lessons in Elementary Anatomy*, that "Muscles acting on bony levers produce definite *motions*, in consequence of which certain epithets are applied to such muscles.

"Thus, when two bones are united by a hinge-joint, muscles which by their contraction tend to make the angle formed by such bones acute are termed *flexors*. Those, on the contrary, which tend to open out such an angle are termed *extensors*. Some muscles attached to a long bone which is relatively fixed at one end, tend to make it describe the superficies of a cone, or a movement of *circumduction*. Such muscles are termed *rotators*. Some muscles move a bone away from a given axis, and are therefore termed *abductors*. Others tend to bring it towards such an axis, and such are called *adductors*. The epithets "*protractors*," "*retractors*," "*elevators*," and "*depressors*" (terms which require

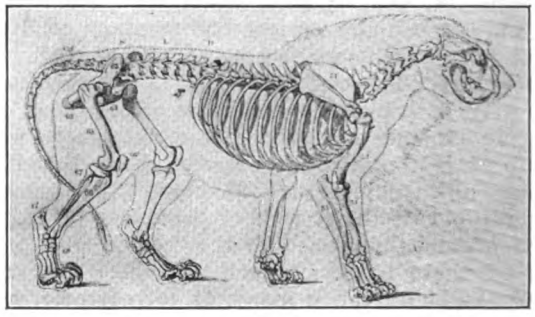

FIG. 11.—Skeleton of lion (*Felis leo*). After Owen. Lettering as in Fig. 14, with D, dorsal; L, lumbar; S, sacral, and C, caudal vertebræ; 51, scapula; 53, humurus; 54, radius; 55, ulna; 62, pelvis; 63, pubis; 65, femur; 66, tibia; 67, fibula; *cl*, calcaneum. Note the digitigrade foot in this mammal.

no explanation), are also sometimes made use of. There cannot, however, be any rational classification of muscles according to the functions they execute, because such functions often vary in different animals with regard to the very same muscle."

As to the classification of muscles, we may say that they are often considered as belonging to three groups namely, (1) the muscles of the exoskeleton; (2) the muscles of the endoskeleton; and (3) the muscles of the viscera. Examples of the first are seen in certain skin muscles, as those controlling the movements of the hairs and so forth. The endoskeleton system of muscles is large and includes the majority of voluntary muscles of the body. As in the case of the skeleton itself, they may be conveniently divided into those that pertain to the axial and the appendicular systems. In the last division occur the muscles of the viscera already referred to above.

Of course, it is quite out of the question to describe the muscles of any mammal here, as the subject is a very large one, and, moreover, my reader knows that I am not writing a work on anatomy. A number of years ago I produced such a book devoted to the muscles of a single species of bird—the Raven.

It printed several hundred pages, and took upwards of one hundred cuts of my own making to illustrate it. The description of the muscles of our antelope would demand the production of a volume of equal proportions—the deer family as a whole, several of them—particularly if the work was made comparative.

To study the muscles conveniently, however, the student should first consider those of the *head and neck;* these include the interesting groups controlling the movement of the eyes, the ears, the tongue, the expressions of the face, and a good many others.

The *muscles of the back* and the *abdominal region* number many pairs, and are responsible for producing a vast variety of movements. There are 32 pairs of muscles in the back of man, and not a few other animals are equally as well provided. Then we have to consider the splendid series of *muscles of the limbs*—the upper and lower extremities. Finally, I may speak of that very important muscle of respiration, called the *diaphragm* or "midriff," which Mivart speaks of as that "partly fibrous, partly muscular partition between the thorax and abdomen, perforated for the passage of certain organs," as the œsophagus and great blood vessels. In studying the muscles in the mammalia, one can very profitably read what Professor Mivart has said about them in his "Lessons in Elementary Anatomy;" Mr. Huxley in his "Anatomy of Vertebrated Animals;" Prof. Sir Richard Owen in his "Comparative Anatomy and Physiology of Vertebrates;" in the works of Chauveau, of Gegenbaur, and of a very long list of other comparative anatomists.

With respect to *the Digestive System,* it is to be briefly noted that it presents the widest imaginable variation among mammals. Only its main, salient points can be referred to here. Taken as a whole, the digestive tract consists of a tubular passage presenting certain cavities and dilatations for examination and associated with certain accessory organs. This passage has an anterior orifice, the mouth, and a posterior one, anus. In large part it is muscular in structure, thus insuring the transmission of the food through it, while other structures aid in preparing it for absorption by the body, as the teeth for its mechanical division, and various secretions from glands for its chemical preparation. In these operations the *mouth* and its different structures are important adjuncts. Muscular *lips* guard the entrance of the former, and these, to a greater or less extent, are prehensile in their function, as is also very frequently the *tongue,* the latter varying remarkably in character, being long and extensile in some mammals and rudimentary in others (porpoise). This is the principal organ or taste, and its superior surface is supplied with special papillæ and nerves for that purpose. It is supported by the *hyoidean apparatus.* From the view-point of the classifier, the *teeth* in mammals are exceedingly important structures. These arm the two *jaws* when present, but they may be entirely absent as in *Manis, Echidna* and *Myrmecophaga.* Their vast variety is well known and will not be dwelt upon in this place.

So far as known, never more than *four* pairs of salivary glands open into the mouth or buccal cavity. These are the *parotid,* the *submaxillary,* the *sublingual,* and the *zygomatic gland* (rare). They secrete the saliva, a fluid possessing important digestive functions, as well as those of softening the food in order that it may be swallowed with ease. They open by special ducts having special names. After it has been acted upon by the mouth-parts—an extensive action in many mammals but practically amounting to almost nothing in others—the food passes to the *stomach* through a muscular tube called *œsophagus.* In the majority of mammals, the former is merely a muscular pouch or sac, while in exceptional species and genera it becomes a wonderfully complicated structure presenting several divisions. The stomach may have several coats (muscular, serous, etc.); always a *cardiac* or esophageal opening, and a *pyloric* or intestinal one. Its inner coat is glandular (peptic glands, etc.) that have for their function the secretion of the *gastric juice,* an important adjunct in digestion. The manifold variations seen in the stomach of mammals is extended to their *intestinal tracts.* This digestive, muscular and glandular tube extends from the stomach to the anal orifice. Sometimes it is found to be simple, cylindrical, and of fairly uniform caliber. It may be divisible into a large and small intestine, strongly marked as in man. The former is again divided into *colon* and *rectum,* and the latter into *duodenum, jejunum,* and *ileum.* These last divisions are quite artificial. Often a blind pouch or *cæcum* is found at the junction of the large and small intestine. It varies in its development to a remarkable degree, and its study is one of great importance in mammalian anatomy. Glands of divers kinds beset the inner coat or lining of the intestines, and these secrete fluids that aid in digestion, or else are absorbent glands belonging to the lymphatic system. These *villi* occur only in the small intestine—a part of the tract that is curiously sacculated (*valvulæ conniventes*) and otherwise modified to carry out its particular functions.

Outside the main intestinal canal, we meet with two other glands of very considerable size which belong to the digestive system. These are the *liver* and the *pancreas.* The former, an organ of considerable importance, is found throughout the mammalian group. Its secreting duct is the *bile duct,* coming from the *gall-bladder,* and passing to the duodenal division of the small intestine. In some mammals, however, the gall-bladder may be absent; when present, the *bile duct* and the *hepatic duct* unite to form a common duct (*d.choledochus*) that has a similar destination. The liver is usually divided into *lobes,* but it may be more or less simple. For instance, in the rodent *Capromys,* the liver consists of many very small lobules, while in the Dolphin, there are but *two lobes* developed and very small.

We stand in need of far more extensive studies of the liver as found among mammals, which studies should be made comparative, and with the view of arriving at uniform nomenclature and descriptions on the subject.

The *pancreas* ("sweetbread")—another important secretory gland, furnishing the "pancreatic juice," another important digestive fluid passed into the small intestine through the pancreatic duct—is usually situated in the neighborhood of the stomach in mammals, and subject to great variation in different genera and families. It is more complex in a

bear than it is in man, and, as in the case of some of the *Canidæ*, may have two ducts. It is trilobed in the pig, and, according to Mivart, presents a beautiful, arborescent structure in the hedgehog and flying fox. Its duct enters the small intestine in various ways.

We find a serous membrane lining almost the entire abdominal cavity and reflected upon its contained organs and structures. This very complex structure is called the *peritoneum*. It is a completely closed sac, having its own proper cavity, and simply embraces the structures it encloses. Although present in all, it varies greatly in different mammals.

"The blood of mammals," says the late Sir William Henry Flower, "is always red, and, during the life of the animal, hot, having a nearly uniform temperature, varying within a few degrees of each side of 100° Fahr. The corpuscles are, as usual in vertebrates, of two kinds—(1) colorless, spheroidal, nucleated, and exhibiting amœboid movements; while (2) the more numerous, on which depends the characteristic hue of the fluid in which they are suspended, are colored, non-nucleated, flattened, slightly biconcave disks, with circular outline in all known species except the Camels and Llamas, where they have the elliptical form characteristic of the red corpuscles of nearly all the other vertebrates, though adhering to the mammalian type in absence of nucleus and relatively small size. As a rule they are smaller as well as more numerous than in other classes, but vary considerably in size in different species, and not always in relation to the magnitude of the animal, a Mouse, for instance, having as large corpuscles as a Horse. Within the limits of any natural group there is, however, very often some such relation, the largest corpuscles being found among the largest species and the smallest corpuscles among the small species of the group, but even to this generalization there are many exceptions."

A study of the blood naturally leads us to the anatomical consideration of the *heart*. The organ is, in the mammalia, always divided into *four* distinct chambers or cavities. It varies in form, however, throughout the Class, while in most of the ungulata a bone is developed in its central tendinous portion. The four cavities of the heart are the two auricles and the two ventricles, an auricle and a ventricle being upon either side or half. For the entrance and exit of the blood a number of openings occur, and several of these are guarded by a variety of valves, all of which is set forth in detail in works on anatomy. Mammals alone among vertebrates have the right auriculo-ventricular valve tendinous, as in the case of the left, it being flap-like in structure and held in position by fibrous cords. It is only in the Australian Duck-bill and its allies that we meet with the transitional conditions between this and what obtains in birds and reptiles.

Throughout the mammalia we meet with as much variation in the anatomy of the *blood vessels* as we do in the morphology of the heart or the central organ of the circulation. These differences in the blood vessels can be employed with advantage in the classification of mammals, as they hold true for certain natural groups. All mammals possess an aorta through which the supply of red blood is forced by the action of the heart to all parts of the body. The mode of branching of the aorta differs in different mammals, for example, in nearly all cases there is an innominate artery as a primary aortic branch, composed of a union of the carotid and right brachial. These vessels may, in other orders, be given off independently from the aorta—in this event, however, the aorta subsequently passes through the diaphragm to become the abdominal aorta, and to supply the lower part of the body with blood, through its many branches. Various large *veins* again return the blood to the heart, as the *vena cava superior*, and *inferior*, and those of the *portal circulation*. Only arterial blood goes to the kidneys and is returned to be emptied into the inferior vena cava. Both the anatomy and physiology of the venous system in many mammals is extremely interesting, and presents many differences, some of which are, as yet, but little understood.

All mammals have a highly developed *lymphatic* or *absorbent* system, the soft tissues of the body being supplied with *lymph* through its many ramifications. This lymph is a colorless fluid containing nucleated corpuscles, to which is added the *chyle* during the process of digestion. The chyle is taken up by the lacteal system of lymphatics from the small intestine, to be finally discharged into the general vascular system, to mingle with the venous blood. The lymphatics of the body unite to form two main trunks, the larger being the *thoracic duct* coming from the posterior moiety of the animal. There is also a system of *lymphatic* glands through which the lymph is conducted, and the ducts of this system, as in the case of the veins, are supplied with valves.

Other glands, known as the *ductless* glands, are found in the mammalia. They are associated with the lymphatic and vascular systems, and their entire physiology has not, as yet, been satisfactorily explained. The *spleen*, the *suprarenal capsules*, the *thyroid gland*, and the *thymus* are the most important examples of these.

Passing to the *Respiratory system*, we find that throughout the mammalia it has attained to a very high degree of development, and the organs and structures composing it not only vary considerably in many of the representatives of the group, but possess special interest for the anatomist and naturalist. Some mammals breathe through their mouths, and its anatomy has been briefly described above, while in addition thereto most species respire through the *nostrils*. These, with the exception of some cetaceans, are invariably paired. They open in various localities as at the extremity of the trunk in the Elephant, or far back on the head in the Whale. From these external apertures of respiration the air is conveyed to the lungs by means of the tube known as the *windpipe* or *trachea*, the distal end of which is modified in various ways to form the organ of voice, called the *larynx*. Another important organ, or rather structure, connected with respiration is the midriff or *diaphragm;* but this has already been touched upon when describing the muscular system. Above it we find the *lungs* suspended in the thoracic cavity or chest, one being upon either side of the heart, which is placed more or less centrally and enclosed by them. This free suspension of the lungs in the cavity of the chest is by means of the bifurcated root of the windpipe, and the pulmonary veins and arteries—vessels that

pass the blood from and to the heart respectively from the lung tissues. The latter is intimately covered all over by the thin, serous membrane called the *pleura*. In various mammals the lungs exhibit a greater or less degree of lobulation, there being five such *lobes* in man—three for the right lung and two for the left. Mivart says the common European porcupine has six in the right and five in the left. They offer many variations throughout the class.

Finally, there is to be considered the *air-sacs*, remarkable vacuities into which the external air may or may not be admitted. Their use is not always clear. They are found in several localities in the skull of man, and still more highly developed in the Elephant. Sometimes they are associated with the larynx, best seen in some of the Apes.

With respect to the *Urinary System* it is necessary to mention the presence of a pair of *kidneys*, from which pass the *ureters*, one from either organ, to open into the *bladder*. In the latter the urine

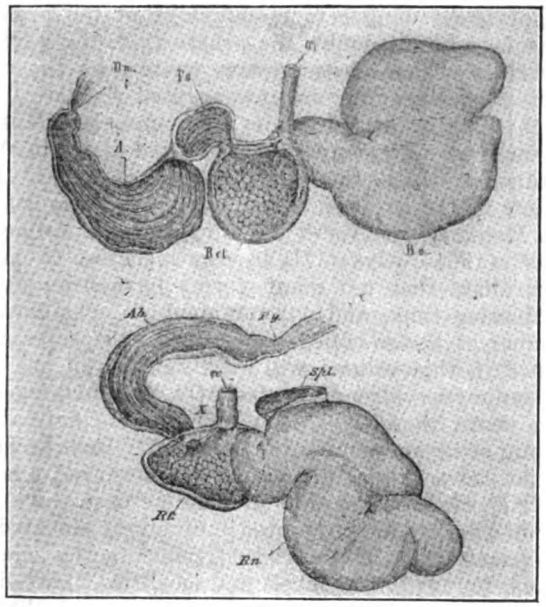

FIG. 12.—Stomach of a sheep (upper) and of a Musk deer, *Fragulus* (lower); *œ*, œsophagus; *Rn*, rumen; *Ret*, reticulum; *Ps*, psalterium; *A*, *Ab*, abomasum; *Du*, duodenum; *Py*, pylorus.

collects, to be discharged from time to time through the *urethra*. In the monotremata the ureters open into the urogenital canal, instead of into a bladder, thus simulating the structure in the Sauropsida. As a rule, in the mammalia, the *Nervous System* and *Organs of Sense* have arrived at their highest stage of perfectness and specialization. In the first-mentioned it consists of a more or less complicated *brain* with its associated parts; the twelve (12) pairs of nerves that commonly issue from it; the *spinal cord*, and the structures making up the *sympathetic nervous system;* while in the second we have to consider the anatomy of the organs of sense, as those of taste, of touch, and the senses of smell, sight, and hearing.

Finally, as to the *Reproductive System*, a very extensive field is opened for the studies of the researcher in mammalian anatomy; for not only are we called upon to consider the morphology of the structures composing and entering into it, but the organs of generation are different in the two sexes, and again very different in various orders of mammals. Then, in a way, we are here, too, to investigate the matter of secondary sexual characters, and the entire subject of the development of the young throughout fetal life to include, at last, the stage where complete development has been reached. Brief references will be made in other articles to be elsewhere published, to some of the peculiarities of the reproductive system in our game mammals, as well as to not a few of the secondary sexual characters that distinguish the sexes, especially as to peculiarities in coloration; the presence of manes or other hairy appendages, as the Bison's beard and the Moose's "bell"; the antlers of the Deer; and the horns of the *Bovidæ*.

In the classification or the taxonomy of mammals we adopt precisely the same methods that are employed in all classification, or the natural and orderly arrangement of any other group of animals, as for example, birds, fish, or reptiles. My views upon the classification of the Class *Aves* have already been presented in *The American Naturalist* several years ago,* and at the close of the present article I shall offer a similar provisional scheme of classification for the Class *Mammalia*. What I have said in regard to the principles of classification in the case of birds in my *Naturalist* paper is equally true with respect to existing and extinct mammals; for, as in the Class *Aves*, all of the various groups, from the lowest to the highest, bear a true relation to each other, for times both past and present. Such relationships exist among all forms that ever have or ever will appear upon this planet. It is the aim of science to discover exactly what these relationships in nature are, and by some means, as graphic as possible, make record of them.

True relationships, in the case of any group or groups, can only be discovered through the application of the sum of our knowledge of the forms to be classified to the solution of the problem. Our knowledge of the kind referred to falls into several distinct departments, as for example, palæontology, geographical distribution, morphology, physiology, habits, and other considerations. As to the pictorial and printed methods of exhibiting and expressing our views upon the classification of the Mammalia, what I have said in the case of Birds, in the above cited paper, is equally applicable to the Class here to be considered, and that account renders repetition in this place unnecessary. As will be seen beyond, the *lineal scheme* has been adopted as in the case of *Aves;* though, with the view of making the classification clearer and more useful generally, I have given the vernacular name of a typical example of each family in parenthesis immediately following its scientific name in the scheme. As but comparatively few fossil birds have been discovered and described, and the relationships of the existing forms being more or less evident or often shedding light upon the subject, these distinct avian species were incorporated into the classification I made of the existing families and higher groups of the Class.

*Shufeldt, R. W.: "An Arrangement of the Families and the Higher Groups of Birds," *Amer. Nat.*, vol. 38, Nos. 455-456, Boston, Mass., November-December, 1904, pp. 833-857, Figs. 1-6.

Now in the scheme of classification here presented of the Mammalia, this feature has been omitted, owing to the several facts that a very much larger number of fossil mammals have been described than birds; that they elucidate more the origin and lines of descent of certain existing mammalian families rather than they do the relationships of the latter; finally, in not a few instances, their relations to existing mammals is not entirely clear, and where it is clear, the fossil forms would merely tend to swell the list of the existing ones without adding anything to the value or completeness of the taxonomy proposed. So for all these good and sufficient reasons I am of the opinion that, at present at least, we are hardly prepared to include in a classification of existing mammals those which we only know by their fossil remains—certainly not in all instances. For example, we are by no means sure that the animals, by many thought to be Triassic mammals, may not, after all, turn out to be anomodonts, and this is probably true, too, of some of those of the Jurassic, which are known to us only through very fragmentary remains. Therefore, to include in my classification such extinct groups as the Polyprotodontia and the Multituberculata, placing the former near the marsupials and the latter near or with the existing monotremes, would neither avail nor mean much; moreover, the relationships are by no means proven.

The horse, deer, camel, rhinoceros, hippopotamus, pig, and various other lines represented by a great quantity of fossil material, would fit in much better, and, in the case of those of the most recent geological horizons, would, in numerous instances, simply fall into modern existing families, and so not affect classification at all. As we trace the ancestors of many of these, however, through the more or less abundant material at hand, we find ourselves soon confronted with vastly different forms, the relationships of which to existing mammals are by no means understood and settled, and it would be more than provisional to include them in any scheme of classification of existing Mammalia. This is all that is necessary to say upon this point. The mammalian taxonomers of some century of the future may be prepared, perhaps, to combine in a classification the then extinct and existing mammals, or even to draw a fairly correct "Phylogenetic Tree" for the Class; but we have not the requisite knowledge, much less the material, at this time.

There have been a great many classifications of the Mammalia proposed, the earliest ones dating far back into remotest history. Crude and unnatural, the first attempts in this direction are now considered by systematists as mere antiquities and curiosities of biological literature, and it is only within comparatively recent times that mamalogists are arriving at anything like unanimity of opinion in the matter, which is the best evidence we have that we are gradually approaching the long-desired goal of the true natural scheme of arrangement for the Class. It is now at least safe to say that we are upon the right road, and any conscientious work done along that road ought to prove to be of use and value, as well as a real contribution to the subject.

It would be quite impossible, if not altogether out of place, to discuss in an article like the present one the merits of any of these earlier attempts to classify the Mammalia, such as the ones proposed by Linnæus, Ray, Cuvier, Owen, Huxley, Flower, Milne-Edwards, Gill, and others; nor will it be expedient to enter into a discussion of the systems proposed by modern writers on mammalian taxonomy, as that, too, would require the limits of a small volume to properly treat of such a theme. I have carefully studied and taken into consideration all such contributions while engaged upon the arrangement here proposed, and for this the student must accept my word. Personally, I have studied all the habits, history, and structure of mammals continuously for the better part of half a century, and it was not until I had passed through such a schooling, both in the museums and in the field, that I felt at all competent to touch upon the subject of their probable relations to each other and ventured to offer a scheme for their arrangement; I trust the present work will bear me out in this statement.

The great danger to mammalogy at the present time is, without doubt, the practice, on the part of a certain school of descriptive writers on the subject, of encouraging an unwarranted specialization in the making of subspecies of mammals. This is deplored by a no less conservative and distinguished naturalist than the late Daniel G. Elliot. Dr. Elliot, in the preface to his work, "A Synopsis of the Mammals of North America and the Adjacent Seas" (1901), says: "It is very manifest to many naturalists that too many forms have been given distinctive rank, and without doubt a considerable number of the so-called species and subspecies contained in this volume will eventually swell the list of synonyms already sufficiently formidable. In late years there has been an evident inclination among some mammalogists to magnify unduly, as it would seem, trivial dissimilarities observed among their specimens, and thus greatly increase the number of slightly differentiated individuals elevated to a separate rank, at the risk of reducing the science to one founded upon labels and localities, instead of distinctive and prominent characters, and thus a knowledge of the place where an example was obtained becomes at times of more importance for its identification than are the differences that may separate it from its allies. The lack of resemblances often observed among crania is frequently but the individual variations of a type, and taking these for the characters upon which to establish a new species is apt to lead into error, and not in a few instances too much reliance has been placed upon such slight differences. The same may be said of shades of color, and not a few names in this Synopsis have been given to specimens so closely alike that one author, in speaking of his Key which was intended to be the means for distinguishing the species, has been obliged to say: 'It will be necessary to have both skins and skulls in hand, and even then *it will be impossible to identify some of the forms without actual comparison with their nearest allies.*' (Bailey: Revision of N. Amer. Faun. No. 17, p. 14.) The scientific value of such species (?) can only be very questionable at the best, and the elevation to a separate distinctive rank of such intimately related creatures can not

be considered as helpful or beneficial to mammalogical science. It can be safely asserted that there is hardly a genus of North American mammals that does not contain too many forms, and that the science would be benefited if a considerable number were relegated to their proper place among the synonyms."

The complaint Dr. Elliot makes here is, without doubt, well founded, but it is a difficult matter to apply his remedy. It is extremely difficult to know where to draw the line, although it is very evident, on the other hand, that in the case of a certain school of mammalogists in this country the refinements of species and subspecies making, has, with some mammals, been carried altogether too far. Indeed, we are almost led to doubt, and with justice, that they appreciate the operation of the law of organic evolution; the matter of color variation in very closely allied forms of mammals, and the value to be placed upon the skeletal and dental variations within the species. To apply the laws of natural classification to mice and ground squirrels presents precisely the same difficulties as the ones encountered when we come to apply those same laws to classify the representatives of the genus *Homo*. We find no trouble in drawing specific lines in the case of an Esquimaux and a Congo negro; but where are we to draw the correct subspecific lines among the commingled white races spread over the continent of Europe and elsewhere? But this is altogether too extensive a subject to discuss in this place, as it would be impossible to give it the full attention that its high importance demands. Moreover, I can afford to shirk any such responsibility here, as my classification of the mammalia, given beyond, carries the arrangement down only to include the families; fortunately these families are not built up upon an enormous collection of subspecific forms, having existence only in the minds of those who must create them in order to live and be recognized.

As in the case of *Aves*, the mammalia are completely isolated from all other groups of existing animals, and, moreover, this is found to be true when we come to take the extinct forms into consideration, in so far as they are at present known to us; this very much simplifies the matter of their classification.

In considering the primary divisions of existing mammalia, it is to be observed that they fall naturally into three clearly defined groups, or subclasses, which by De Blainville were designated as the *Ornithodelphia*, the *Didelphia*, and the *Monodelphia*. Many zoölogists still employ these terms, but the less objectionable ones proposed by Huxley in 1880 are coming into more general use. He substituted for these terms the *Prototheria*, the *Metatheria*, and the *Eutheria*, respectively, and I employ them in my own classification.

There are but two families of existing mammals contained in the *Prototheria*, namely the *Ornithorhynchidæ* (the Australian duck-bills), and the *Echidnidæ* (the spiny anteaters); they are the lowest forms of existing mammals known, having a very primitive anatomical structure.

All the existing marsupial animals of the world have been grouped in the *Metatheria*. Australia is the great region for these, while in the United States there is but one representative, the opossum. Structurally, the *Metatheria* stand between the *Prototheria* and the *Eutheria*. Their young are born in a very much undeveloped condition, and are transferred by the mother to the *marsupium*, where they are attached to her nipples, and subsequently grow, being nourished by the milk injected into their mouths by a special muscle of the mammary glands.

By far the great bulk of existing mammals belong to the *Eutheria*, or placental mammals. Throughout this great group the young, or fetus, is invariably nourished during its development within the womb of the mother by its attachment through an umbilical cord with an allantoic placenta. Exceptions to this rule are merely to be regarded in the light of accidents, as in the case of extra-

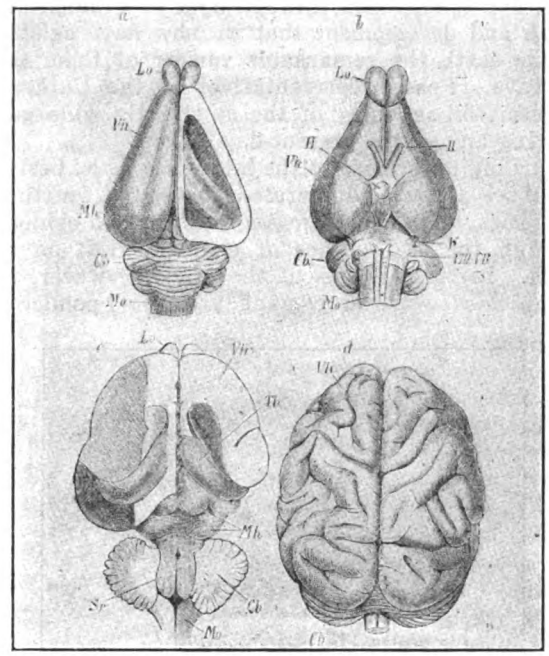

FIG. 13.—Brains of Mammalia. By the author after Claus. *a*, Brain of rabbit from above; the roof of the right hemisphere is removed so as to expose the lateral ventricle. *b*, The same from below. *c*, Brain of cat; on the right side the lateral and posterior part of the hemisphere is removed, and almost as much on the left side, and the greater part of the hemispheres of the cerebellum have been removed. *d*, Brain of orang (*a*, *b*, *c*, after Gegenbaur; *d*, from the Règne Animal.) *Vh*, cerebral hemispheres; *Mh*, corpus quadrigeminum; *Cb*, cerebellum; *Mo*, medulla oblongata; *Lo*, olfactory lobe; II, optic nerve; V N, trigeminal; VII, VIII, facial and auditory nerves; H, hypophysis cerebri; *Th*, optic thalmus; *Sr*, sinus rhomboidalis.

uterine pregnancies, and other departures from the normal course.

While the *Prototheria* and *Metatheria* have practically come to a standstill as a group of mammals, in so far as further development is concerned, the *Eutheria*, on the other hand, is still evolving with a powerful impulse toward specialization in morphology, mentality, and general organization. It includes mammals of the widest possible variation in form, as men and mice, bats and whales, elephants and shrews—and yet they are all more or less linked together by anatomical and other bonds, the interpretation of which there can now be no shadow of doubt.

Among existing *Eutheria* there are at least three groups that can at once be differentiated from all

the others; these are the *Edentata*, containing the armadillos, sloths, and anteaters; next the *Sirenia*, containing such large aquatic herbiverous mammals as the dugongs, the manatees, and some fossil forms closely allied to them, as the *Rhytina*, and others; finally, the *Cetacea*, a group containing the various species of whales, porpoises, and dolphins.

With respect to the remaining groups it is clear that they are more nearly related to each other, notwithstanding the great diversity of form to be seen among them. Although endowed with wonderful differences in the matter of their dentition, the dental formula is, nevertheless, the same throughout; that is to say, all in the permanent dentition, whatever their modification, may be derived from the general formula of 44 in the two jaws. Paleontology has gone far to show that the *Eutheria* have all sprung from a common, general type, and it has been through ages of gradual evolution and development that we now have existing on the earth the remarkable variety of them that we have. Fossil representatives of the *Eutheria*, however, fill in many of the apparently wide gaps existing among the present-day orders.

Turning once more to the latter, we have, besides the three already enumerated above, the fourth in the series, or the *Proboscidea*, now only in evidence through the two species of elephants left on the earth. In former ages of the world, however, the *Proboscidea* was an elegant array of ponderous

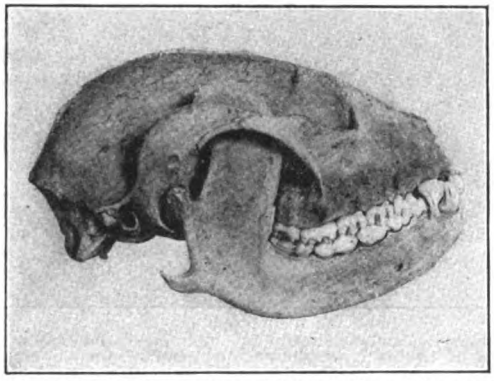

FIG. 14.—Right lateral view of the skull and lower jaw of the Cat-bear or Panda (*Ælurus fulgens*). By the author, natural size, from a specimen in the Academy of Natural Sciences of Philadelphia. Note the remarkable dentition of this curious Himalayan carnivore; it is allied to the raccoons.

animals, rich in species, and vast in numbers. They included the mastodons, the mammoths, and the *Dinotheria*, with their allies. And, as hinted above, we may add, that undoubtedly, through the extinct *Dinocerata*, the elephant forms are, in a way, though nevertheless really, linked with modern, ungulate animals, such as horses, pigs, tapirs, all the ruminants, and the rhinoceroses.

Another somewhat isolated group is represented by a very few and small Old World species known as Conies (*Hyrax*). Some mammalogists consider them to form an order (*Hyracoidea*), while others relegate them to subordinal rank.

As I have elsewhere said, the discovery of fossil mammals, both nearly and remotely related to the ungulate series (*Ungulata*), is constantly tending toward a rearrangement of these forms, and it may be that in the future this order will be much extended—even possibly to include the *Proboscidea* and the *Hyracoidea*.

Another great group is seen in the *Rodentia*, and one that is more or less clearly differentiated from all the other orders. As we know, it includes all the existing species of gnawing mammals, or the rodents, abundantly represented in the various families of rats, squirrels, marmots, and their various allies. So far as existing species is concerned, their common dental formula isolates them completely, while some discovered fossil forms point to their probable kinship with the ungulate series. (Compare the *Mesotherium* and the *Toxodontia*.)

Two other now extinct orders are recognized in the *Insectivora* and the *Carnivora*, but we find them to be far more closely allied when we come to study the discovered fossil remains of mammals as above pointed out. Especially does this apply to those early and primitive carnivores, called by Cope the *Creodonta*. Professor Flower seemed to believe that the "transition from the insectivores to the lemurs is not great, and, strange to say, however different they now appear, the early forms of lemurs are not easily distinguished from the primitive ungulates."

Allied to the *Insectivora*, we have another very distinct order of existing mammals. This includes, and only includes, the order *Chiroptera*. They, as we well know, are all volant mammals, possessing extraordinary modifications of their pectoral limbs, in the way of alar membranes stretched between the immensely elongated fingers.

In the last order of all, namely the *Primates*, we place the various subspecies of men, and all the various family groups containing the apes, monkeys, and their allies.

Through what forms, either extinct or existing, the *Hominidæ*, the *Pongiidæ*, and other simian families, are linked with the mammalian orders nearest allied to them, is a question not yet definitely settled. The secret is still locked up in the crust and caverns of the earth, though the researches of the palæontologist and the archæologist are slowly but surely solving this great, and to man, very important problem.

Within comparatively recent years a number of fossil or subfossil forms of very primitive types of men, including the extinct Pithecanthropi, have been discovered in different parts of the world. These point with ever-increasing clearness to the relation of this family to the stock from which both *Homo* and the simians are derived in prehistoric time. Such material is of the utmost importance and significance; but it is quite out of the question to enter upon its description here, more particularly as every intelligent person now fully recognizes the fact that man sees his nearest relatives in the existing simians; that he belongs in any complete scheme of classification of the mammalia that we undertake to make; and that he is, and will ever be, just as much subject to the law of evolution as any other mammal, living or extinct.

My present views, then, on the classification of the mammalia are set forth in the following arrangement:

A CLASSIFICATION OF THE MAMMALIA.

Kingdom: Animalia (animals).
Phylum: Vertebrata (vertebrates).
Branch: Craniata (skulled animals).
Class: Mammalia (mammals).

CLASS MAMMALIA

SUBCLASS I. PROTOTHERIA. (Lowest Mammals.)

Order I. MONOTREMATA. (Monotremes.)

Suborder	I.	MONOTREMATAFORMES	(Monotreme Animals.)
Family	I.	Ornithorhynchidæ.	(Duckbill.)
	II.	Echidnidæ.	(Echidna.)

SUBCLASS II. METATHERIA. (Marsupials.)

Order II. MARSUPIALIA. (Existing Marsupials.)

Suborder	II.	MARSUPIALAFORMES.	(Marsupial Animals.)
Superfamily	I.	Polyprotodontoidea.	(Carnivorous Marsupials.)
Family	III.	Didelphidæ.	(Opossums.)
	IV.	Dasyuridæ.	(Dasyure.)
	V.	Peramelidæ.	(Bandicoot.)
	VI.	Notoryctidæ.	(Pouched Moles.)
Superfamily	II.	Diprotodontoidea.	(Diprotodont Marsupials.)
Family	VII.	Macropodidæ.	(Kangaroo.)
	VIII.	Phalangistidæ.	(Koala.)
	IX.	Phascolomyidæ.	(Wombat.)

SUBCLASS III. EUTHERIA. (Placental Mammals.)

Order III. EDENTATA. (So-called Edentate Mammals.)

Suborder	III.	LORICATA.	(Armadillos.)
Family	X.	Dasypodidæ.	(Armadillo.)
Suborder	IV.	TARDIGRADA.	(Sloths.)
Family	XI.	Bradypodidæ.	(Sloth.)
Suborder	V.	VERMILINGUIA.	(American Ant-eaters.)
Family	XII.	Myrmecophagidæ.	(Ant-eater.)
Suborder	VI.	PHOLIDOTA.	(Scaly Ant-eaters.)
Family	XIII.	Manidæ.	(Manis.)
Suborder	VII.	TUBULIDENTATA.	(Aardvarks.)
Family	XIV.	Orycteropodidæ.	(Aardvark.)

Order IV. SIRENIA. (Sirenians.)

Suborder	VIII.	RHYTINAFORMES.	(Herbivorous Cetaceans.)
Family	XV.	Manatidæ.	(Manatee.)
	XVI.	Dugongidæ.	(Dugong.)

Order V. CETACEA. (Cetaceans.)

Suborder	IX.	MYSTICETE.	(Whale-bone Whales.)
Superfamily	III.	Balænoidea.	(Right Whales.)
Family	XVII.	Balænidæ.	(Fin-back Whale.)
Suborder	X.	DENTICETE.	(Toothed Whales.)
Superfamily	IV.	Delphinoidea.	(True toothed Whales.)
Family	XVIII.	Physeteridæ.	(Sperm Whale.)
	XIX.	Plantanistidæ.	(Gangetic Dolphin.)
	XX.	Delphinidæ.	(Grampus.)

Order VI. INSECTIVORA. (Insectivores.)

Suborder	XI.	DERMOPTERA.	(Winged Insectivores.)
Family	XXI.	Galeoptheridæ.	(Flying Lemur.)
Suborder	XII.	INSECTIVORA VERA.	(True Insectivores.)
Superfamily	V.	Erinaceinoidea.	(Hedgehog and allies.)
Family	XXII.	Tupaiidæ.	(Pentail.)
	XXIII.	Macroscelidæ.	(Elephant Mouse.)
	XXVI.	Erinaceidæ.	(Hedgehog.)
	XXV.	Soricidæ.	(Shrew.)
	XXVI.	Talpidæ.	(Mole.)
Superfamily	VI.	Solenodontoidea.	(Solenodon and allies.)
Family	XXVII.	Solenodontidæ.	(Solenodon.)
	XXVIII.	Potamogalidæ.	(Otter Shrew.)
	XXIX.	Centetidæ.	(Tenrec.)
	XXX.	Chrysochloridæ.	(Golden Mole.)

Order VII. CHIROPTERA. (Bats.)

Suborder	XIII.	MEGACHIROPTERA.	(Frugivorous Bats.)
Family	XXXI.	Pteropodiidæ.	(Flying Fox.)
Suborder	XIV.	MICROCHIROPTERA.	(Insectivorous Bats.)
Family	XXXII.	Rhinopomidæ.	(Tomb Bat.)
	XXXIII.	Emballonuridæ.	(Red Mastiff Bat.)
	XXXIV.	Noctilionidæ.	(Noctilionine Bats.)
	XXXV.	Nycteridæ.	(Nycterine Bats.)
	XXXVI.	Megadermidæ.	(Big-eared Bats.)
	XXXVII.	Rhinolophidæ.	(Horse-shoe Bats.)
	XXXVIII.	Hipposideridæ.	(Nose-leafed Bats.)
	XXXIX.	Phyllostomidæ.	(Vampire.)
	XL.	Desmodontidæ.	(Blood-sucking Bats.)
	XLI.	Natalidæ.	(Natalinæ Bats.)
	XLII.	Furipteridæ.	(Furipterine Bats.)
	XLIII.	Thyropteridæ.	(Funnel-eared Bats.)
	XLIV.	Myzopodidæ.	(Madagascar Bat.)
	XLV.	Vespertilionidæ.	(Long-eared Bat.)
	XLVI.	Myscopidæ.	(New Zealand Bat.)
	XLVII.	Molossidæ.	(Bull-dog Bat.)

Order VIII. RODENTIA. (Rodents.)

Suborder	XV.	SIMPLICIDENTATA.	(Simplicident Rodents.)
Superfamily	VII.	Sciuroidea.	(Sciurine Rodents.)
Family	XLVIII.	Sciuridæ.	(Fox Squirrel.)
	XLIX.	Geomyidæ.	(Pouched Rat.)
	L.	Heteromyidæ.	(Pocket Mouse.)
	LI.	Castoridæ.	(Beaver.)
Superfamily	VIII.	Muroidea.	(True Mice.)
Family	LII.	Muscardinidæ.	(Dormouse.)
	LIII.	Cricetidæ.	(Cricetines.)
	LIV.	Platacanthomyidæ.	(Malabar Mouse.)
	LV.	Rhizomyidæ.	(Bamboo Rat.)
	LVI.	Spalacidæ.	(Mole Rats.)
	LVII.	Muridæ.	(Typical Rats.)
Superfamily	IX.	Dipodoidea.	(Kangaroo Rats.)
Family	LVIII.	Graphiuridæ.	(Short-tailed Dormice.)
	LIX.	Aplodontidæ.	(Sewellels.)
	LX.	Anomaluridæ.	(Scaled-tailed Squirrels.)
	LXI.	Idiuridæ.	(African Flying Squirrels.)
	LXII.	Zapodidæ.	(Jumping Mice.)
	LXIII.	Dipodidæ.	(Jerboas.)
	LXIV.	Ctenodactylidæ.	(Comb-rats.)
	LXV.	Pedetidæ.	(Jumping Hares.)
Superfamily	X.	Bathyergoidea.	(Ethiopian Mole-rats.)
Family	LXVI.	Bathyergidæ.	(Sand Moles.)
Superfamily	XI.	Hystricoidea.	(Hystricine Rodents.)
Family	LXVII.	Hystricidæ.	(Old World Porcupine.)
	LXVIII.	Erethizontidæ.	(American Porcupines.)
	LXIX.	Echimyidæ.	(Spiny Rats.)
	LXX.	Petromyidæ.	(African Rock Rats.)
	LXXI.	Myocastoridæ.	(Coypus.)
	LXXII.	Thryonomyidæ.	(Cane Rats.)
	LXXIII.	Dinomyidæ.	(Giant Rat.)
	LXXIV.	Cuniculidæ.	(Lemmings.)
	LXXV.	Dasyproctidæ.	(Pacas; Agoutis.)
	LXXVI.	Chinchillidæ.	(Chinchillas.)
	LXXVII.	Abrocomidæ.	(Habrocomes.)
	LXXVIII.	Caviidæ.	(Guinea-pigs.)
	LXXIX.	Hydrochoeridæ.	(Capibara.)

Order IX. LAGOMORPHA. (Rabbits and Pikas.)

Suborder	XVI.	DUPLICIDENTATA.	(Leporine Mammals.)
Family	LXXX.	Ochotonidæ.	(Pika.)
	LXXXI.	Leporidæ.	(Rabbit.)

Order X. UNGULATA. (Ungulates.)

Supersuborder	I.	SUBUNGULATA.	(Polydactyl Ungulates.)
Suborder	XVII.	HYRACOIDEA.	(Conies.)
Family	LXXXII.	Procaviidæ.	(Doman.)
Suborder	XVIII.	PROBOSCIDEA.	(Proboscideans.)
Family	LXXXIII.	Elephantidæ.	(Indian Elephant.)
Supersuborder	II.	UNGULIGRADA.	(True Ungulates.)
Suborder	XIX.	PERISSODACTYLA.	(Odd-toed Ungulates.)
Superfamily	XII.	Lophiodontoidea.	(Tapirine Animals.)
Family	LXXXIV.	Tapiridæ.	(Tapir.)
Superfamily	XIII.	Rhinoceroidea.	(Rhinocerine Animals.)
Family	LXXXV.	Rhinocerotidæ.	(Rhinoceros.)
Superfamily	XIV.	Equinoidea.	(Equine Animals.)
Family	LXXXVI.	Equidæ.	(Horse.)
Suborder	XX.	ARTIODACTYLA.	(Even-toed Ungulates.)
Superfamily	XV.	Bunodontoidea.	(Suiform Animals.)
Family	LXXXVII.	Hippopotamidæ.	(Hippopotamus.)
	LXXXVIII.	Suidæ.	(Wart Hog.)
	LXXXIX.	Tayassuidæ.	(Peccary.)
Superfamily	XVI.	Tylopodoidea.	(Camelines.)
Family	XC.	Camelidæ.	(Camel.)
Superfamily	XVII.	Tragulinoidea.	(Chevrotains.)
Family	XCI.	Tragulidæ.	(Water Chevrotain.)
Superfamily	XVIII.	Pecoroidea.	(Cervines.)
Family	XCII.	Cervidæ.	(Deer.)
	XCIII.	Antilocapridæ.	(Prong-horn Antelope.)
	XCIV.	Giraffidæ.	(Giraffe; Okapi.)
	XCV.	Bovidæ.	(Bison.)

Order XI. CARNIVORA. (Carnivores.)

Suborder	XXI.	FISSIPEDIA.	(True Carnivores.)
Superfamily	XIX.	Æluroidea.	(Felines.)
Family	XCVI.	Felidæ.	(Cougar.)
	XCVII.	Cryptoproctidæ.	(Foussa.)
	XCVIII.	Viverridæ.	(Civet.)
	XCIX.	Protelidæ.	(Aard Wolf.)
	C.	Hyænidæ.	(Hyæna.)
Superfamily	XX.	Cynoidea	(Canines.)
Family	CI.	Canidæ.	(Wolf.)
Superfamily	XXI.	Arctoidea.	(Ursines, etc.)
Family	CII.	Ursidæ.	(Grizzly Bear.)
	CIII.	Mustelidæ.	(Weasel.)
Superfamily	XXII.	Procyonoidea.	(Racoons, Coati, etc.)
Family	CIV.	Ailuridæ.	(Panda.)
	CV.	Procyonidæ.	(Racoon.)
	CVI.	Potosidæ.	(Kinkajou.)

Order XII. PINNIPEDIA. (Phocaceans.)

Suborder	XXII.	PINNIPEDIA.	(Finned Carnivores.)
Family	CVII.	Otariidæ.	(Sea Lion.)
	CVIII.	Odobenidæ.	(Walrus.)
	CIX.	Phocidæ.	(Common Seal.)

Order XIII. PROSIMIA. (Lemurines.)

Suborder	XXIII.	PROSIMIÆ.	(Lemurs, etc.)
Superfamily	XXIII.	Lemuroidea.	(Existing Lemurs.)
Family	CX.	Lemuridæ.	(Ring-tailed Lemur.)
	CXI.	Tarsiidæ.	(Tarsier.)
	CXII.	Daubentoniidæ.	(Aye-Aye.)

Order XIV. PRIMATES. (Monkeys and Man.)

Suborder	XXIV.	HOMINIFORMES.	(Hominids.)
Superfamily	XXIV.	Quadrumanoidea.	(Simians.)
Family	CXIII.	Hapalidæ.	(Marmoset.)
	CXIV.	Cebidæ.	(Spider Monkey.)
	CXV.	Lasiopygidæ.	(Barbary Ape.)
	CXVI.	Pongiidæ.	(Chimpanzee.)
	CXVII.	Hominidæ.	(Hottentot.)

3356 EIGHTEENTH STREET, N. W.

THE EARLY SIGNS OF DISEASE OF THE NERVOUS SYSTEM.

By TOM A. WILLIAMS, M.D.,

WASHINGTON, D. C.

DISEASE, even when serious, may fail to be manifested functionally. Familiar instances are chronic nephritis, latent tuberculosis, cerebrospinal syphilis, cerebral neoplasm. On the contrary, function may be disturbed long before we are able by signs to affirm physical disease. As regards the nervous system the first diagnostic issue is the region or structure affected; the second is the etiology or nature of the disease processes. Either of these may be the primary problem to the clinician. When function is disturbed without focal disease of the nervous system the issue lies between disturbance of material source elsewhere or dynamic interference with integration. This latter may be reflex, but is far more frequently psychogenetic, even when the primitive stimulus may be a physical disturbance.

It is folly to attempt to nosologize before formulating these issues, mentally at least. Most of the errors have occurred on account of the premise that when one cannot find physical disease, hysteria is a justifiable diagnosis. Far more pragmatical, at least, is the postulate that when one cannot find a psychogenetic mechanism adequate to account for the symptoms, then physical disease must be present, even although we are unable to elicit its signs. This statement is particularly true regarding pain, disorders of sleep, asthenia, alterations of character, emotional disturbances.

It is particularly frequent, regarding paresthesia, to be asked to examine a patient with a diagnosis of hysteria in whom one finds the characteristic paresthesiæ which occur in the spinal disturbances of pernicious anemia before there can be detected any change in the blood. To ascertain disturbance of the attitude sense is a speedy process to confirm the diagnosis. Many milder cases of encephalitis are labelled neurotic because of the marked changes in character, the slight agitation, the euphoria and insomnia, and the absence of lethargy and paralyses. Frequently in patients sent to me as neurasthenics do I find endocrine disorders, the inertia of hypothyroidism and its headaches. (This is the form of headache which improves during the day in consequence of the stimulus of activity and food and which is so different to the genus of headache which is aggravated by activity, increased by food, or brought on by posture—the toxic or migrainous type which conforms in many clinical characters to the post-commotional headache); the asthenia of hypoadrenia; the agitatedness, irascibility, or fatiguability of mild hyperthyroidism; the indolence and vague feelings of dyspituitarism. Finally, neurotic behavior is often the first sign of a state of mild toxicosis or of an infective focus.

Spontaneous disappearance of symptoms is far from a proof that they are hysterical, indeed it is a presumption that they are not, although asthenia consequent upon emotional disturbance is usually of short duration. Apparent success of psychotherapy is no criterion of hysteria, for symptoms of grave organic disease may be overpowered by suggestion for considerable periods. A glaring example is that of the woman who was kept subjectively well for a year, at the end of which a post mortem showed nephritis, myocardial deterioration, and valvular disease, pulmonary tuberculosis, hepatic cirrhosis, chronic ulcer of the stomach, and carcinoma of the uterus. Ecclesiastical healers have caused thousands of incapables to functionate for a time in the belief that they were healed.

Hence the great danger of confiding patients, even when labelled functional or neurotic, to individuals, even though medical graduates, who are not highly skilled in neurological diagnosis.

This is not to exaggerate the importance of the clinical sign; it can never lose its place, but its superiority as an objective fact should not permit the clinician to ignore the subjective fact set forth by the patient. To do so does not mean the uncritical acceptance at his valuation of every complaint. The complaint is often a mere interpretation, erroneous and fallacious. What we really seek is a subjective fact of the patient's experience, that is a mental fact, a percept, but none the less valid when we know how to shear it of the accretions to which it is so subject, more especially when it is being distorted by friends and perhaps doctors.

1621 CONNECTICUT AVENUE.

RADIUM IN UTERINE HEMORRHAGE.*

By DOUGLAS C. MORIARTA, PH.G., M.D., F.A.C.S.,

SARATOGA, N. Y.

WHEN I told our president that I would have for my subject this evening, the consideration of radium as a therapeutic agent in metrorrhagia, I intended to review the field and give you the conclusions of serious-minded and prominent clinicians concerning the use of radium in specific pathology; and these conclusions I thought to supplement by my personal experience.

While reviewing the literature on the subject, I noted the statement of Dr. John G. Clark of the University of Pennsylvania that 80 per cent of the cases of uterine cancer that had come to this clinic during a period of three years were inoperable. I then reviewed my own notes and found that 100 per cent of the cases of uterine carcinoma that I had seen in my practice during a period of five years were inoperable. As a consequence, I thought a consideration of uterine hemorrhage might prove of interest for a practical discussion. It will at least give us food for thought and an opportunity to explain to ourselves why so many women are allowed to go on without relief to their doom. Many of these women, I grant, bear their crosses uncomplainingly, and do not consult a physician until absolutely forced to do so, and then it is too late. These unfortunate cases can be reached only by educational propaganda.

However, it is not these women that come in for censure, but rather the attitude of our own profession—at least those of us who do not take the initial symptom very seriously, and do not make a diagnosis, and consequently cannot make a prognosis. These practitioners usually putter along with drugs, occasionally temporizing with douches, and usually give some foolish explanation to the patient for

* Read before the Saratoga Springs Medical Society, Jan. 20, 1920.

their failure to relieve the condition. This method, if method it can be called, is continued until it is too late for surgery. The condition is then hopeless, unless, as occasionally happens, radium, caustics, or the *x*-ray effects a clinical cure. If the conditions which I have just stated are as common as they seem to be, some of us are criminally negligent; and this could be surely demonstrated if a malpractice suit should be brought against us on these grounds, for the law exacts "reasonable care and judgment" on our part.

It is obvious, and must be so interpreted, that metrorrhagia is not a disease but a symptom, and one which has for its origin varied pathological conditions. Because of the remote and pernicious morbidity that so often follows this symptom in benign cases, and the great mortality that occurs in malignancy, in which metrorrhagia is the constant early symptom, uterine hemorrhage is the one most important indication which occurs from pathological conditions in the female pelvis, and we *must* appreciate the enormous toll which nature exacts when these conditions are neglected. Just when one is justified in making a pelvic examination in a young girl, or suggesting instrumentation for relief of the symptom, is a determination that must be made in each individual case. But in no instance should the patient be allowed to drift beyond the possibility of surgery.

It is not my purpose to attempt a review of the possible or probable etiology of this symptom, or to suggest procedures for its control; but I do want to say just here, and as emphatically as I may, that the patient ought not to be allowed to go on indefinitely without intelligent advice. And in saying this I fully realize the obstacles which often have to be overcome in the management of these cases; and further, I am sure that they occasionally baffle all the skill of the most clever and experienced clinician. But this is not the point. What I want to call to your attention is the number of cases in which no rational attempt has been made by the physician to determine and control the condition. I feel sure that the suggested discussion of uterine hemorrhage is warranted by the facts I shall give you in the cases which follow.

CASE I.—Mrs. S., housewife, age 52, referred to me for a hysterectomy in June, 1915. She has always been a strong, rugged woman, weighing 160 lbs., never having been ill except at the birth of her three children. She began to flow a year previously and had continued up to the time of consulting me; during this period she had been under the care of two physicians and had taken internal remedies continually; she had also had vaginal douches more or less regularly, all of which were negative in effect. When I saw her, she had lost 30 lbs., was pale, languid, and unable to attend to her customary duties. Red blood count, 3,200,000; white, 6000; hemoglobin, 40. The urine was scanty, contained albumin, on boiling becoming practically solid, and contained small hyaline and granular casts. The tissues over the entire body were markedly edematous. Plainly she was a poor, not to say unjustifiable, surgical risk, and I so advised them. I suggested the use of radium, which was accepted. After the third treatment, the flow ceased, to reappear after 14 months. After two radium treatments it again ceased, and has not appeared up to this time. She entirely recovered her weight, color, and strength, and is now attending to the duties incident to the care of a family of five.

CASE II.—Mrs. R. consulted me in June, 1916, in reference to her flowing which, she stated, had been practically continuous during the past four years; while it had not been profuse, she had been obliged to wear a napkin. She said she had been treated more or less constantly during the four years without material benefit; that her last physician told her she had a tumor which required an operation, but that she was not in a condition to endure it. She was a housewife, aged 58, anemic, easily fatigued on the slightest exertion, legs edematous nearly to the trunk, urine loaded with albumin, with small and large hyaline as well as granular casts. Normal weight 175 lbs.; present weight, 150 lbs. Typical cardio-vascular renal degeneration. On examination I found a fibroid, four inches in diameter, on the right side at the uterocervical juncture. Radium was suggested and accepted, with the result that the hemorrhage ceased and has not recurred up to date (December, 1919); the fibroid has diminished and her general condition has improved somewhat, although the nephritis is about the same.

CASE III.—Miss P., seamstress, age 41, came to me in July, 1918. Was of slight build, had always been regular (menstruation of the 21-day type). Appendicitis in 1913 with perfect recovery. Her sister, a trained nurse, brought her to me for radium treatment, at the direction of Dr. Mount of Albany. Her statement was that she had been all right until a few months previously, when her periods lasted 14 of the 21 days. At her March period she had a severe hemorrhage and her family physician referred her to a Troy surgeon. He promptly curetted her, and she was relieved for a period of five weeks when the flooding again occurred. She returned to the surgeon and he repeated the curettage, this time with a relief of only three weeks. Now, however, the flow was not profuse, though it has been continuous up to the present time. She again saw her surgeon and he advised her going home to be built up, after which he would do a panhysterectomy. It was apparent both to her and to her sister, that unless the cause of the present physical weakness was relieved, not only would she not regain the strength desired for a hysterectomy, but that she was slowly but surely dying (to use her own words). It was at this time that Dr. Mount advised radium. She had lost the little flesh she possessed and was absolutely colorless; pulse rapid and weak, and she tired so easily that it was only with the greatest effort she had been able to come to Saratoga. Kidneys negative. Radium was given, and after the fourth treatment hemorrhage ceased, not to recur. She has improved generally, taken on her former flesh, and well-being, and is now (December, 1919) working steadily at her sewing.

CASE IV.—Mrs. G., housewife, age 41, no previous trouble. She stated that in January, 1919, at a regular menstrual period, she had a severe hemorrhage, so that the doctor was sent for. He came several times, gave her medicine, and she was obliged to go to bed as the flow did not stop. Her husband was advised by the doctor that the condition was due to nervousness, and that he should have her get up and be about or she would be bed-ridden. She did get around the house, was worse, and a second doctor was called. He saw her a number of times, prescribed medicines and a vinegar douche, and after a week told her she should go to the hospital for a slight operation. The flow continued, and a third physician was called. He made, for the first time, a vaginal examination, advised her to go to bed, prescribed internal remedies, and hot douches. The flow diminished, but continued almost constantly until I saw her in August. At this time she was intensely anemic, so pale that she was actually white, and extremely emaciated. Red blood count, 3,000,000, hemoglobin 17. She was practically confined to her bed. Operative interference was out of the question. Radium was suggested and accepted. It was with the greatest difficulty that she was taken to the hospital. Radium was applied, the flow diminished, and ceased after two weeks; it has not reappeared (December, 1919) in excess, although she has menstruated twice since. She has taken on color and weight, and is now able to resume her household duties.

I can appreciate thoroughly the lack of enthusiasm, on the part of the profession, toward the extravagant claims for radium, because it is new and relatively untried, and has not fully come into its

own. However, I do not suggest it as a general panacea, or even that you give it the broad consideration that it has already earned for itself in varied specific instances. But it *is* concededly a specific for uterine hemorrhage. It is easy of application, acts without pain, does not mutilate, and as I have used it in the reported cases, without anesthetics or instrumentation, it has no contraindications. We are all inclined to cling to the advantages of our individual experience, both with remedies and with measures, and naturally so. But I feel that I am justified in pointing out as clearly as I can that radium did control the types of disease that I have presented for your discussion, when the time for the use of the usual remedies had passed.

At present the results of the action of radium, except in uterine hemorrhage, are not uniform; and if they were to be expressed from my own clinical experience, I would say that they consisted of a series of surprising benefits and unexpected disappointments. But this only emphasizes two facts, viz., (1) We do not know definitely all that radium will do, and not always how it does some of the things which it does. But this is not so remarkable when often we do not know the etiology of the pathological condition which we are attempting to treat. I refer to indeterminable uteropathies and malignancy. (2) Only a very small percentage of our cases come early for radium treatment; and in my experience, the suggestion for its use comes more often from the laity than the profession.

But radium has a field and has come to stay. It is not a haphazard measure, by any means. Unfortunately, it is potent for harm as well as for good, when the method of its application and contraindications are not observed.

As you are aware, those most familiar with treating uterine hemorrhage with radium, particularly in patients 35 or more years old, advocate anesthesia, dilatation, and curettage of the uterus. The radium is placed, screened with one or more millimeters of brass, covered with rubber, and this is left in place for 24 hours.

My first case prohibited this procedure, so I used a small carrier made just large enough to hold the glass capsule containing the radium, which was no larger than a uterine sound. This was introduced into the uterus and allowed to remain for two hours. The treatments were repeated every second day. This procedure proved to be so satisfactory that I followed it in the other cases in the series, as they all seemed poor risks for anesthesia. Of course I could not determine whether or not I was dealing with malignancy, nor could I have done differently if I had known.

A possible feature of the therapeutic action of radium was suggested in these cases, *i.e.* its effect on metabolism when used locally. The patients all seemed to convalesce more rapidly than the controlling of the flow would ordinarily suggest. These patients are all alive and apparently normal; case I is 4½ years old, postoperatively; case II, four years; case III, 1½ years; case IV, a few months. In conclusion, I wish to state that I was unable to determine the pathology of any of them, unless case II, which presented a determinable fibroid. Situated as it was, however, it did not seem as if it were the factor causing the hemorrhage.

SKIN GRAFTING.

By HUGH A. BALDWIN, M.D., F.A.C.S.,

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In spite of its simplicity and desirability, skin grafting is often deferred or neglected entirely, and prolonged convalescence or even deformity results. The theatrical and sensational aspect given to this operation by newspapers is perhaps responsible for the view held by many that it is an operation difficult of accomplishment.

Skin grafting as a practical operation was first brought to the notice of the profession by Reverdin of France in 1869, and his method to-day probably has the greatest field of usefulness. The methods of Thiersch, Wolfe, and Krause are likewise easy of accomplishment and are frequently advisable, especially to bring about the prompt epithelization of wounds made by surgeons in cosmetic or plastic work, when the appearance of the part must be considered. In the Reverdin and Thiersch methods only the superficial layers of skin are used, this being known as epidermatoplasty, while Wolfe and Krause practise dermatoplasty, using the entire thickness of the skin. Grafts taken from the patient himself are known as autografts; if taken from others, isografts or heterografts.

It is with the latter group that this paper most concerns itself. While autografts are undoubtedly the best, the most likely to survive, yet frequently the condition of the patient is such as to render their use inadvisable.

In any hospital there is easily plenty of material for isografts, which can be obtained without subjecting the donor to pain or discomfort. As soon as the area to be grafted is in suitable condition, if the operating-room schedule is watched only a day or two will elapse before some patient with lax abdominal walls will be entered for laparotomy. A Wassermann test should be run; if this is negative, a strip of skin from the sides of the wound can be cut away by the surgeon. This will not be missed by the donor, but on the other hand will perhaps facilitate the closure of the wound. The skin so obtained should at once be transferred to warm salt solution. For ease in snipping off the Reverdin grafts, the skin can be tacked to a board and kept covered with gauze, moist with warm saline solution. The grafts are then cut away, using fine tissue forceps and a sharp knife. Very small grafts can be used, but larger grafts, from an eighth to a quarter of an inch in width and from three-eighths to a half inch in length, are very satisfactory. These should be carefully placed in rows, each graft about an inch from its neighbor. With these larger pieces I try to tuck one corner down into the granulations to prevent possible displacement. After the grafts are in place they are protected by strips of gutta-percha tissue, placed gridiron fashion over the rows of grafts.

One great advantage of this method is that the grafting can be begun on any part of the surface as soon as healthy granulations appear without waiting for the entire area to clean up. These grafts are very resistant and will grow even in the presence of pus.

From personal experience I have found that redundant scrotal tissue, removed in the course of

a varicocele operation, is ideal material. Lucas[1] as quoted by Eisenberg[2] believes that material from these parts possesses a peculiar germinal vitality and advocates the use of a child's prepuce. I have recently tried the latter from new born babes, but failure resulted. The fact that the skin from new born babes is undesirable has been brought out by others, but I am unable to quote the article, as it has been mislaid. That the prepuce of older children can be used has been demonstrated by Eisenberg,[3] who covered the end of a finger successfully with the foreskin removed from the patient, using in this case the entire thickness of skin. The vitality of resected scrotum is shown in a case in which after removing the redundant skin it was put in salt solution and then placed on an ordinary radiator, while the operator went to the opening baseball game of the season. Returning at six o'clock Reverdin grafts were placed on a large ulcer involving a child's abdomen. Every graft took.

Bevan[4] says pessimistically that not more than 10 per cent. of isografts will survive. My own experience would indicate that the percentage is much higher; 50 per cent. or more will adhere and grow if transplanted in the proper manner, at the right time, and with careful after-treatment.

The use of isografts has recently been placed on a secure footing, with the same promise of success as in the case of autografts, by bringing the same principles to bear as in blood transfusion, namely, blood grouping. This principle has been advocated by several men. Its marked advantages have been excellently presented by Harold K. Shawan, M.D., Captain M. C., U. S. A.[4] in an article based on personal experience while with "Lakeside U. S. A. General Hospital, B.E.F." It has been found that all individuals fall into one of four groups depending upon the interaction of mixed bloods. Moss[5] gives the following classification:

"Group I.
Serum agglutinates corpuscles of no person.
Corpuscles are agglutinated by serum of Groups II, III, IV.
Group II.
Serum agglutinates corpuscles of Groups I and III.
Corpuscles are agglutinated by serum of Groups III and IV.
Group III.
Serum agglutinates corpuscles of Group I and II.
Corpuscles are agglutinated by serum of Groups II and IV.
Group IV.
Serum agglutinates corpuscles of Groups I, II and III.
Corpuscles are agglutinated by serum of no person.

Groups I and III are rare groups; Groups II and IV are common. The relative incidence of the four groups, as found by Karsner in 1000 groupings, was: Group I, 3.1 per cent.; Group II, 42.4 per cent.; Group III, 8.3 per cent.; Group IV, 46.2 per cent."

Shawan substitutes the words "skin graft" for "corpuscles" in the above chart and shows most conclusively that the fate of the isografts can be accurately determined by using donors selected according to their blood grouping.

It will be noted, according to Karsner (6), that 46.2 per cent. of individuals fall in Group IV, and can be called universal donors because grafts from this group will grow on individuals of the other three groups, and the chances of selecting such a donor, without testing, would be 46 to 54. Group I comprises 3.1 per cent. and can be called universal recipients, because they will accept grafts from any of the other groups. This brings the percentage of sure takes, without testing, up to 50 per cent., which, as stated in a preceding paragraph, has been my experience. Shawan's conclusions based on twenty-six patients, all grouped by their blood, are as follows:

Initial takes occurred independently of group compatibility; but permanent takes were modified by biological compatibility as follows: Group I patients grew skin from donors of each of the four groups and equally well. Group II grew isogroup grafts and grafts from Group IV, while primary skin takes from Groups I and 111 donors in the course of time either shrunk to minute size or entirely disappeared. Group III recorded only skin from the same group and Group IV as permanent takes. Permanent takes from the same group *only* were obtained in the case of Group IV recipients.

SUMMARY.

1. Autografts grow best.
2. Isografts obtained from donors of the same blood group as the recipient, or from Group IV donors, became permanent takes and grew almost if not equally as well as autografts.
3. Isografts where the donor and recipient were of different groups did not remain as permanent growths except when Group IV skin was used or when the recipient was a member of Group I.
4. Group I recipients grew permanent skin from donors of all of the four groups and apparently equally well.
5. Group IV skin grew permanently on the recipients of all groups, but only Group IV grafts and autografts remained as permanent takes on Group IV recipients.
6. It appears that skin grafting obeys the principle of blood grouping, as in the transfusion of blood.

There are many ways of blood grouping, but the method of Lee[7] as quoted by Karsner[6] is rapid and easily carried out if the standard serums are available. This method is as follows:

From 0.5 to 1.0 c.c. of 0.85 per cent. sodium chlorid solution is placed in a small test tube, into which are dropped two drops of the blood to be tested. If a clot forms, a satisfactory emulsion of cells can be made by shaking the tube. A platinum loopful of each of the standard serums is placed on a clean slide, and into each drop a loopful of the blood emulsion is rubbed. The reading of the agglutination is made under the microscope (16 mm. objective), and is usually complete in from five to fifteen minutes. As will be seen from the table, if both drops show agglutination, the blood is in Group I; if neither shows agglutination, it is in Group 4; and if one shows agglutination and the other not, the blood belongs to the group in which there is no agglutination. A somewhat smoother emulsion may be made by inverting the slide so as to convert the drops into hanging drops. The inverted slide can be placed on the microscope stage and another slide whose ends are built up with small pieces of fairly thick slide pasted on with balsam.

The standard serums can be obtained from the Government Laboratory in Washington. If, however, they are not available the blood of the donor can be tested directly against that of the recipient by any standard method of testing for agglutination. The following method is described by Lee:[7]

One c.c. of blood is collected from the patient and

allowed to clot. The serum is then obtained. One drop of this serum is placed on a slide and mixed with a 10 per cent. suspension of the donor's blood in 1.5 per cent. solution of citrate solution. If agglutination takes place another donor must be sought.

The after care of the grafted area should be under the personal observation of the surgeon and not left to an inexperienced nurse or assistant. The most important feature of this stage is the proper control of the granulations. The granulations must be kept in a healthy condition and maintained on a level with the growing skin. For this purpose nothing can compare with the sticks of fused silver nitrate. Exuberant granulations can be quickly brought back to the correct level by the generous application of the silver while edematous or unhealthy granulations can be stimulated into normal activity by light strokes of the caustic stick.

Beck[8] has recently called our attention to a method by which the granulations are kept even with the skin by the use of adhesive strips. The adhesive plaster keeps the granulations from rising higher than the skin and gives the epithelium a chance to regenerate underneath the plaster, the under surface of the adhesive acting as a path for the regeneration of the cells on the same principle as a vine would grow along a string or a wire. His description of this method is as follows:

> The technic consists in applying strips of plain or zinc oxide adhesive plaster along the edges of the granulating wound. These strips, one-half to three-quarters of an inch in width, must be so adjusted that they cover both margins, that of the skin and that of the granulating wound. This leaves the center of the granulating surface exposed for absorption of the wound secretions by a dry sterile dressing.
>
> Twenty-four hours later the dressing and adhesive plaster are carefully removed. It will be found that along the margin of the skin there has now formed a bluish-gray border, about 2 or 3 mm. in width. This bluish-gray border represents the new growth of epithelial cells.
>
> The wound is now dressed with dry gauze, which is left on for twenty-four hours, followed on the next day by another application of adhesive plaster. This procedure is repeated uptil the entire granulating surface is covered with an epithelial growth.

With small denuded surfaces this method can be used alone with great satisfaction. With large wounds it can be used after grafting as soon as the grafts have become securely attached to their bed. This granulation will cause epithelization to take place with astonishing rapidity.

In this paper no attempt has been made to describe the many maneuvers to be carried out in special or complicated cases. This belongs to plastic surgery, an immense field which is developing into a distinct specialty. I have attempted only to show that the doctor must keep pace with the demand for efficiency and return his patient to work in the shortest possible time with the least amount of scarring or deformity.

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347 EAST STATE STREET.

A DISCUSSION OF POST-OPERATIVE RECURRENCES OF ANORECTAL FISTULA, THEIR CAUSES AND PREVENTION.

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IN selecting anorectal fistula as the subject of this paper, we have been actuated by the circumstance that the results of the treatment of this disease have not yet reached that degree of perfection which surgeons are trying to attain or patients have a right to expect when they submit to the risks of operation. It is safe to state that in no surgical affection comparable with it, is the prospect of permanent relief more uncertain than in fistula, a statement which may be readily verified by the records of rectal clinics, where naturally the greatest variety of such material is available for study. It is conservatively estimated that 20 to 30 per cent of all persons suffering from fistula have been operated upon for recurrence one or more times, and it is far from certain that some of these will not require further surgery before they are relieved of their symptoms, either because of the return of the disease, or the presence of some complication or sequel which interferes with the orderly function of the parts and with the comfort and happiness of the patient.

Those who are familiar with the natural history of fistulæ, especially with the cases which have been unsuccessfully operated, will concede that while there is a surface similarity among them, they present quite marked difference in their clinical features. According to these differences they may be seen to fall into groups more or less distinct in pathology and clinical course.

GROUP I: Following operation the wound is found to discharge freely, is painful and sensitive to touch, but shows no evidence of unsound condition of its tissues; it may appear to close up entirely, only to be followed sooner or later by soreness and swelling of the parts and the appearance of a discharging sinus; or it may heal over firmly throughout except for a minute opening at one end, from which purulent material may be discharged at intervals. Probing discloses a tract of variable depth which generally will be found to run upwards towards the rectal wall, terminating in a rough, elevated area or in a depression with raised edges.

GROUP II: The wound looks unhealthy, its surface being very faint pale pink, its edges undermined in every direction. Seen before operation, it discharges a dirty grey material through an external opening which is relatively large and

ragged, often presenting a tuft of fungoid granulations. The patient shows an evident lack of resistance, feels weak, and suffers a general deterioration of health.

GROUP III: There is a slight discharge, but little pain and no marked tenderness about the parts. The granulations are delicate and friable, and lack a healthy pink color. Healing is sluggish, delayed or absent, and the scar is bluish and lacks firmness.

GROUP IV: The wound heals uneventfully and the parts look normal. The patient is apparently cured, only to return months or years later with a sinus on the same or opposite side.

GROUP V: In this group belong cases in which the fistula is cured but the patient is not. He is made uncomfortable by constant moisture of the parts, suffers from chafing and pruritus, and often complains of a diminished sense of defecation. He may be unable to control gas and soft stool, or may find it difficult to move his bowels at all except after severe straining.

GROUP I: In this class will be found cases, (a) in which the fistula is of non-specific origin but has numerous branches, one or more of which have been missed at operation; (b) those in which the focus has not been discovered, as may happen in infections originating about the vertebræ, sacrum, coccyx, or pelvic organs; (c) those whose internal opening has not been located and which have thus been treated mistakenly as blind external fistula; (d) rare cases with more than one internal opening in the rectal wall, only a single one of which has been discovered at the time of operation; (e) cases treated without division of the sphincter; (f) and finally these in which, by reason of faulty after-treatment, the tissues have been allowed to bridge over.

(a) To feel reasonably assured that operation for a chronic anorectal fistula will be successful, it is necessary to dissect, divide or destroy all branch tracts, for if any infected tissue is left behind without being properly drained, the chances of recurrence are immeasurably increased. Hence, surgeons have tried various procedures to uncover these, the most common one being the injection of colored fluids such as methylene blue, which stain the tissues and enable the operator to follow the tracts. While this method appears on the face of it sound, practically it has very definite limitations, because of the uncertainty of reaching the smaller tracts, especially when they are plugged with dried products of wound secretion; any excessive pressure may easily force the fluid into the loose cellular fat of the ischiorectal fossa and stain tissue which is uninfected. As the solution colors all tissue alike, there is no way to distinguish those which are pathological, and one may thus actually remove sound portions while leaving infected ones.

A method which has given the writer much satisfaction depends upon the use of sight and touch of the unstained tissue. Infected portions, when wiped clean and dry, invariably show differences in morphology, texture and color, besides imparting to the palpating finger a sense of induration absent in sound tissue. Gentle probing of such areas will readily disclose the direction of any branch sinus; when, as sometimes happens, the parts appear honeycombed with tracts, they are probably dead and are best removed en masse, and the deep layers brought together with one or two catgut sutures.

(b) We suspect that in a few cases of anorectal fistula failure results because the source of the trouble has not been reached. This may originate in traumatism or disease of the coccyx, sacrum, or lumbar vertebra or other neighboring bone, pelvic abscess from suppurative processes of the female genitalia, or the prostate, vesicles, urethre and bladder in the male, broken down gummata, sacrococcygeal tumors, which have become infected and burrow downwards. Unless their focus has been discovered and properly treated, it will be futile to expect permanent relief.

(c) Complete fistula whose internal openings have not been located at the time of operation furnish a considerable percentage of recurrences, inasmuch as these will not heal as long as infective material can enter from the bowel in circumstances which do not allow of free drainage. We are not in sympathy with the suggestion that when one is unable to locate the internal opening of a fistula he may cut into the rectum elsewhere, as that simply opens up additional areas in healthy tissue while making no provision to take care of such as are already infected; neither do we consider it advisable to divide the intervening tissue between the internal and external openings, as we may thus miss a portion of the tract if it does not run through in a straight line. It is safer to introduce the probe from without as far as it will pass, then, with a hooked probe from within the rectum to act as a guide, to dissect upward toward the rectal wall.

(d) Many suggestions have been advanced concerning the treatment of cases which have more than one internal opening, none of which to our mind meets the situation. It seems to be best, if they are on the same side to try, to unite them, precisely as in the treatment of fistula with multiple external openings, for they will nearly always be found to converge toward a main sinus. The management of cases which have openings on opposite sides has been described by the author in *Surgery, Gynecology* and *Obstetrics*, March 1919, p. 276.

(e) Is it necessary to divide the sphincter muscle in operations upon complete fistula? We answer without hesitation that unless this is done we cannot secure good drainage and rest of the parts, conditions which are so essential in the healing of all wounds wherever situated.

(f) The results of the most carefully planned operations may be ruined by slovenly or neglectful after treatment, a truism which applies with peculiar force to the treatment of fistula. The wound must be watched for any evidence of superficial healing before the bottom of it has filled in firmly; if necessary it must be opened up again and again and a layer of gauze inserted into it to keep its edges apart.

GROUP II: This comprises cases which present distinctive features because the local disease is a manifestation of tuberculosis, which dominates the clinical picture. It is unfortunate that they are still spoken of and classified as fistula rather than under their proper names as rectal or perirectal tuberculosis. They generally begin subacutely with mild local disturbances, soon succeeded by a thin, dirty-grey discharge from a wound about the peri-

anal parts which is relatively large and gaping, with thin, bluish edges, and a general appearance of lack of vitality about the skin and subcutaneous tissues which is unmistakable. The question of surgical interference in such a condition presents a serious problem which must be judged by the evidence in each individual case. It depends upon the general condition of the patient, the presence of pulmonary or other complication, the powers of resistance as measured by good appetite, absence of fever and gastric derangement, and slight loss of weight. All things being equal, if the patient's condition permits it we consider it fair to rid him of a focus which might at any time lead to serious complicating lesions elsewhere; especially since operations to that end are short, may be done under local anesthesia, with little loss of blood and but a brief stay in the hospital. On the other hand, if the condition is progressive and the patient shows little resisting power, it is best to abstain from surgical interference, or at most only try conservative measures intended to improve drainage.

GROUP III: Occasionally it will be found that healing of a fistula is delayed or absent in an apparently healthy person despite the most careful attention, while the wound will exhibit characteristics which are not present in normal repair. Such instances occur in patients who suffer from constitutional diseases as active syphilis, diabetes, nephritis, and various blood dyscrasias, and their management goes hand in hand with the treatment of the primary disease.

GROUP IV: It is not uncommon to find persons whose fistula has healed uneventfully and who have been free from symptoms months or years, returning with a recurrence on the same or opposite side. By the frequency with which such instances come under observation, we are persuaded that this is more than a mere coincidence. We saw two cases recently in which the patients returned with evidence of acute infection at the site of the old wound over ten years after operation, having been entirely well during the interval, as far as they knew. There is little question from the evidence at hand that this is due to an increased vulnerability of parts weakened from infection, producing loss of local resistance, rather than true recurrence.

GROUP V: Every surgeon is familiar with the patient who long after his fistula has healed has a variety of annoying if not serious complaints referable to the rectum. To set such persons down as neurasthenics without carefully considering all possible sources of local trouble is unfair, certain to invite disaster. Chafing and pruritis may arise in such circumstances from irritation of a thick scar in which peripheral nerve endings have become imprisoned, and should be treated by prophylaxis, such as early operation to prevent excessive scar formation, blocking out as much of the cicatrix at operation as possible, and bringing the deeper portions of the wound together by catgut sutures, in order to diminish the amount of scar tissue to be filled in by repair. When seen after operation dilation of the sphincter offers a chance of improving the symptom. An annoying post-operative complaint following fistula operations consists in the diminution or loss of the usual desire to empty the bowel; the patients go to stool because of the dictates of their judgment and not because they are conscious that there is an accumulation of stool. On the development of such symptoms, strange to say, people sometimes forget to empty the bowel until a mild form of actual impaction is produced, and we have one such case on our operative records. When this occurs as a post-operative condition it is ascribed to an interruption in the peripheral nerve conduction due to the cutting of the nerves, their destruction by disease, or imprisonment in unyielding scar tissue. Fortunately, this is not a permanent condition but subsides when the nerves have become regenerated. More serious is the inability to control gas and soft stool which follows when there has been extensive abscess formation with destruction of portions of the sphincters and the levator ani; when they have been cut improperly, and when both internal and external sphincters have been divided in one or more plane. The levator ani, though not generally classed as a sphincter, performs an essential function in the control of the stool, which it is enabled to carry out most efficiently by encircling the walls of the rectum in a situation where the effect of leverage is greatest. It would be strange indeed from what we know of the reserve forces which are exhibited everywhere in the human body, if nature were to trust a function, whose loss spells chronic invalidism, to two muscles, one of which is a little slip no thicker than the blade of a small pocket knife, the other really not a true sphincter at all, but a thickening of muscle fibers which have no fixed points from which to work. No, the hand work of God shows no such fatal omissions. The best union between the cut ends of a muscle is secured obviously when all of its fibers are made to unite, which can best take place after a division of it at right angles; if they have been severed obliquely there is a tendency for the unsupported lower strands to retract and become lost, union occurring only in the median plane, and resulting in weakened control of the outlet. When both sphincters have been thus injured, and when the injury has taken place in more than one plane, it is evident that the risk of incontinence is correspondingly increased.

All operations upon the anal canal lead to a certain amount of narrowing of an outlet which at best is none too large, and requires careful watching for undue contraction. When the pathology which calls for operation, results in loss of substance which must be replaced by scar tissue, it becomes obvious that one must be prepared to meet the functional disability corresponding to such loss. In the case of fistula which has been preceded by extensive abscess, such loss may be considerable; if no large abscess has occurred, but the fistula existed a long time before an attempt has been made to excise it, repeated exacerbations take place, each of which is followed by loss of muscle tissue and replacement by inelastic scar, leading to a narrowing of the outlet sometimes amounting to true stricture. The remedy of this serious condition lies largely in prevention, and the application of such approved surgical measures as are readily carried out if patients can be made to see the situation and submit to proper treatment before permanent damage has been inflicted upon the parts.

310 WEST EIGHTY-SIXTH STREET.

Medicolegal Notes.

Degree of Skill Not Limited to Locality in Missouri Courts.—The Missouri Supreme Court holds that an instruction to the jury in a malpractice action that in performing an operation it was the defendant's duty to exercise reasonable skill and care, such as an ordinarily skillful and careful surgeon is accustomed to exercise and use in like surgical operations under like circumstances, is proper, and should not be limited to "the degree of skill possessed by reasonably skillful surgeons in the community" in which the defendant is practising."—Krinard v. Westerman (Mo.), 216 S. W. 938.

Causal Relation Between Accident and Pneumonia Not Known.—A salesman for a firm of wholesale fish dealers lifted a heavy box of goods weighing about 200 lbs., and while doing so felt his back snap and felt a very severe pain. He complained of this and from the time it happened gave evidence in his movements that he had sustained an injury. He remained about the place of business a short time and then went home and called a physician, who strapped his back. The doctor visited him professionally a number of times. Later pneumonia set in and the patient died about three weeks after the accident. The New York State Industrial Commission holds that while it was evident that the deceased had received an injury in lifting the heavy box, it was impossible nevertheless to make a finding under the circumstances of the case that there was any causal relation between such injury and the conceded septic pneumonia and pharyngitis which was the cause of death. Award under the Workmen's Compensation Act was therefore denied.—Meigs v. Robins & Robins, 21 State Dep. Reps. 389.

Statements in Proofs of Loss on Accident Policy—Use in Hypothetical Questions.—In an action on an accident policy three physicians testified as experts, in answer to a hypothetical question, that, in their opinion, the deceased's condition and subsequent death resulted from some external violence, some injury. The hypothetical question propounded to these physicians contained some facts pertaining to discoveries at the operation performed on the deceased, gleaned from the attending physician's certificate attached to the proof of loss, which, being *ex parte*, were only competent for the purpose of showing a compliance with the terms of the policy. The Indiana Appellate Court holds that, the certificate not being competent against the insurance company to prove any facts therein, these facts, unless otherwise proven, should not have been included in the hypothetical question.—Abendroth v. Fidelity & Deposit Co. (Ind.) 124 N. E. 714.

Powers of North Carolina Board of Chiropractic Examiners.—Under statute passed in 1917, and amended in 1919, the State of North Carolina provided for a State board of chiropractic examiners to be composed of three practising chiropractors of integrity and ability, resident in the State, which board was given certain supervisory powers on the subject, including the licensing of practitioners therein, etc. Certain exemptions in regard to examination were allowed to those already in practice. The North Carolina Supreme Court holds that where the evidence before the board as to whether the applicant for license had been engaged, as claimed, in the practice of chiropractic prior to January 1, 1917, entitling him to license under the statutes, was conflicting, the court will not control the board's exercise of its powers to pass on the bona fides of the applicant's claim; and upon the board's refusal to grant a license on the ground that the applicant had not been so practising, will not by mandamus direct issuance thereof.—Hamlin v. Carlson (N. Car.), 101 S. E. 22.

Transference of Streptococcic Infection from Foot to Face.—The California Supreme Court holds that a finding of the Industrial Accident Commission that a streptococcic infection in an injured toe was transferred to the face of the deceased employee by external means, and that the death was proximately caused by the original injury, giving him erysipelas and septicemia, being based on the testimony of medical experts grounded on medical science, cannot be overturned. The medical testimony on which the commission based its finding that the germs which caused the facial infection were carried from the toe to the face by external means was, in effect, that such a method of transfer was exceedingly common, the transmission of the germs being very readily accomplished, that there was no reason to suppose that the infection had come from another source than the toe, and that, while it was within the realm of possibility for the infection to have come from another source, such hypothesis was so very much the least probable that it seemed useless to theorize as to such possibility in the face of facts indicating that the germs "certainly must have been carried" from the foot.—Bethlehem Shipbuilding Corp. v. Industrial Acc. Com. (Cal.), 185 Pac. 179.

Right to Practise a Valuable Property Right—Powers of Board of Medical Examiners to Suspend Licenses.—The California Board of Medical Examiners suspended the license of a physician for one year, whereupon the physician began a proceeding in the Superior Court to review the action of the board on the ground of excess of jurisdiction. From a judgment of the Superior Court sustaining a demurrer to his complaint, he appealed, on three grounds: (1) That the provision of the statute empowering the board to suspend or revoke a license to practise medicine, upon finding the practitioner guilty of "unprofessional conduct," is unconstitutional; (2) that the complaint filed with the board did not sufficiently state any cause for the revocation or suspension of the license; (3) that no sufficient evidence was produced on the hearing before the board to prove the charges or justify the suspension. The power given to the board to revoke or suspend the license of a person duly admitted to practise medicine, upon finding him guilty of charges of unprofessional conduct, as defined in Section 14 of the statute, is judicial in its nature. And the right to practise medicine is, like the right to practise any other profession, a valuable property right, in which one is entitled to be protected. Nevertheless, it is now well settled in California that tribunals such as the board of medical examiners or other boards empowered to revoke licenses which they have previously granted, for cause defined by the law, are not courts in the strict sense; they are not exercising "the judicial power of the State" as that phrase is used in the Constitution conferring judicial power upon courts, and that statutes creating such boards and conferring such powers upon them are constitutional. It is also settled that, where a board has exercised quasi judicial power of the nature of that in question, its decisions are subject to revision by certiorari. The complaint charged the procuring a criminal abortion upon a pregnant woman, naming a certain person. The plaintiff contended that the board could not have jurisdiction unless the charge was as specific and complete as would be necessary to an indictment under the provisions of the California Penal Code defining the crime of abortion. In support of his point that there was no legal evidence to support the decision of the board, his claim was that the charges were sustained wholly by the testimony of persons who would in a criminal prosecution have been classed as accomplices in the act charged, and that under the Penal Code no conviction could be had on the testimony of accomplices alone. Neither of these contentions was sustained, the first, because the complaint need not be specific, and the second because the board is not limited to the rules of evidence prescribed by the Penal Code. The judgment was affirmed.—Luckow v. Board of Medical Examiners, California Supreme Court, 187 Pac. 965.

Propriety of Allowing Hypothetical Question Rests with Court.—The propriety of allowing hypothetical questions rests largely in the discretion of the trial court, and, where such questions are allowable, it is the duty of the trial court to see that they are properly framed, that they are responsive to the issues in question, and that they assume only such facts as are supported by some evidence in the record. Whether such facts have been actually proven is a question for the jury to decide. But the party framing such questions should be allowed a fairly wide latitude, so long as he keeps within reasonable bounds as to his theory of the case and the evidence supporting such theory. The opposing party has the right to rebut the facts assumed, as well as the testimony of the witness.—Dean v. Seeman, South Dakota Supreme Court, 176 N. W. 649.

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CARTILAGE GRAFTING.

THIS subject receives a complete historical and periscopic discussion by Mauclaire in *La Presse Médicale* for Aug. 11, 1920, xxviii, 56. It begins with the work of Middeldorph in 1852 in animal experiment. The first work in connection with mankind was reported by Koenig in 1896, who was closely followed by several of his German colleagues. It is advantageous to relate the animal and human researches individually. Middeldorph placed a bit of cartilage in the peritoneal cavity of an animal and it was absorbed. This was an autoplastic graft. Ollier announced in 1857 his opinion that for a graft to take, the perichondrium should accompany the cartilage. We hear nothing further until 1877, when Zahn implanted the cartilage of an animal under its skin and elsewhere, and employed adult homoplastic grafts. These underwent fatty degeneration, but when embryonal cartilage was used the grafts took in an artificial cavity with good blood supply. One year later Tizzoni showed that a graft could survive in a joint cavity. The author now traces the subject down to near date and sums up as follows: cartilage has low vitality and the least pus formation in the recess for the graft means necrosis. After the introduction of antisepsis and asepsis the experiments succeeded more frequently. Grafts in the peritoneal cavity and under the skin where no useful purpose can be served undergo atrophy and a so-called "active graft" which can exert some function of a mechanical character has a better chance of survival. A pedicle and a good vascular supply are conditions which make for survival. Homoplastic grafts from one dog or rabbit to another are often successful. Nageotte had a positive result with auricular cartilage from a dead rabbit implanted into the ear of a living rabbit. Heteroplastic grafts have in general failed.

Human grafting of cartilage inaugurated by Koenig first consisted in the closure of a tracheal fistula by thyroid cartilage. Next a series of grafts were made by German surgeons with costal cartilage used for the closure of tracheal and laryngeal fistulæ in a two-stage procedure, in the first stage of which the fragment was implanted from the nearest cartilage under the integument, while in the second it was made to close the fistula. Rhinoplasty was effected in the same fashion. Numerous cases of analogous character followed, and in 1907 the author implanted a piece of costal cartilage into a defect in the subject's tibia due to osteomyelitis. At a later period Morestin sought to close cranial defects in a similar manner, but the process was not really grafting for the fragments simply became encysted. Cartilaginous grafting for occlusion of defects with costal and auricular cartilage has become too frequent to quote and has been chiefly autoplastic. Results with homoplastic growths have been dubious, while heteroplastic growths have always failed.

The author now takes up grafting with articular cartilage in animals and mankind. This comprises transplantation of articular cartilage with bone, arthroplasty, etc., but this sort of cartilage has also been used in filling defects in long bones. He distinguishes between conjugal and diarthrodial cartilage. The work done in this field involves transplantation of bone with its articular surfaces, as when a fibula is used to replace an exsected ulna, in whole or in part. Generally speaking, grafts with conjugal cartilage used largely in animal experiment have not made good in mankind while autoplastic diarthrodial grafts often succeed; homoplastic grafts have succeeded while heteroplastic grafts absorb. Homoplastic grafting is done under difficulties and the transplants must be conserved with ice.

SCLEROSIS OF THE FACIAL GLANDS.

UNDER this title Portmann describes in the *Journal de Médecine de Bordeaux* for August 10, 1920, xci, 15, the affection commonly known as Mikulicz's syndrome, which is not believed in some quarters to be an autonomous disease. He first describes in full two cases of different type from the original affection (first described in 1892 by the Breslau surgeon). In the type case the disease began in the lacrymal glands and was seen by an ophthalmologist; other cases first developed in the salivary glands, but whatever the debut the patient soon presented enlargement of both kinds of gland. Patients complained of defective sight and inability to masticate, the mouth becoming habitually dry. Gradually it was noted that the ordinary mucous glands of the mouth could participate. Not until 1909 were the atypical forms thoroughly understood, and about this time a relationship with some of the leucemias was seen and the opinion was divided as to whether they had to deal with a pseudoleucemia or a form of tuberculosis. Later it was regarded as an endocrinic disorder comparable to exophthalmic goiter, etc. But whatever component thus came to the front, it was always absent in the average case. In 1912 it was found as a gonorrheal metastasis and later Frenkel found physiological types in which no pathology entered. These were naturally mild and abortive. Much symmetry in evolution and appearance, benign type of evolution, and absence of blood changes speak for a physiological affection. Of the pathological forms the causal factors may be simple adenitis, tuberculosis, syphilis, the causes of the

leucemias and pseudoleucemias, etc. Not much attention has been paid to the sclerotic forms or stages of the syndrome.

Studied from the latest viewpoints the author's two cases are instructive. Along with some hypertrophy other structures presented only atrophy. Thus in one subject only the parotids were hypertrophic, the other salivary and lacrymal glands being sclerotic with total suppression of function. In the other patient the nasal glands participated along with the salivary, the lacrymal glands being but slightly involved. There was nothing to show that sclerosis had been preceded by hypertrophy, and apparently the sclerotic component had never entered into the conception of Mikulicz's syndrome. It was believed certain that any of the glandular structures in the face, superficial or deep, could undergo this sclerosis, with or without some hypertrophy. The conception of the syndrome must therefore be greatly enlarged to include the atrophic manifestations, and if the condition is truly autonomous, with some constant causal influence, the author can only suggest some alteration in the trophic nerves of the face.

MAY GRIPPE BE TRANSMITTED BY THE FLEA?

THE author, Gaminara, whose article is found in the *Anales de la Facultad de Medicina de Montevideo* for May-June, 1920, v., 5-6, does not, of course, necessarily mean that such a method of transmission is the rule, but merely asks if such transmission is possible or does occur. Dr. G. Friedman of New York asked the same question about the bedbug in the MEDICAL RECORD at the time of the pandemic, and similar queries have been put from time to time. The present author, however, writes at great length on the subject. Unless there is aerial contagion, he says, it is difficult to comprehend some things about the great pandemics and their relation to *influenza nostras*. Concerning interhuman transmission we know some things, such as contagion by nasal secretions, but in many cases the transmission seems to have been not so direct, but indirect, although we know nothing in this connection of fomites and animal transmission. Not the author himself, but his friend, Dr. Diaz, first conceived the possibility of flea transmission. The influenza was essentially a sepsis and the flea bite might explain how the blood could become so quickly contaminated. The author in this connection appeared to have overlooked the fact that one of the most certain criteria in the differentiation between pandemic influenza and bubonic plague was the absence in the former of any suggestion of flea transmission, but later in his study he comes to this point and makes it serve him as an argument for instead of against flea transmission. In fact he believes that the flea is responsible for the great points of similarity between the two pestilences. He goes back before the pandemic to some remarks made by the medical men of the Pasteur Institute of Constantinople, who thought that flea transmission explained not only the bubonic but the pneumonic form of the old plague. But the fact of the complete protection of Japanese medical men and others when in attendance on victims of the lung plague by the face mask would seem to nullify this doctrine. It might, of course, be answered that an energetic flea prophylaxis was in vogue at the time, and one might also adduce in this connection the failure of masks in other cases.

Many instances are quoted in connection with the late pandemic and its echoes which are explicable by the theory of flea transmission, but which do not exclude the likelihood of other methods, nor does the author seek to belittle the ordinary modes of communication of the disease. Thus certain victims without exposure to others noted the great abundance of fleas before they were stricken. Important in this connection is the fact that the flea accused for influenza is the human and not the rat or another flea. The author also submits facts about fleas in connection with the pandemic of 1890, and believes that he has at least proved that so far as Montevideo is concerned there was almost a plague of these insects in both pandemic years. In numerous cases people who had not been flea bitten before came down with grippe in from 24 to 48 hours after having been bitten as shown by the marks of the insect. Medieval writers made the same observation about the transmission of the plague. It may be possible for the flea to cause plague sepsis without any formation of buboes as contended by Symond in 1910 or 1911, and it may, of course, be possible that influenza is thus transmissible, but the author has not made his case very convincing and his ideas are probably shared by few.

STANDARDS OF INTELLIGENCE.

HUMAN beings differ not only in the knowledge that they have acquired, but in their dower of intelligence or general ability. It has long been accepted that the former property may continue to increase until the natural faculties begin to abate, but that the latter has a maximum for each individual, attained early in life. It has been suggested, even, that the physical structure of the brain gives visible testimony to these mental differences, the branching processes of the cells being the correlate of the results of education, the actual cells being a measure of the natural endowment. The ramifications certainly increase during life, while the cerebral cells do not multiply, although they take some time to reach maturity. The histological structure of the cerebrum, even if it be correctly interpreted, can be taken as no more than a rough diagram of the mental phenomena, but it serves to illustrate the observed fact that intelligence, as opposed to knowledge, is fully developed before the age of schooling is complete. Sixteen years has usually been taken as the age at which, even in those best endowed, the limit of intelligence has been reached. Obviously the standard varies from one subject to another; the degree of intelligence passed through by the more fortunate at the age of ten may be the

final attainment of others, and all intermediate stages occur.

During the late war the United States faced the enormous task of creating a modern army in the smallest possible time, and the aid of psychologists was enlisted to examine and classify the intelligence of recruits so as to marshal these men into the places for which they were the most fitted. Ingenious and rapid tests of intelligence were devised, and were applied to one million seven hundred thousand cases. This was a fair sample of a population roughly estimated at one hundred millions, and a larger scale examination than had ever been before attempted. Mr. H. H. Goddard, the well-known psychologist, thinks himself justified in taking the army sample as a fair criterion of the entire population of our country. He classifies the intelligence of our male population into seven grades, but believes that in exceptional instances, amounting to four and a half per cent. of the population, a superlative standard of intelligence is attained at the age of nineteen years. On the other hand, seventy per cent. of the citizens of the United States are compelled to carry on their lives with the intelligence of children of fourteen years, and ten per cent. with that of children of ten. These curious results should have a deep intrinsic interest to all students of human nature, and they are of direct importance to the art and science of education, an all-important side issue of medicine.

Rapidly Fatal Poisoning by Phosgene.

Irene Gerber of Geneva, assistant to the medical clinic of the University, reports this case in the *Revue médicale de la Suisse romande* for June, 1920, xl, 6. The victim was a chemical engineer aged 29, admitted to the clinic September 19. His previous condition had been good and he was robust of habit. Two years before he had been poisoned with nitrobenzol and had severe dyspnea and cyanosis; but in 24 hours these symptoms were dissipated by the use of oxygen and after a month's interval he was back at his work. His recovery seemed to have been complete and he was not again exposed to any poisonous substances until he began to handle phosgene in an ether-ethyl-chloroform synthesis. The gas is set free in a certain quantity during one of the manipulations and some of the workmen had been temporarily incapacitated by the fumes. The victim had not been exposed longer than the two laborers and he complained only of irritation of the eyes and a cough as he turned to the clerical duties of the laboratory. He was so preoccupied that he neglected to go to supper and instead took a drink. His bad appearance was noted by others and he was sent home. He collapsed before reaching his dwelling and was sent to the hospital with the correct diagnosis. Here he was seen to be cyanotic over the entire body and received oxygen inhalations, camphor injections, etc., but death took place 34 hours after the exposure. The clinical history and autopsy finds are given *in extenso*. That one should suffer death while the two others were only incapacitated for the day by the same exposure was confusing, and caused the suspicion of some mixed intoxication, but the possibility of any other factor, such as inhalation of nascent hydrochloric acid seems to have been excluded. There is left the possibility of the formation of the acid from phosgene in the parenchyma of the lung with production of a second and fatal stage; the two workingmen having experienced only the first stage.

Accidental Amenorrhea.

Under this title Dalché contributes a paper to the *Gazette des hôpitaux* for July 6-8, 1920, xciii, 60. He makes three types, due respectively to exposure to cold, traumatism, and emotional shock. Amenorrhea in this connection refers to suppression of the function either at its onset or during its course. Cold as a cause is sufficiently familiar. In certain cases one suppression has been followed by life long invalidism. The exposure may be slight as when suppression follows simple washing of the hands in cold water. Chilling of the feet or legs may be sufficient, and one of the simplest methods of arresting flooding is to place the feet in cold water. Of the traumatic form the author says but little and mentions suppression as a result of railway accidents. The mechanism is obscure and perhaps these cases are best placed under the rubric of mental shock, which reduces the number of familiar types to two. The author goes extensively into the subject of emotional amenorrhea and cites interesting cases. This form may produce its effect in the intermenstrual period. During the bombardments from the air, suppression occurred from fright and one such case in a robust young woman appeared to set up hysterical pseudomeningitis; however, the fatal ending led to an autopsy, when it was learned that the patient had succumbed to tuberculous meningitis. It was believed that the sudden suppression had mobilised the tubercle bacilli in some latent focus. The phenomenon known as emotional anaphylaxis is seen in this connection as when a subject as a result of some passing emotional experience becomes sensitized to the cause of the emotion; in such a case repetition of this mild emotional experience may provoke suppression. Among the serious results of sudden suppression may be mentioned ovarian apoplexy and catamenial internal bleeding.

The Irish Fasters.

Laumonier writes on the subject of fasting in the *Gazette des Hôpitaux*, Sept. 14-16, 1920, xciii, 79. There have, he states, always been fasters, and we have professional fasters, such as Succi, Merlatti, Tanner, and Cetti. Tanner by the way lived to be 91, which speaks well for his good constitution and for the harmlessness of his fasts. The limit in professional fasting—and this species must stop in season to save life—is considered about 50 days. The insane faster has beaten this record, and Devillers reported a fast in an insane man of 76 days. It is not stated whether or not this man survived the experience but it is to be presumed that he died. The type of hunger striker is different in some respects. He may expect to yield or be forced to eat, or persists in a hopeless case until death. If the hunger striker hopes to sur-

vive he must be guided by the practice of the professional, taking water freely and keeping as nearly motionless as possible. An important factor in hunger striking is the *morale*. The subject is calm and fears nothing, so that his condition is the opposite of that of the man trapped in a mine or the shipwrecked sailor. The insane faster does not fret about himself, and the lethargic or hysterical faster being in a trance-like state is also free from worry. The latter seems a powerful factor to shorten life in fasting. In professional fasting the great suffering is usually assuaged with opiates and doubtless these have been used for the Irish fasters who are said to have suffered greatly. The temperature goes to subnormal but does not sink beyond a certain level until the final descent, which is called a fatal prognostic if not heeded. Yet Cetti, who according to Zuntz paid no attention to this terminal fall, hungered on and recovered.

Weil's Disease.

A certain amount of confusion is likely to arise in regard to spirochetosis icterhæmorrhagica because the Teutons do not appear to be inclined to give up the term Weil's disease and raise questions of unicism and dualism. Sobernheim at a session last winter of the Medical Society of Berne (*Schweizerische medizinische Wochenschrift*, July 8, 1920, i, 28) read a paper on Weil's disease. The clinical and autopsy pictures show marked polymorphism. In asserted ignorance of the Japanese labors, Germans claim to have discovered the transmissibility of the disease in the laboratory during the year 1915. They found a parasite the nature of which for a time was obscure but later it was named *Spirochæta nodosa*. Quite independently other German pathologists discovered a spirochete which they termed the *S. icterogenes*. The latter was cultivated successfully. Only recently had the author had the opportunity of seeing the Japanese preparations of icterus hemorrhagica and its spirochete and of comparing them with the German finds. So far as he had gone he was by no means satisfied that the two affections were identical and he proposed to deal with this problem forthwith. The two spirochetes show points of difference and in animal experiments the Japanese seems the more icterogenic and the German the more hemorrhagic. Apparently Sobernheim would temporarily call the Japanese disease "seven-day fever" and the German malady "Weil's disease."

News of the Week.

International Health Board Widens Scope.—The annual report of the International Health Board of the Rockefeller Foundation, recently issued, outlines plans for a campaign against hookworm disease and yellow fever in new parts of South America and China, and reviews its work since its establishment in 1914. It dwells particularly upon the enlargement of the cooperative plan of the board during 1919. All the work of 1919 was conducted in close association with governmental agencies.

Guayaquil Free From Yellow Fever.—According to the report for 1919, recently issued by the International Health Board of the Rockefeller Foundation, the last health campaign conducted by the late Major General William C. Gorgas was a success—Guayaquil, Ecuador, is free from yellow fever.

"Youth" for Sale.—American financiers and Physicians, according to press notices, have formed a million-dollar company in Vienna for the purpose of founding an establishment for "juvenescence by the Steinach method."

Eight Millions Asked by League of Nations for Fighting Typhus.—The League of Nations News Bureau, reviewing a report recently received from the Secretariat of the League, states that the League, through its Typhus Commission, has asked its members to contribute eight millions of dollars for fighting typhus fever in Poland and for protecting the rest of the world from a general spread of the infection. In Poland and Galicia cases of typhus have increased from 34,538 in 1916, to 231,206 in 1919. The estimated number for 1920 to date is 306,000.

Red Cross Aids Italian Earthquake Victims.—Relief supplies of an approximate value of $135,000 have been donated by the American Red Cross for the sufferers from the recent earthquakes and tornadoes in Italy. Practically 25,000 people are said to be homeless, having lost everything they possessed. Seven villages, each with a population of 2,000, have been completely destroyed. An outbreak of typhoid fever has given an added horror to the situation, causing many deaths.

Vienna Cardiologist Accused of Cruelty to Conscripts.—Professor Wagner von Jauregg, cardiologist of the University of Vienna, who recently appeared before a commission investigating war delinquencies, is charged with cruelty in the use of a high electric current to detect "heart disease shammers" among conscripts. It is said that several deaths resulted from his treatment, while a number of men committed suicide because of the suffering thus inflicted.

Professor Magnus Hirschfeld, noted German physiologist, who was reported to have died in a Munich hospital as the result of bodily injuries inflicted by anti-Semites, is now said to be alive, having recovered sufficiently to leave the hospital.

Institute on Red Plague Diseases.—The United States Public Health Service has organized an institute on venereal disease control and social hygiene to be held in Washington, November 22 to December 4. At this meeting health officers, private practitioners, clinicians, educators, psychologists, sociologists and others who feel the need of further information in regard to the twin diseases of the red plague and in regard to the different sciences that have helped in building up our now wide knowledge concerning them, may obtain, free of all charge, the benefit of ten days' intensive training by the best experts, man and woman, in the country. In this work the American Social Hygiene Association and the Interdepartmental Social Hygiene Board will assist. The session of the Institute will be followed by the All-American Conference on the Great Red Plague, which will continue for six days.

Hospital for Shell-Shocked Soldiers.—The new

Government hospital at Perryville, Md., where the U. S. Public Health Service will provide special care and treatment for shell-shocked soldiers, was opened recently with the transfer of over 100 patients from the temporary hospital at Cape May, N. J. The new institution is in charge of Surgeon E. H. Mullan, an experienced regular officer of the Public Health Service, who has been the commanding officer at Cape May. At the present time the Public Health Service has under treatment over twelve thousand discharged soldiers suffering from shell-shock and other mental disorders. Of these 5,578 are in hospitals operated by the service, and the remainder in other hospitals where proper care and treatment is provided under contract.

Training of Industrial Cripples Urged.—Philander P. Claxton, United States Commissioner of Education, at a recent conference of state directors and officials of the Federal Board for Vocational Education, said every state in the Union must make provision for the maintenance of industrial cripples if proposed plans for their rehabilitation are to be successfully executed. It is planned, he said, to spend $7,000,000 on vocational education, in the rehabilitation senses, during the next two or three years.

Pharmacologist Needed.—The United States Civil Service Commission announces an open competitive examination for pharmacologist, to fill a vacancy in the Bureau of Internal Revenue, Treasury Department, Washington, D. C., at $2,500 to $3,000 per year. Vacancies in positions requiring similar qualifications, at these or higher or lower salaries, may be filled from this examination. Applications should be made before November 30, on Form 2118, obtainable from the United States Civil Servcie Commission, Washington, D. C., or from the Secretary of the local United States Civil Service Board.

"Protective Social Measures" Workers Wanted.—The United States Civil Service Commission announces open competitive examinations for the following: Director of Bureau, Division, or Section of Protective Social Measures, $3,500 to $4,500 a year; Supervisor of Protective Social Measures, $2,800 to $3,600 a year; Field Agent, Protective Social Measures, $1,800 to $2,000 a year; Special Assistant Agent, Protective Social Measures, $900 to $1,500 a year. Vacancies in the United States Interdepartmental Social Hygiene Board, for duty in Washington, D. C., and in the field, at the salaries indicated, and in positions requiring similar qualifications, will be filled from these examinations, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion. Applicants should apply before November 23, for application form, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C., or to the secretary of a local United States Civil Service Board.

New York State Civil Service Positions.—The Civil Service Commission of the State of New York announces the following appointments to be made:

Assistant Medical Officer, Office of Health Officer, Port of New York. $1,800. Candidates must be licensed physicians. The appointee must reside at City Island and give part of his time to the inspection of vessels from foreign ports, and the examinations of passengers and crews for the detection of the quarantinable diseases, such as cholera, plague, typhus fever, yellow fever, smallpox, and leprosy. No written examination will be required, but candidates will be rated on training, experience, and personal qualifications. Inquiry may also be made as to character and ability and all statements are subject to verifications. An interview may be required.

Coroner's Physician, Monroe County. $200 a year. Candidates must be licensed physicians. No written examination will be required, but candidates will be rated on training, experience, and personal qualifications. Inquiry may also be made as to character and ability and all statements are subject to verification. An interview may be required. This position requires part time only.

Professor Jules Bordet, director of The Pasteur Institute of Brussels, will deliver the second Harvey Society Lecture at the New York Academy of Medicine, Saturday evening, October 30, 1920. His subject will be "Coagulation of the Blood."

Dr. Charles Mallory Williams has removed his office to No. 4 West Fiftieth Street.

Dr. John Rogers has removed to 177 East Seventy-first Street.

Tuberculosis Christmas Seal Campaign.—Plans are being formulated by the County Tuberculosis Committees of the States Charities Aid Association. The campaign is scheduled for the month of December, during which time it is planned to raise the State's quota of $582,000, exclusive of New York City.

Birth Control Endorsed by Women's Clubs.—The New York State Federation of Women's Clubs, at its twenty-sixth annual meeting recently held at Utica, placed itself on record as favoring birth control.

Ocean Liner Made Quarantine Boat.—When the Holland-America liner *Nieuw Amsterdam* arrived from Rotterdam last week, with 621 cabin and 1,673 steerage passengers, it was found that a boy from Czecho-Slovakia had developed smallpox during the voyage. The first and second cabin passengers were vaccinated and allowed to land, but the steerage passengers, it is said, will be held indefinitely on the boat at quarantine, the detention islands, Swinburne and Hoffman, being too crowded to receive them. The *Noordam* had arrived with a case of typhus fever on board, and the *Roma*, which brought a case of smallpox. The War Department, upon request of the Health Officer of the Port of New York, has designated the obsolete transport *Lancaster* for use as a quarantine boat while the present rush of immigrants continues, but the vessel will not be ready for several days.

Charitable Bequests.—Among the bequests provided for in the will of the late Jacob H. Schiff are the following: The Baby's Hospital, $5,000; the Solomon and Betty Loeb Memorial Home for Convalescents, $25,000; the New York Association for the Blind, $10,000; the Tuberculosis Preventorium for Children at Farmingdale, N. J., $5,000; the Montefiore Home and Hospital for Chronic Dis-

eases, $300,000; the Nurses' Settlement, $50,000, and the Federation for the support of Jewish Philanthropic work, $500,000.

"Silencer" for New York City.—Dr. Royal S. Copeland, Health Commissioner, after a preliminary survey of the city with regard to noises, is convinced that a "silencer" is needed to mollify the din. Where noise interferes with sleep it tends to affect the health of the community, and so the Commissioner proposes to stop or reduce to a minimum the multitudinous unnecessary noises. Among other discoveries Dr. Copeland found a pretty general disregard of no-noise signs on hospital streets.

Woman Posing as Graduate Nurse.—The Methodist Episcopal Hospital of Brooklyn has issued a warning to hospital superintendents everywhere to the effect that a young woman posing as Miss Mary Ault, a graduate of that institution, is attempting to secure a position under that guise. The real Miss Mary Ault is practising in Lebanon, Pa., it is stated. It is suggested that superintendents insist upon seeing the diploma of any applicant under this name.

Registration of Disabled Soldiers and Sailors for Rehabilitation.—The Federal Board for Vocational Training has inaugurated a three-months campaign to register disabled soldiers and sailors for vocational education and training. The board announces its determination to see that every ex-service man who is entitled to such training actually receives it. Representatives of the Federal Board in New York City will meet veterans at the following places: Second Field Artillery Armory, One Hundred and Sixty-eighth street and Franklin avenue, the Bronx, Monday, Oct. 18, to Saturday, Oct. 23, inclusive; Eighth Coast Defense Command Armory, Kingsbridge Road and Jerome avenue, the Bronx, Thursday, Nov. 25, to Tuesday, Nov. 30, and Twenty-second Engineers' Armory, Fort Washington avenue and One Hundred and Sixty-eighth street, Wednesday, Nov. 1, to Monday, Nov. 6.

School Health Day.—Dr. Royal S. Copeland, Health Commissioner of New York City, has announced that Health Day will be observed in the schools of the city on November 9. On that day every public school child is to be examined.

Obituary Notes.—Dr. WILLETT S. CONNORS, of Boston, Mass., formerly a practising physician of Brooklyn, N. Y., died October 11, at the age of fifty-one. He was graduated from Dartmouth Medical School in 1891.

Dr. DUNCAN MACDOUGALL, of Haverhill, Mass., died October 15, at the age of fifty-four. He was graduated from Boston University School of Medicine in 1893, specializing in surgery. He was a fellow of the American Medical Association and a member of state and local societies. Dr. MacDougall created considerable comment by his experiments in "the weighing of the soul." By means of delicate weighing devices he weighed bodies just before and immediately after death, and from these observations calculated the weight of the soul at between six and eight ounces.

Dr. RICHARD SCHLEMM of Union Hill, N. J., died Oct. 3, at the age of fifty-five. He was graduated from Bellevue Hospital Medical College in 1885.

Correspondence.

OUR LONDON LETTER

(From Our Own Correspondent.)

LONDON, September 24, 1920.

Conference of the Sanitary Inspectors' Association.—The conference of the British Sanitary Inspectors' Association was held at Margate during the week ending September 18, last. Sir James Crichton-Browne, the well known London mental specialist, gave the presidential address. Referring to the housing problem, he said that after the necessary houses had been built, people must be taught how to live in them. During the industrial period in England the working classes had to a large extent, owing to the nature of their occupations, lost touch of those domestic arts on which the comfort, happiness, refinement and healthfulness of life so much depended, and in these arts they must be now reinstated. Our schools must bestow much more attention on them than they had hitherto done, even at the sacrifice of a little etymology and syntax. Our health visitors must give practical demonstrations in them, and above all our women must be given time to become expert in them. Factory hands and out-workers must be allowed time to become wives and mothers in the full sense of the terms. He saw that 252 bishops assembled in conference at Lambeth decided the other day in favor of the equality of the sexes, which was an anatomical and physiological heresy of the first magnitude, and decreed the revival of the Order of Deaconesses, who were to be permitted to take services, baptize, and preach, which no doubt women of a certain type would with unction do. It was with extreme timidity that he questioned episcopal infallibility, but he ventured to think that the working women of Burnley had shown more wisdom than the bishops in coming to the conclusion, as they had done at the very time of the Lambeth Conference, that there were sexual differences, and that they must leave the mills to the men and stay at home to look after the babies. "For men must work and women must sweep" might be their motto, but perhaps the men might help in the sweeping too.

Dealing with tuberculosis, the president pointed out that after January 1, the insurance committees would have no further responsibility for the sanatorium treatment of insured persons. There seemed to be uncertainty as to where the payments for the treatment of the insured were to come from. It was of the utmost importance that this should be settled without delay, as the demand for treatment was likely to increase largely. One of the evil legacies bequeathed by the war had been an increase of tuberculosis. In England, which seemed to have suffered far less than any other country, the tuberculosis death rate rose from 104 per 100,000 living in 1914 to 137.6 in 1918. It might be anticipated that with a return to more normal political, economic and social conditions there would be a diminished loss of life from tuberculosis. But it might be long before we returned to pre-war conditions. Adverse influences were at work. We had with us great numbers of war-broken and war-worn men, many of

whom had suffered from wounds of the chest or gassing, and who were exceedingly liable to succumb to tubercular disease. It was estimated that there were at present in London 90,000 suffering from tuberculosis. In resisting the attacks of tuberculosis it was practical sanitation in all its branches that was to be depended on. Above all, it was by improved housing that we could reduce the ravages of tuberculosis. Sanatorium treatment was, at present, as it were, under a cloud. He admitted that it had not fulfilled expectations, but these expectations were much too sanguine. It was foolishly boomed by some of its promoters as an almost certain cure, and so there had been widespread disappointment. But our sanatoriums had not, as yet, had fair play. Patients had not been sent to them soon enough, and had not had suitable after-treatment when they had left them. It was now found that at least six months' residence in a sanatorium was necessary to consolidate a cure, even in favorable cases, and it was to be hoped therefore, that hereafter longer duration of treatment would be secured whenever recommended, care being taken that in the case of married men they were given that peace of mind without which treatment could not be fully efficacious, by a liberal allowance to their wives and children while they were away from home. A prolonged convalescence under medical supervision and guidance, and a nicely graduated return to work in a wholesome environment, were necessary if the damaged lung was to be made sound and resistant, and hence the value of industrial and training colonies in which light but remunerative employment, in the open air wherever possible and under medical regulation could be given to patients leaving sanatoriums. Such colonies could not be self-supporting. They must be subsidized from public funds; but considering the excellent results they were already yielding it would be a misfortune if they were not included in our national anti-tuberculosis armament. It would be deplorable if faith in sanatorium treatment should be lost. It was possible that they would yet be able to vaccinate against tuberculosis as successfully as they did against smallpox. Sir James Crichton-Browne's remarks concerning sanatorium treatment were apropos. It is perfectly true that sanatorium treatment in itself and by itself is not regarded with the favorable eyes it was a few years ago. It is also true that, to some extent, the swing of the pendulum is due to the exaggerated statements made as to the wonderful, almost magical effects of sanatorium treatment. This form of treatment has been weighed in the balance and found wanting, that is it certainly will not cure tuberculosis after it has reached a certain stage. But will any treatment cure the disease after it has obtained a hold on the system, and is it not likely always to recur under trying conditions when this is the case? Tuberculosis in the incipient stage can be cured but it is so difficult to meet with cases of this kind and when met with it is quite as difficult to persuade the sufferers, especially if they are working men, to undergo proper treatment. When the disease has become established, the sanatorium has its place in treatment, and industrial settlements and clinics are essential supplements, but it is probably the fact that when once an individual has passed a certain stage in the course of the disease he or she is never fit for the rough and tumble of life again. Both for their own sakes and even more for the good of the community at large, they should lead a life apart, in industrial settlements or colonies and under medical supervision. Among other matters in connection with public health discussed at the Conference was the question of the smoke nuisance. Mr. E. W. Hill of Birmingham, moved that more vigorous action was necessary, from both domestic and industrial points of view, to abate the smoke nuisance, and that the Ministry of Health should introduce stringent legislation to this end. Mr. F. Gentry of Fulham, in seconding the resolution, said only smoke-consuming stoves should be manufactured. It meant scrapping a lot of plants but that was a small matter when they remembered that 25 per cent. of sunshine was now cut off from our cities and towns by smoke. The milk supply was deteriorated in quality when cows grazed in smoke areas, and the only remedy was to remove the cows. The resolution was adopted.

The Future of Hospitals.—The future policy of voluntary hospitals was discussed in Manchester on September 17, last, at a conference arranged and presided over by Sir Arthur Stanley, president of the British Hospitals Association. Sir Napier Burnett said that if hospitals were municipalized they would cost at a very moderate estimate one-third more than at present. He made suggestions for obtaining a large regular income, remarking that the people were willing to give, and it was for the hospitals to set up the machinery. He considered that a state subsidy ought to be limited to a provision of accomodation for patients or staff grants toward new buildings, or money loans to hospitals at a low rate of interest. It was decided to form a regional committee of the British Hospitals Association representing hospitals in the Northwest of England, which will consider a scheme for placing hospitals on a more satisfactory financial basis.

To Fight Typhus.—Mr. Balfour, on behalf of the League of Nations, has addressed a letter to all the governments of the British Empire asking their co-operation in raising £2,000,000 to fight typhus fever. The menace of the disease spreading from Eastern Europe, over the continent of Europe and to the shores of Great Britain, is said to be grave and imminent. Mr. Balfour has issued an appeal to the various governments for the immediate provision of £250,000. In the course of this appeal Mr. Balfour said, "In Russia the disease seems to be epidemic. A medical authority says that it has been swept from end to end by typhus; that scarcely a town or village has escaped; and that half the doctors engaged in combating the pest have died. His statement is confirmed by other witnesses. From the vast center of infection the disease is carried westward by an increasing stream of immigrants. Prisoners returning to their homes, refugees flying for safety, crowd the railways. Two millions of these unfortunate persons have passed the Polish disinfection stations since the armistice

and doubtless many more have entered Poland without being subjected to medical examination. They are pouring into a country already overcrowded where every circumstance, material and moral, combines to favor the spread of infection. So much for the present facts. What forecast can be made about the future? Every competent authority is at one in thinking that the evil is on the increase. Typhus is a disease which normally shows itself more in winter than in summer. If, therefore, conditions were constant, the number of cases at this time of the year should be very small. As a matter of fact, they are not; and it is safe to conclude that, unless effective steps are immediately taken, the plague will be far more deadly in the winter of 1920-21 than it was in the winter of 1919-20." As the *Lancet* points out, no actual work in the direction of staying or limiting the spread of the epidemic can be undertaken until money guarantees have been obtained from the different nations of the league, which so far have not materialized, except in the case of a few countries, including Great Britain and Canada. The same article draws attention to the fact that since little can be done at the present time in Russia, where are the originating foci of the epidemic, owing to political conditions, there only remains the feasible and practical policy of effective epidemic prevention by international action in the border states, especially Poland, Lithuania and Galicia. However, before any steps can be taken, a very substantial sum of money is required, but this sum ought to be forthcoming with the greatest promptitude for humanity's sake and for the sake of self-interest also. To allow the disease to rage unchecked throughout Europe would mean a fearful loss of life and economic disaster.

Obituary.—Lieut. General Sir William Babtie died suddenly on September 15 last while on a holiday at Knocke in Belgium. As a major, R. A. M. C., he won the supreme award of the British army for valor at the battle of Colenso during the South African War. The *Gazette*, in which the announcement was made, said: "The wounded of the Fourteenth and Sixty-sixth Batteries, Royal Field Artillery, were lying in an advanced donga close in the rear of the guns, without any medical officer to attend to them, and when a message was sent asking for assistance, Major W. Babtie rode up under heavy rifle fire, his pony being hit three times. When he arrived at the donga, where the wounded were lying in sheltered corners, he attended to them all, going from place to place exposed to the heavy rifle fire which greeted any one who showed himself. Later on in the day Major Babtie went out with Captain Congreve to bring in Lieutenant Roberts, Earl Roberts' son, who was lying mortally wounded on the veldt, after a gallant attempt to save the guns. This also was under heavy fire." Sir William Babtie, who was sixty-one years of age, was the eldest son of the late ex-Provost Babtie of Dumbarton, Scotland. Having taken his degree in medicine, he entered the army medical service in 1881. In Crete in 1897-8 he was senior medical officer and for his services during the troubles there was given the C. M. G. During the South African War he acted as medical staff officer, being present at the actions leading up to the relief of Ladysmith, and the subsequent operations in Natal and the Eastern Transvaal, his services being recognized by mention in despatches and his promotion to lieutenant-colonel. He became Surgeon-General in 1912, honorary surgeon to the King two years later, and in 1914 went to India as Director of Medical Services. Three months after his arrival the Great War broke out, and he had to provide not only for the Mesopotamia expedition, but for three other overseas expeditions, Egypt, the Dardanelles and East Africa. Sir William was later appointed Director and then Inspector of Medical Services at the War Office, with the temporary rank of lieutenant-general.

The late H. J. Andrews, of the Indian Medical Service, who had been awarded the V. C. for distinguished bravery in India, was the son of Salvationist parents, and although only forty-eight when he was killed in the act of attending to the wounded, he had been himself an officer of the Salvation Army for over thirty years in India. Commissioner B. Cowers, who was in charge of the Salvation Army's work in India, writes that to Dr. Andrews the Salvation Army owes the commencement of its medical work there. He began its work at Nagercoil with a penknife and a razor for surgical instruments, and his first operations were performed in a bathroom. From that beginning he brought into existence a creditable hospital, which he handed over to Dr. Percy Turner, another Salvation Army officer. From Nagercoil he went to Anand in Guzerat. Up to this time he was without recognized medical qualifications, and he and his leaders thought he ought to qualify. He took his medical course, passed with honors, and returned to India to bring into existence another medical center at Moradabad. For all these buildings he was his own architect and overseer of construction. The Moradabad hospital was used for three years for war purposes, and the military authorities took it in many ways as a model.

On September 2, last Dr. Frederick Rutherford Harris died at Eastbourne at the age of sixty-four. Son of a judge in Madras, he studied medicine at Edinburgh University, qualifying M. R. C. S. in 1889 and L. R. C. P. Lond. in the following year. For a time he practiced medicine in Kimberley, South Africa. He then became associated with Cecil Rhodes, who appointed him secretary of the British South Africa Company. South African and later English politics became his chief interest. He was member for Kimberley in the Cape Parliament, and in 1903 was returned to the House of Commons as member for Dulwich.

Progress of Medical Science.

Boston Medical and Surgical Journal.

October 7, 1920, clxxxiii, 15.

1. Orchitis in Mumps. Conrad Wesselhoeft.
2. Why Relief of Joint Troubles Is Easy or Difficult. Herman W. Marshall.
3. The Influence of the Medical Profession on Medical Legislation and the Public Welfare. John B. Hawes.
4. Transfusion in Obstetrics. R. S. Titus.

1. Orchitis in Mumps.—Conrad Wesselhoeft collected, from all the sources at his command, in which the percentage of orchitis is given, 8,153 cases of mumps,

with 1,468 cases of testicular involvement, giving a total incidence of 18 per cent.

4. Transfusion in Obstetrics.—R. S. Titus holds that the ideal of obstetrics is not reached until all has been done that can be done to safeguard the patient against any and all disasters. The accidental bleeding cases, however, are the ones which by no examination can one anticipate. For all loss of blood there is nothing like replacing blood, and severe shock is best treated by blood transfusion. It has been the writer's custom for some time to match the blood of each patient with the blood of the husband and with the blood of a group four person. This is done within six or eight weeks of expected delivery. Strangely enough, in only one case was the husband's blood compatible; on the other hand, the group four person has been compatible with the pregnant patient's blood in every instance. This routine, of course, is not practicable in clinics taking care of patients at home. So far as hospital practice goes, all patients who have had any hemorrhages and cases in which the possibility of hemorrhage is present, should be matched in order to meet the emergency should it arise.

New York Medical Journal.

October 9, 1920, cvii, 15.

1. The Diagnosis of Inflammations of the Male Urethra. Araham L. Wolbarst.
2. The Comparative Anatomy of the Genitourinary Organs of the Lower Animals. Henry Tucker.
3. Syphilis as a Cause of Delayed Healing in the Non-infected Abdominal Incision. William Edgar Darnall.
4. An Early View of Visceral Disease. Hon. William Renwick Riddell.
5. The Modern Treatment of Syphilis. Oscar L. Levin.
6. The Conquest of Venereal Infection. Ettie A. Rout.
7. Results in the Treatment of Neurosyphilis. Philip Goldfader.
8. Disorders of Function of the Urinary Bladder. Sergeant Price Martin.
9. The Wassermann Reaction. Charles Greene Cumston.

3. Syphilis as a Cause of Delayed Healing in the Non-infected Abdominal Incision.—William Edgar Darnall, in an experience which covers an active service of nearly twenty years, could find but three cases of delayed healing in non-infected abdominal incisions, among hundreds of such cases. This comparative infrequency accords with the experience of most of those discussing the question. No surgeon seems to have had many cases, and yet all can point to a few. His own cases are not enough for definite conclusions, but two were undoubtedly syphilitic and the other was probably so. This evidence is enough to suggest syphilis as one of the causes of delayed healing in the abdominal incision.

7. Results in the Treatment of Neurosyphilis.—Philip Goldfader bases this contribution on a review of the results of treatment of neurosyphilis as conducted by the urological service of the Brooklyn Hospital during 1918 and 1919. In order to treat neurosyphilis successfully the treatment must be instituted as early as possible. Since the spinal fluid is involved in from sixty to seventy-five per cent. of cases during the secondary stage and in twelve to twenty-five per cent. of the cases the pathological changes of the fluid persist, one should be on the watch for early involvement of the central nervous system. During the two years covered by this report diagnostic lumbar puncture was performed in sixty-one cases, which included syphilitic patients who had symptoms referable to the nervous system and those who were ready to be discharged. Out of that number eleven, or eighteen per cent., gave positive fluid findings showing involvement of the central nervous system. During the same period 210 intraspinal treatments were given to forty-two patients. The number of treatments given to any one patient varied between one and thirty. The forty-two patients were divided clinically as follows: Twenty-nine cases of tabes, or 68 per cent.; twelve cases of cerebrospinal syphilis, or 29 per cent.; one case of paresis, or 3 per cent. The diagnosis in each case was determined by history, physical examination, blood Wassermann, and spinal fluid examination. In a few cases no improvement was noted either clinically or serologically; brilliant results were obtained in a few cases, and definite results in a considerable number. It is therefore felt that the results are better with the combined method of treatment than with the intravenous method alone. The tabulated results are as follows: Improved, 27, or 64 per cent.; unimproved, 14, or 33 per cent.; died, 1, or 3 per cent. The writer believes that when properly performed intraspinal treatment is indicated as a routine in all cases of syphilis where clinical symptoms and examination of the spinal fluid indicate involvement of the central nervous system.

Journal of the American Medical Association.

October 9, 1920, lxxv, 15.

1. Clinical Observations on the Digitalis-Like Action of Squill. Paul D. White, Gerardo M. Balboni and Louis E. Viko.
2. Infectious Eczematoid Dermatitis. Richard L. Sutton.
3. Some Observations on Chronic Nephritis, with Special Reference to Chronic Interstitial Nephritis. L. A. Turley.
4. Metrotherapy, or the Measure of Voluntary Movements: Its Value in Surgical Reconstruction. Fred H. Albee and A. R. Gilliland.
5. Social and Medical Aspects of Childhood Delinquency. Sanger Brown, II.
6. Suspected Asynchronism of Respiratory Movements in Lobar Pneumonia. C. F. Hoover.
9. Importance of the Vital Capacity in Thoraic Surgery. Evarts A. Graham.
10. Relative Value of Various Operative Procedures Employed in Acute Empyema. Carl Eggers.
11. Potency of Some Old Human Isohemagglutinating Serums. M. W. Lyon, Jr.
12. An Important Factor in the Successful Treatment of Malaria. L. R. DeBuys.

1. Clinical Observations on the Digitalis-Like Action of Squill.—White, Balboni, and Viko, in the observations detailed in this contribution, employed the five assay tinctures of squill, all obtained from good pharmacists, and all tested in the Department of Pharmacology of Harvard Medical School. The effect of squill on thirteen cardiac patients with auricular fibrillation and on one with auricular flutter was studied. Their findings are summarized as follows: 1. The digitalis-like action of squill has been studied in fourteen cases of heart disease, complicated by auricular fibrillation in thirteen cases and by auricular flutter in one case. 2. The two definite clinical signs of digitalis action are the production of heart block and the lowering of the *T* wave of the electrocardiogram. 3. Heart block was produced in this series by the standardized tincture of squill only in large dosage. 4. The *T* wave of the electrocardiogram was flattened or inverted by large doses of the squill, similarly as by digitalis. 5. No diuresis occurred even with very large doses of the standardized tincture of squill, except in two cases of edema after the pulse rate had been reduced and the circulation improved. 6. Toxic symptoms were very rare, even with the largest doses. 7. With the reduction in pulse rate (and diuresis) there was subjective improvement in some of the cases. 8. Finally, the conclusion is justified that squill does have a definite digitalis-like action, but only in larger dose than that now stated as an average. e.g. from 2 to 4 drams (8 to 16 c.c.), instead of 15 minims (1 c.c.) of the tincture at each dose.

2. Infectious Eczematoid Dermatitis.—Richard L. Sutton expresses the belief that while the conception of infectious eczematoid dermatitis—a term which is lacking in grace and euphony, as well as in accuracy, but he knows no appellation that will adequately take its place—as first described has undergone some changes, these changes tend to increase rather than diminish the clinical importance of the disorder. While infectious eczematoid dermatitis is in no sense of the term a purely anaphylactic manifestation, in many instances there is a concurrent eruptive phenomenon which can be ascribed to no source other than that of allergy. The association of the two conditions is too frequent to be due to accident alone. In a series of seventy-four case histories, selected at random and scattered over a period of two years, he found a record of concurrent urticarial eruptions in nineteen instances (more than 25 per cent.). The antecedent disorders varied greatly, but were fairly characteristic: lacerated, infected wound of the hand; furuncle of the right thigh; scabies; infected ingrowing toe nail; ecthyma; infected wound of the right forefinger; otitis media; infected, incised wound of the right hand; infectious discharge from the nose; infected wound of the right shin; furuncle of the left axilla; paronychia; infected wound of the thumb, and furuncle

of the scalp. As a rule the anaphylactic manifestations did not appear until after the staphylococcic disorder was well under way. A considerable percentage of these patients had never before suffered from urticaria. In a few instances the wheals were accompanied by vesiculation, with subsequent infection and pustulation. As a rule, the pustules did not heal promptly. The problem of successful treatment is often a vexatious one. Sutton has found, in the earlier stages of the disease, that a mild astringent, such as an aqueous solution of aluminum acetate (0.5 per cent.), or even lead and opium lotion, is more effective than one of the greasy preparations. At the end of forty-eight or seventy-two hours, however, one may profitably begin the use of a weak ammoniated mercury ointment (2 per cent.), together with a bland dusting powder containing a small amount of boric acid. After the tendency to suppuration has been overcome, phenolated zinc oil may be substituted for the mercurial ointment. For the relief of the pruritis which often accompanies the urticarial lesions, calamine lotion, to which liquor carbonis detergens (from 2 to 10 per cent.) has been added, affords much relief. If necessary a small amount of phenol (1 per cent.) or menthol (0.5 per cent.) may be added to the ammoniated mercurial preparation, and the ointment used in conjunction with the lotion. It may be necessary to supplement the local treatment with internal medication and vaccine therapy.

9. Importance of the Vital Capacity in Thoracic Surgery.—Evarts A. Graham. See MEDICAL RECORD, June 5, p. 975.

10. Relative Value of Various Operative Procedures Employed in Acute Empyema.—Carl Eggers. See MEDICAL RECORD, June 5, p. 975.

The Lancet.

September 18, 1920, cxcix, 12.

1. The Lumleian Lectures on the Clinical Experiences of a Physician During the Campaign in France and Flanders, 1914-19. Lecture ii. Sir John Rose Bradford.
2. Diurnal Variations in the Hemoglobin Content of the Blood. Georges Dreyer, H. C. Bazett, and H. F. Pierce.
3. Rupture of Cesarean Section Scar in Subsequent Pregnancy or Labor. Eardley Holland.
4. Public Health in Soviet Russia. (*To be concluded.*) L. Haden Guest.
5. The University Problem. Sir Edward Sharpey.

2. Diurnal Variations in the Hemoglobin Content of the Blood.—Dreyer and his associates describe the method employed and record observations carried out on goats and men. They found that the diurnal variations in hemoglobin percentage met with in man and animals are very cosiderable and may even reach as much as 30 per cent., while 10 per cent. changes are of more or less common occurrence. On an average the excursions seem to be more marked in individuals or animals with a low hemoglobin content of the blood. In attempting to establish the normal hemoglobin content in a series of individuals it is essential to take the observations at a time of the day when the daily variations are found to be of the smallest, *i.e.* late afternoon between 5 and 7 P. M. In the study of the phenomena where alterations in the concentration of blood are concerned it is necessary to view them in the light of the marked normal diurnal variations that may occur.

3. Rupture of Cesarean Section Scar in Subsequent Pregnancy or Labor.—Eardley Holland discusses this subject under the following heads: (1) An account of five new cases. (2) A general discussion on the etiology and anatomy of ruptured scars and an analysis of the literature. (3) The results of a follow-up inquiry into the subsequent obstetric history of a large number of cesarean section patients operated on between 1912 and 1918. From this study he draws the following conclusions: 1. The frequency of rupture of the cesarean section scar in subsequent pregnancy or labor (abortions excluded) is 4 per cent. 2. The cause of ruptured scar is imperfect healing, leading to a thin scar in which muscular union has failed, and which consists of little more than peritoneum and decidua with a varying amount of intervening fibrous tissue. 3. All thin scars stretch during pregnancy; rupture of a thin scar may be determined solely by the intrauterine tension of normal pregnancy or by the uterine contractions of normal labor; or it may be favored by various accidental factors, of which the chief is insertion of the placenta over the scar, with partial separation of the placenta and retroplacental hemorrhage. 4. Other accidental factors are overdistension of the uterus, prolonged or obstructed labor, operative interference, such as internal version, the insertion of hydrostatic bags, and the administration of such drugs as pituitrin. 5. In the reported cases rupture occurred almost as often during pregnancy as during labor (in proportion of three to four), and many cases have been reported as early as the seventh month of pregnancy. 6. The chief cause of imperfect healing is infection of the uterine wound; other causes are imperfect methods of suture and the employment of unsuitable suture material. 7. As regards the suture material, catgut should not be used, for the liability to rupture after catgut is two and a half times the liability after silk. For theoretical reasons silkworm gut is the most suitable material. 8. As regards the incision, the scar of the transverse fundal incision is especially liable to rupture. Only one case has so far been reported of rupture of the scar of the cervical incision.

British Medical Journal.

September 18, 1920, ii, 3116.

1. Introductory Remarks (Section of Pathology and Bacteriology, British Medical Association). Professor J. Lorrain Smith.
2. The Bacteriology of Cerebro-Spinal Meningitis. Opening paper by Joseph A. Arkwright.
3. Bacteriological Studies of Cerebro-Spinal Fever Among Troops (1914-1918). M. H. Gordon.
4. A Summary of the Results of the Serum Treatment of 267 Cases of Cerebro-Spinal Fever. T. G. M. Hine.
5. The Meningogoccus "Carrier" Question. C. W. Ponder.
6. The Meningococcus Carrier Rate: Its Relation to Prophylaxis Against Cerebro-Spinal Fever. J. Allison Glover.
7. Paths of Infection. W. E. Carnegie Dickson.
8. Diplococcus Crassus and Meningitis. J. Graham Forbes.
9. A Physical Therapeutic Centre: An Experiment by the North Stratfordshire Coal and Iron Masters Along the Suggested Lines of Future Medical Service. T. Lister Llewellyn.
10. Neurological Jottings—II. James Taylor.
11. A Simple Method of Combining Ether Administration with the Vernon Harcourt Inhaler. H. P. Fairlie.

4. A Summary of the Results of the Serum Treatment of 267 Cases of Cerebrospinal Fever.—T. G. M. Hine realizes that the series of cases collected is far too small to give really reliable statistical figures; nevertheless much may be surmised from a careful analysis of the material available. Of the 267 cases, all treated with the monotypical serum, 18 died of some other disease following on the cerebrospinal fever; indeed, several of the cases were said to have been cured of the cerebrospinal fever before contracting the fatal one. Of the remaining 249 cases all were diagnosed bacteriologically. In these cases the mortality was 31.72 per cent. Of the 249 cases it was found that in 48 the type of invading coccus was never clearly determined, or that it was found too late to be of any value in treatment. As this report is concerned only with cases which received the appropriate serum, these 48 cases are discarded, which leaves 201 cases, with 57 deaths—a mortality of 28.36 per cent. These 201 cases are divided into two groups: (a) cases in which treatment started before the sixth day and was given in adequate amount; (b) those in which serum was first given after the sixth day or insufficiently, and cases moribund when first seen. The first group contains 141 cases with 27 deaths, or a mortality of 19.14 per cent.; the second group has 60 cases with 30 deaths, or a mortality of 50 per cent. From these figures he concludes that the serum must be administered reasonably promptly to be of value. It is of the utmost importance for the proper treatment to ascertain the type of the coccus at the earliest moment possible, as therein lies the only chance of applying curative serum scientifically. It is important to give the serum in adequate quantities and to resolutely stick to the treatment. This, however, is very difficult to prove by figures. It was laid down as a direction early in the epidemic that serum should be given not only as early as possible, but repeatedly daily for at least four days after treatment had commenced, whether the patient was better or not.

5. The Meningococcus "Carrier" Question.—C. W. Ponder confines himself in this report to one clean-cut section of the population tested. At Cambridge in

1916 two cases of cerebrospinal fever had been notified, both in the month of March. In October, seven months after the last case, he swabbed the nasopharynx of most of the staff and employees at the Cambridge Scientific Instrument Company's works outside the town. It should be noted that these employees were earning good salaries and wages and therefore lived in comfortable homes; that none of them had come in contact, to his knowledge, with a case of cerebrospinal fever; that for seven months in a town of about 40,000 population there had been no cerebrospinal fever; and that most of the employees had lived and worked there for many months. This could therefore be described as a "noncontact" population so far as could be found. The following results were obtained: Of the 100 employees swabbed, 41 yielded colonies on Kutscher's medium indistinguishable from meningococcus; in 28 plates such organisms were present either in almost pure cultures or in large proportions. From these plates, 38 of the meningococcus-like organisms gave sugar reactions of meningococcus and good agglutination (generally with serum 1 in 400 or 1 in 800) with one of the monovalent antimeningococcal serums employed. Thus, 38 per cent. of the employees, by cultural and agglutination tests would have been classified as meningococcus carriers if a case had occurred in the works. Further, absorption tests, following as closely as possible the technique recommended by Gordon, were carried out on 19 strains of the above 38 agglutinating strains; of these, 9 absorbed the agglutinin as well as the homologous coccus, and 4 absorbed it partially. Presumably, therefore, 26 per cent. of these employees who had not been in contact with cerebrospinal fever were harboring organisms in their throat which were indistinguishable by every test known from the true meningococcus.

New Orleans Medical and Surgical Journal.

October, 1920, lxxiii, 4.

1. Is It Scientific to Give Vaccines on a Clinical Diagnosis? G. H. Sherman.
2. The Operative Cure of Pruritis Ani and Vulvæ. Carroll W. Allen.
3. The Role of the Physician in Physical Education. C. M. Menville.
4. Typhoid Fever. (*Abstract.*) Lodilla Ambrose.

2. The Operative Cure of Pruritus Ani and Vulvæ.—Carroll W. Allen describes an operation for this condition which has in view the separation of the skin from the underlying tissue, thus dividing all nerves which reach the affected parts, rendering them anesthetic, and preventing the skin from immediately healing to the underlying tissues by packing, which is kept up until a firm bed of granulation has formed. This usually requires about one week, when the packing is discontinued and the skin allowed to fall back in place, where it is soon again firmly united, leaving an anesthetic area which nearly equals the extent of the undermined area. In the anal region a series of incisions are made, beginning at the anal margin and continuing outward to about one-half inch beyond the affected area, which rarely exceeds two inches. The incisions are made about one inch apart at their peripheral extremities until the entire perineal region has been covered. The operation upon the vaginal outlet is performed in the same general way. After dissecting up the skin flaps the space beneath is packed with iodoform gauze. After the packing is removed the parts quickly unite. The total disability is about two weeks.

Southern Medical Journal.

October, 1920, xiii, 10.

1. Responsibility of Physicians Who Treat Malaria Cases. C. C. Bass.
2. The Effect and Maintenance of Intra-Abdominal Pressure. J. B. Fitts.
3. The Occurrence of Gallstones in Young Individuals. Julius Friedenwald and Alfred Ullman.
4. What Are We Doing for the Mentally Backward Child? Charles E. Boynton.
5. Cooperative County Health Work in North Carolina. B. E. Washburn.
6. A State Law Regulating the Construction and Maintenance of Privies. K. E. Miller.
7. Cranioplasty: Indications, Operation, and Results. Joseph E. J. King and Gilbert C. Anderson.
8. Reminiscences in Bone Surgery with Special Reference to Pott's Disease. R. Tunstall Taylor.
9. Non-Hypertrophic Forms of Prostatic Obstruction. Bransford Lewis and Neil S. Moore.
10. Abdominal Pregnancy: Case Report. E. B. Wren.
11. General vs. Local Faucial Tonsil Removal. Frank D. Boyd.
12. Simplified Technic for Local Anesthesia of Tonsils—Intranasal Surgery Without Packing. W. T. Patton.
13. Medical Education from the Viewpoint of the Fifth-Year Graduate. Guy A. Caldwell.
14. Medical Education by a Fourth-Year Student. Dan Collier Elkin.

5. The Occurrence of Gallstones in Young Individuals.—Friedenwald and Ullman, since 1896, have met with five cases of cholelithiasis occurring in adolescents, three of whom came to operation, the diagnosis in the other cases being made from the passing of gallstones. Brief histories of these cases are given. From their observations, together with those of other writers, the following conclusions are formulated: 1. Gallstones are rarely observed before the twentieth year, though youth affords no absolute immunity. In the five cases the ages varied between fifteen and eighteen years. 2. As in older individuals, in the young the condition is found more commonly in females than males. In this group there were four females to one male. 3. The clinical picture in the young is quite similar to that observed in adults. Pain and tenderness under the right costal arch are constant symptoms and were present in all the cases. Jaundice is common and was present in three cases. 4. In none of the cases was there evidence of any fecal or general infection which could be considered as a causal factor.

4. What Are We Doing for the Mentally Backward Child?—Charles E. Boynton, under the head of treatment in general, makes the following suggestions: 1. Never make a diagnosis of idiocy unless the size of the head rules out all possibility of any hope of improvement. 2. Have a Wassermann made to rule out syphilis or treat it, if found, and have the eyes examined by a competent oculist to exclude amaurotic family idiocy. 3. Examine the child thoroughly, and especially for evidence of insufficiency of the endocrine organs. 4. Examine the urine, stools and blood for evidence of any toxic conditions. 5. See that the child is well nourished and that proper food is supplied. 6. Employ tonics and general hygienic measures, not forgetting to give plenty of water. 7. Try in every way possible to attract the attention and teach the child to concentrate the gaze; feel of the hands and educate the grip, the muscles and special senses. 8. Endeavor to secure the mother as an ally. Encourage and train her as much as possible without promising her anything. If she is intelligent and will cooperate, she makes the best possible trainer up to the time the teacher or the psychologist is ready to take charge.

Il Policlinico.

June 7-14, 1920, xxvii, 23-4.

Medical Treatment of Dysenteric Hepatic Abscess.—Pontana sums up his serial article on this subject as follows: The work of the clinic and laboratory shows that in masked dysentery the *Ameba histolytica* is recognizable in the feces and in the "pus" in positive puncture of the liver, but a negative result does not exclude hepatic "abscess." The punctate is not really pus, but an albuminous fluid containing cellular detritus, a few degenerated cells, red blood corpuscles, fatty droplets and fat crystals. This find is so characteristic that even in the absence of anything specific the author regards it as diagnostic of hepatic abscess. The fact that this fluid is not true pus may explain why a medical cure is attainable. Emetine chloralhydrate injected intramuscularly in proper dosage will arrest suddenly the necrotic process and cause the absorption of the socalled abscess. If microorganisms can be cultivated from the "pus" emetine proves equally curative. for in this situation such organisms are to be regarded as saprophytic and they are rapidly destroyed. If the organisms are truly pyogenic and can transform the fluid into true pus no medical treatment will avail and surgical intervention is imperative. Neither the severity of the disease nor the size of the "abscess" are contraindications to medical treatment. The coincident dysentery must, of course, be treated. If multiple "abscesses" form they may be beyond the reach of sur-

gery if the latter is indicated. Generally speaking, the amebic abscess must pass back from the domain of surgery to that of medicine.

La Presse Médicale.

July 31, 1920, xxviii, 53.

Quinine in Fibrillation and Tachysystolia.—According to Schrumpf of Lausanne, quinine seems to exert a curative action on fibrillation and auricular tachysystolia occurring in paroxysms. He however is not yet convinced of the truth of this claim. It is certain that once these conditions become fully established, quinine cannot modify them. Quinine appears to transform fibrillation into tachysystole and to regulate the action of the ventricle. In these two conditions quinine improves the circulation and regularizes the pulse, but not by suppressing either the fibrillation or the tachysystolia. Regulation of the ventricular action may be brought about either as a result of auriculoventricular block or through the development of a regular tachysystole. Quinine is best given with digitalis of high dosage, and preferably in prefibrillation cases and early cases of fibrillation; here their synergism appears to be perfect.

Intramuscular Injections of Ether in Pertussis.—Cheinisse gives a synthetic review of the labors in this field of Weill, Dufourt, Audrain and Castel, Renard, Deherripon, Dalche, Variot, Courcoux, and others. The consensus of favorable reports and opinions makes it almost certain that this resource surpasses anything heretofore tested for this malady. There are some differences of opinion, as when Dufourt asserts that the treatment is valueless after bronchopneumonia has complicated the pertussis, while Deherripon finds it completely suited to the complication of these conditions because the ether serves as a cardiac stimulant. As a coincidence a recent writer on bronchopneumonia in infants (Lasalle of Thonon), without reference to the cause in the individual case, recommends ether injections for the disease.

La Presse Médicale.

August 11, 1920, xxviii, 56.

Inflamed Axillary Lymphnodes in Nonulcerated Breast Cancer.—Bonneau describes a case of this type in a woman of fifty-seven who had never borne nor nursed a child. There had been a small lump in the breast since the age of eighteen and seven years before her visit she was advised to have it removed. She did not take this advice and four years later noted discomfort on moving the arm, swollen arm veins and pain. She still refused operation until the nipple showed retraction, when she consented. The tumor was the size of an orange, the skin above was adherent, but there were neither deep adhesions nor axillary lymphnode enlargement. Halsted's operation was performed and a neoplastic focus was seen in the extirpated mass, but there were none of the usual evidences of malignancy. There was no tumor capsule, and no deep adhesions and the muscles, skin and nipples were intact. There were a number of small axillary lymphnodes, not cancerous. The microscope showed an epithelioma of low proliferative activity; infiltration of the cancerous type could be seen and there were central and peripheral sclerotic processes. With few exceptions all the changes in the lymphatic system represented a reaction of inflammatory type. This growth is not of the type of the ordinary closed breast cancer because of its low malignancy. Noncancerous enlarged lymphnodes are not uncommon in closed cancer of the breast, and in 1909 Fague wrote a thesis on this subject. Another point of interest lay in the fact that the woman was fat, which usually makes against a favorable prognosis. In cases like the present to clear out the axilla and take the other steps incident to a radical operation is meddlesome and leads to great disability. The only resource in theory is to open the axilla and excise a portion *en bloc*, then making sections with the freezing microtome. If the lymphatics are found to be noncancerous, Bonneau says, the dissection of the axilla may be discontinued and the wound closed.

La Riforma Medica.

July 31, 1920, xxxvi, 31.

Postinfluenzal Immunity.—Falcioni anticipates by the statement that the general belief is in favor of an acquired immunity following the pandemic of 1918. This, however, is limited and may extend over not more than four months, but usually a year or even longer. A society formed for the study of influenza in Milan which met last April came to certain conclusions. The absence of laboratory criteria, the numerous types and varieties of influenza so called, the regular winter and spring visitations, etc., all play a rôle in the discussion of immunity. The fact that the same subject has undergone several successive attacks of "influenza" need not mean that he has no immunity. But another element may help us here. True influenza is highly contagious, passing rapidly through a family and from one to another. In two successive waves of this type it was often noted that the immunes of the second wave had been victims of the first wave; and that those who escaped the first wave often succumbed to the second. The immunes of the second wave were true immunes, for they were frequently exposed in caring for the victims of that wave. This sort of immunity lasted not only from May-June to October, but was also in evidence during 1919. Hence the author's criterion of one year or more of immunity for the majority originally attacked. In a minority of cases, in which victims of the May-June wave escaped the October wave, we can only speak with certainty of about four months' immunity, for a certain number contracted the disease in 1919. This contingent seems to have been very small. The fact that the early victims were protected during 1919 goes to show that influenza in that year was the genuine disease and not one of the milder or false types. The author does not appear to have any belief in the theory of a life-long immunity following an attack of genuine influenza. Yet many who had suffered from an attack of influenza in the epidemic of 1889-90 escaped during the pandemic invasion of 1918-19, and such were generally credited with an immunity conferred by their attack twenty-eight years before.

Revista Española de Medicina y Cirugia.

May, 1920, iii, 23.

An Epidemic of Nephritis.—Roset of Valls states that in 1904, month of April, a quasi epidemic of nephritis appeared in Valls. It followed a cold spell and there was seen at the same time an accumulation in the usual incidence of erysipelas, phlegmons, puerperal infection, anginas and diphtheria. Both sexes and all ages were affected by the morbidity. The exact number of cases of nephritis was 21 in a population of 13,228, or 1.6 per 1,000. Most of the 21 consulted for edema of the face and hands. In no instance did a case of nephritis follow an angina or other focal condition. The urine showed a tendency to hemorrhage and contained a pyogenic streptococcus. A few of the patients developed uremia. In one elderly patient the acute affection became chronic. In one youth of eighteen the affection pursued a fulminating course, uremia supervening at an early date; the patient was given up, but a hot bath was followed by extensive critical diuresis. It is of interest to note that two years after this episode Eichhorst, the well known Swiss clinician, reported two cases of the same type. None of the cases is mentioned as having ended fatally.

Adenoid Vegetations in the Adult.—Suñé Medán of Barcelona analyzes 62 cases of adenoids in the adult, of which number 41 occurred in males. The word adult, however, is misleading, for the author apparently regards the period of childhood as extending only to the age of thirteen, while adolescents are classed as adults. There are twenty cases in the age period twenty-two to forty and six patients were aged thirty and upward. There is no case over forty, although rhinologists state that cases are seen in advanced age. The author elsewhere analyzes his material as follows: there were thirty cases in the "period of puberty" and thirty-two in the "adult" period, which he reckons as from eighteen upward.

Book Reviews.

TREATISE ON GENERAL AND INDUSTRIAL INORGANIC CHEMISTRY. By DR. ETTORE MOLINARI, Professor of Industrial Chemistry at the Royal Milan Polytechnic and at the Luigi Bocconi Commercial University at Milan. Second edition, translated from the fourth revised and amplified Italian edition by THOMAS H. POPE, B.Sc., F.I.C., A.C.G.I. With 328 illustrations in the text and two phototype plates. Philadelphia: P. Blakiston's Sons and Co., 1920.

THE scope of this magnificent work is indicated by the title. It will be seen that the book is not a chemistry for medical students, but even medical schools should have the volume on their library shelves. The practical applications of chemistry to the various arts and industrial processes are handled here in a satisfactory manner. Useful tables of statistics and of the cost of raw material occur frequently. The discussion of the fundamental laws and principles of chemistry occupy the first part of the book, and their presentation from a somewhat novel angle adds to the interest of the topics. There seems to be some variation in the date of the statistics given; in some cases the figures are brought down to 1916, while in many others they are carried only as far as 1911. It is doubtful if the cost of the various materials has remained constant; indeed, it may be questioned if any of the prices quoted are of more than historical value. The volume deserves a much better index than it now possesses; a book of 850 large pages, bristling with information, cannot be satisfactorily indexed in seventeen pages. We have looked in vain for the Carrel-Dakin solution, both in the index and also in the body of the book, but perhaps that item does not come within the scope of the volume.

THE CATARRHAL AND SUPPURATIVE DISEASES OF THE ACCESSORY SINUSES OF THE NOSE. By ROSS HALL SKILLERN, M.D., Professor of Laryngology, Medico-Chirurgical College, Post-Graduate School, University of Pennsylvania; Late Lieutenant-Colonel, M. C. U. S. A.; Fellow of American Laryngological Society; Fellow of the American College of Surgeons; Fellow of the American Laryngological, Rhinological and Otological Society; Fellow of the New York Academy of Medicine, etc. Third Edition. Thoroughly Revised and Enlarged. Philadelphia and London: J. B. Lippincott Company, 1920.

IT is gratifying to learn that this book has survived the turmoil of the war which put an end to much deserving medical literature, and that a new edition has been called for. We do not find much that is new here, nor should we expect to, for in truth there has been but little advance in our management of sinus diseases in the past few years. The author states that, while in service, he was particularly interested in noting the influence of diseased sinuses on the general system, especially on the individual capacity of the recruit and the man in action. What he learned in this respect and also the knowledge gained of war wounds of the sinuses, so far as this applies to civil life, have been incorporated in this new edition.

ARTERIOSCLEROSIS AND HYPERTENSION, with chapters on Blood Pressure. By LOUIS M. WARFIELD, A.B., M.D. (Johns Hopkins), F.A.C.P., Formerly Professor of Clinical Medicine, Marquette University Medical School; Chief Physician to Milwaukee County Hospital; Associate Member Association of American Physicians; Member American Association of Pathologists and Bacteriologists, etc. Third Edition. St. Louis: C. V. Mosby Company, 1920.

AS it is eight years since the publication of the second edition of this work one can appreciate the necessity for many changes in the text to bring the teaching in line with the theories of the present day. A great deal of work has been done in both of these allied fields and a considerable shifting of opinions has taken place. The author, for instance, has discarded the notion of arteriosclerosis as a marked entity with a definite etiology but regards it rather as a simple degenerative process following a number of provocative factors.

The author states somewhat apologetically in the preface that his book embodies his personal views with little borrowing from the literature. He need not apologize, for this is what lends particular value to the book, and if more authors insisted upon their own views and left a review of the literature to writers of encyclopedic treatises, there would be a distinct and most desirable advance in medical teaching. The book is well printed and well illustrated and it is an occasion of satisfaction that it has been deemed worthy of a third edition.

THE X-RAY ATLAS OF THE SYSTEMIC ARTERIES OF THE BODY. By H. C. ORRIN, O.B.E., F.R.C.S., Ed., etc. Price $5. New York: William Wood & Company, 1920.

THIS atlas comprises twenty-one plates of the systemic arteries, the latter having been injected with an opaque substance. The volume therefore counts as an anatomical work which may be regarded as a control of an atlas of dissections of the same vessels. The first three plates are devoted to the fetal arteries after which come the head and neck, upper extremity, thorax, abdomen, pelvis and lower extremity of the adult vessels, concluding with two stereoscopic radiographs of the head and trunk and extremities respectively. Most of the plates are accompanied by a certain amount of illustrative text.

LA EPIDEMIA DE GRIPPE DE 1918-19. Por JOSE W. TOBIAS (Thesis for the Title of Doctor of Medicine, National University of Buenos Aires). Buenos Aires: A. Guidi Buffarmi, 1920.

THIS thesis comprises over 200 pages illustrated by 26 plates. The epidemiology of influenza is first discussed with special reference to the domestic types of the disease. The bacteriology follows, going back to the earliest episodes before Pfeiffer's time. Pathological anatomy is the subject of the third chapter, and the state of all the viscera is considered. The next topic is the interrelationship beginning with the domestic and pandemic influenza. The three remaining chapters are devoted to symptomatology, clinical types, and prophylaxis. There is no separate section on treatment. Many case histories are given with an extensive bibliography.

DIE GESCHLECHTSKÄLTE DER FRAU (Eine Psychopathologie des Weiblichen Liebeslebens). Von Dr. WILHELM STEKEL. Berlin and Vienna: Urban & Schwarzenberg, 1920.

IN a brief review of such a subject we can do little more than give an outline of the plan of the author. His 15 chapters which comprise nearly 400 pages are devoted among other themes to love at first sight, conditions under which love operates on the individual, sexual trauma of adults, psychology of the frigid woman, infantile fixations, the will to "unlust," imagined love, the warfare of the sexes, psychoanalyses of certain patients, etc. The book contains no analytical index. The author, judged by the quotation at the beginning of his book, evidently regards frigidity and lack of attraction towards men as made up of inhibitions and not as elementary defects. Like all works of this type the subject matter is eminently anecdotal, aside from the many detailed case histories. The subjects psychoanalyzed comprised a dyspareunic, a woman compared by the author to Messalina, and a transvestite. The "will to unlust" appears to be a subconscious volition to antagonize sensual pleasure.

X-RAY OBSERVATIONS FOR FOREIGN BODIES AND THEIR LOCALIZATION. By CAPTAIN HAROLD C. GAGE, A.R.C., O.I.P., Consulting Radiographer to the American Red Cross Hospital of Paris. St. Louis: C. V. Mosby Company, 1920.

THIS small volume is dedicated to Béclère, who is the head of the radiological department of the Military Government, Paris, and contains an introduction by Dr. Joseph A. Blake. The number of pages is 83, of illustrations 55. The contents of the volume are wholly technical, which accounts perhaps for its small size. There is no subdivision of the text into chapters or sections. Perhaps the title should have been a "technical manual of localization of foreign bodies, etc." No case histories are incorporated. Although apparently the last word in technique, we note that the book was composed in June, 1917. The Coolidge tube is mentioned only in a footnote as likely to supplant the coil described in the text.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held May 20, 1920.

THE PRESIDENT, DR. GEORGE DAVID STEWART, IN THE CHAIR.

THE program of the evening was arranged in cooperation with the Section of Neurology and Psychiatry.

Experimental Studies in Encephalitis Lethargica, with Lantern Slides.—Drs. ISRAEL STRAUSS and LEO LOEWE made this presentation. Dr. Strauss referred to their former communications, in which they had established the fact that epidemic encephalitis was due to a filterable virus and that they had successfully cultivated this virus. The experimental work embodied in these reports demonstrated the close relationship of the virus and the microorganisms to the nasopharynx. Berkefeld filtrates of the nasopharyngeal mucous membrane from fatal cases of epidemic encephalitis and cultures of these filtrates when injected intracranially into monkeys and rabbits, produced the typical clinical and pathological picture of the disease. The present report was a continuation of this experimental work and indicated the value of animal inoculation in the diagnosis of epidemic encephalitis. Monkeys and rabbits that succumbed were examined post mortem, and microscopic slides of sections were exhibited which showed characteristic lesions, consisting of meningitis with round cell infiltration, perivascular and adventitial infiltration with mononuclear cells, focal infiltration with round calls, punctate hemorrhages and edema. Filtrates of nasopharyngeal washings from a number of patients with epidemic encephalitis were cultivated on kidney-ascitic fluid media, with positive findngs in a large percentage of the cases. Subcultures of many of these strains were taken successfully and carried along through several generations. In a number of instances the organism was recovered from the brains of animals injected with the virus of these nasal washings and in several instances from the brains of rabbits injected with organisms isolated from these nasopharyngeal washings. Cerebrospinal fluids from patients having epidemic encephalitis were injected intracranially into rabbits in amounts of 0.25 to 1 c.c., and about 50 per cent. of the rabbits that died showed the characteristic microscopic lesions. Animal inoculation had served to confirm the diagnosis in about 75 per cent. of the cases included in this study. Cerebrospinal fluids had yielded the filterable microorganism in more than one-half the fluids cultivated. Control studies had been uniformly negative. Briefly stated, their conclusions were: (1) That the virus of epidemic encephalitis could be maintained by regular rabbit passage; that it became a fixed virus, killing the animal on the fourth, fifth or sixth day, with symptoms of torpor, myoclonia, meningeal irritation, fleeting epileptiform convulsions, rigidity and typical lesions. After many passages through this species of animal it became pathogenic for catarrhine monkeys. (2) The virus was not cultivable by the usual methods. (3) It could be preserved in glycerol. (4) It was a filterable virus, passing with facility through Chamberland filters one and three. (5) It could be inoculated into the rabbit either by the cerebellar route or by way of the peripheral nerves. Subcutaneous inoculation had no effect.

Dr. SIMON FLEXNER said he thought all present had reason to congratulate Dr. Strauss, Dr. Loewe, and themselves on the presentation that had been made this evening. This subject of encephalitis lethargica had been and still was a very puzzling one; it was also a very serious one. Those who had come directly in contact with the disease realized the last proposition. The question which had been uppermost in the minds of pathologists had been the relation of this new epidemic disease to other epidemic diseases of the central nervous system, and the one with which we had become most familiar was poliomyelitis. As Dr. Strauss had said, when encephalitis lethargica first appeared in England the two diseases were confused. However, studies of encephalitis lethargica, in relation to its characteristic clinical symptoms, its seasonal incidence, and its inoculability into monkeys went to show that the two diseases were distinct. If epidemic encephalitis lethargica was not poliomyelitis the question was what was it. Was it a new disease, or was it an old disease not recognized before? That question was still a subject of contention. There was a form of encephalitis observed during the epidemic of influenza, and the question arose as to whether it was related in some way to influenza or whether it was merely coincident with influenza. If the work which Drs. Strauss and Loewe had presented was confirmed, then these two diseases would be shown to be entirely distinct from each other. Dr. Flexner said he thought the history of the two diseases as they had appeared recently indicated that they were distinct diseases. Encephalitis lethargica was first described in Vienna in 1916 and 1917, and that was before this last epidemic had occurred. There was no epidemic of the disease here in 1916 and 1917; at least none was recognized. There was such an epidemic, however, in western Europe a year later, coincident with the influenza epidemic, and a similar epidemic had occurred in this country coincident with the influenza epidemic. A post-influenzal form of encephalitis had been recognized since 1892, and it was with this disease that encephalitis lethargica had been confused. The speaker's observations in both epidemics led him to find out if in 1892 there was a worldwide epidemic of encephalitis. There were no records of such a worldwide epidemic of encephalitis following the epidemic of influenza in 1892, and considering the state of medical knowledge at that time if there had been such an epidemic coincident with the epidemic of influenza it would have been noted in the literature of that period. Dr. Flexner stated that he was of the opinion, therefore, that this was an independent disease, not related to poliomyelitis or influenza. Encephalitis lethargica was always present in the winter, while poliomyelitis occurred in the summer and fall. Epidemics of diseases of the nervous system were common in history. One had occurred in New South Wales in 1916-1917, in the summer time. Those who studied the disease there thought at first it was poliomyelitis, and then became convinced that it was not poliomyelitis and called it "X" disease. In a certain article by an Australian writer, who discussed encephalitis lethargica as it occurred in Austria, the opinion was expressed that the "X" disease in Australia was the same as the encephalitis lethargica existing in Austria. The speaker, however, thought that was a fallacious opinion, inasmuch as the incidence of the diseases was different, that in Vienna occurring in the winter and that in New South Wales in the summer, and, in addition, the disease in Australia was easily transmitted to monkeys, while transmission was very difficult in the case of encephalitis lethargica. Moreover, they found that the Australian disease could be transmitted from monkeys to sheep, calves, and horses. If that was true they were dealing with a disease quite unlike epidemic encephalitis and poliomyelitis. The important point from the public health standpoint was: Were there three distinct epidemic diseases of the central nervous system moving about the world to-day? Dr. Flexner said that might be. He had had tissues sent him from cases of the "X" disease of Australia and had studied sections carefully and compared them with sections from cases of poliomyelitis and epidemic encephalitis lethargica. It seemed to him that the epidemic in New South Wales might have been an atypical poliomyelitis.

Dr. Flexner said it would not be fair if he did not say a few words about their experimental work with encephalitis lethargica at the Rockefeller Institute. They had made attempts to communicate the disease to animals and it had failed where the gentlemen from Mount Sinai had been successful. He had not succeeded in spite of the fact that he had used the same materials in a large number of animals, some thirty or forty monkeys and over one hundred rabbits. The materials employed were central nervous system tissues, cerebrospinal fluid, washings from the nasopharynx, and the mucous membrane from the naso pharynx of human beings dying of encephalitis lethargica. This work of Drs. Strauss and Loewe was of the utmost importance if it was confirmed, as he believed it would be, since Levaditi had apparently been successful in reproducing the disease in animals. Why the production of the disease experimentally was so easy for some and so diffi-

cult for others was a question only the future could answer. There was one practical point, however, which he thought should be mentioned, and that was with reference to the use of animal inoculation as a diagnostic measure. This attempt had failed so often in their hands that he would hesitate to place any value on it at the present stage of their studies. The lesions shown by the speaker on the screen, however, closely resembled the lesions of encephalitis lethargica seen in human beings. Dr. Flexner then threw a number of slides on the screen, showing that other affections of the central nervous system produced lesions very similar to those attributed to encephalitis lethargica. Among these were two slides from cases of African sleeping sickness, in which the lesions were very similar to those shown in the cases of encephalitis. The lesions in the African sleeping sickness were more pronounced in the cortex, while those in encephalitis lethargica were more pronounced in the basal ganglia. In sleeping sickness there was a more pronounced meningitis than in encephalitis lethargica. The pathological condition in African sleeping sickness was a meningoencephalitis, but the lesions were similar to those of encephalitis lethargica. The same was true of the Australian disease. The similarity of these lesions indicated that lesions of this kind could be produced by a variety of infectious agents.

DR. WILLIAM H. PARK congratulated Drs. Strauss and Loewe upon the thoroughness with which the work had been done and presented, and expressed the hope that the difference in the results between th two laboratories, that at Mt. Sinai and the Rockefeller Institute for Medical Research, would be cleared up. He said he could understand why they might have had such different results with monkeys if different varieties had been used, but he did not see why there should have been the difference in the experimental work on rabbits. Possibly a difference in the filters might explain the difference in their results. Dr. Park asked if they had found enough mixed infections to suggest that secondary infection might play a part in the picture presented. He stated that they had examined at the Department of Health only two brains of subjects dying of encephalitis lethargica and on one of these they had found the streptococcus abundantly present and this had suggested the idea that this complicating organism might have had much to do with the fatal outcome. It would be interesting to know whether complicating organisms occurred frequently enough to suggest that they might have an important influence on the course of the disease.

The Symptomatology of Encephalitis Lethargica.—DR. ISADORE ABRAHAMSON made this contribution in which he discussed somewhat fully two functions the disturbance of what constituted the fundamental physiological discord in this disease. He stated that for convenience it was customary to assume the existence of a typical form of morbid response and to describe it. The typical form, however, was more or less mythical; it did not exist. In different areas of the same epidemic at different times, different group reactions dominated. He therefore deemed it better to consider somewhat fully the fundamental disturbances of the mental and motor functions than merely to enumerate all possible symptoms, signs and syndromes of encephalitis lethargica.

Mental Disturbances in Lethargic Encephalitis.—In discussing this phase of the subject, the essayist said that the toxins of encephalitis acted as a poison to protoplasm. This poison attacked all cells, individually and in mass, and under its influence cell life became torpid. All cells, however, were not equally vulnerable to the toxins of encephalitis lethargica. The main brunt of the attack and its consequences fell upon the nerve cells. Functional correlation which was chiefly nervous, therefore, suffered more than that which was partly under chemical or mechanical control. Thought was a function wholly dependent upon cerebral nerve cells; it was, therefore, a function which must inevitably suffer in this disease; and lethargic encephalitis invariably gave rise to mental disturbance. The superficial form of the disturbance in the same case varied according to the stage of the disease and in different cases according to the severity of the infection. Somnolence and insomnia, mania and depression, delirium and coma, confusion and catatonia might all be observed; these were essentially variations in the severity and phase of the disturbance and not in its nature. Dr. Abrahamson described minutely the somnolent state of the patient, the depth of which had no correspondence with the temperature, respiration, blood pressure, or blood picture, since all of these might remain normal. The somnolence came on gradually and usually disappeared gradually, leaving the patient in a state of utter weariness and inability to find refuge from that weariness in sleep. The somnolence might deepen into stupor from which the patient was not easily aroused to conscious response. This stuporous state resembled very closely a drug intoxication. The patient passed into a state known variously as catalepsy, flexibilitas cerea, narcolepsy, or catatonia, according to its severity. This state might pass away leaving confusion, faulty orientation, and memory loss of the Korsakoff type. It also, as a rule, left a very real depression, in which there might be anorexia, with many other inhibitions, and lack of initiative and perseverance, as well as confusion and extreme poverty of thought. The stupor occasionally deepened into coma, which, as a rule, ended fatally. The coma presented no features distinguishing it from coma in other diseases. The coma might also appear rather suddenly as a terminal phenomenon, and be due not so much to the specific poison of lethargic encephalitis as to acidosis. Dr. Abrahamson reviewed the views of McNulty who had given the mental disturbances of lethargic encephalitis special study and said he felt that he could not compare the mental picture of the consciousness of the victim of lethargic encephalitis with personal experience. What was disclosed of them was usually too fragmentary for analysis. The hallucinations seemed to differ in few respects from those seen in other profound intoxications. The associations and perceptive faculties were not retained and consciousness was clouded, and greatly restricted, so that on command it became exclusively occupied by the response; and volition was practically suspended. The hallucinations, therefore, probably arose unsought, not as exaggerated visual ideas, for all ideas were minimized, but as essential hallucinations, which whether of strong or weak imaginative force were the result of intoxication. Most of these hallucinations were visual. Some of them seemed to be endowed with all the elements of reality; the critique was therefore lacking. The part of the cells chiefly affected by the toxins of lethargic encephalitis was not yet determined. But any poison which reduced the vitality of the cell *ipso facto* lightened the resistance at the synapse. And the persistent sequence of severe intoxications, the psychoses, the Korsakoff phenomena, and even the protracted recovery showed that beside nutritive changes, actual structural disturbances might also occur—a true inflammation of the brain cells with destruction of the cellular processes.

Motor Disturbances in Lethargic Encephalitis.—In discussing this phase of the symptomatology the essayist stated that as had been pointed out the main stress of the toxemia of lethargic encephalitis fell upon the nerve cells. At certain sites the toxic action was reinforced by the direct attack of the Loewe-Strauss bodies upon nerve cells. The nerve sites attacked by these organisms was determined in part by the particular mucous membrane in which the initial invasion took place. From this area the organisms were carried along the lymphatics to the central nervous system. As the habitually invaded area was the nasopharyngeal musoca, the nerve sites usually attacked were in the head end of the nerve axis. But if the intestinal musoca were the invaded area, then the brunt of the attack fell upon the caudal end of the nerve axis. The direction, extent, and severity of the attack upon the nervous system determined the nature and degree of the resulting functional disturbances. Since the nervous mechanism which subserved the function of movements was coextensive with the nervous system, in lethargic encephalitis movements were invariably deranged. Lethargic encephalitis might affect the function of movement in all predictable ways, to all conceivable degrees, and at all possible points of the motor mechanism. In different epidemics, and even during the same epidemic in different localities, or at different periods, particular varieties of motor derangement tended to

prevail. But in spite of such episodal variations, among the qualities of the motor defects of lethargic encephalitis were certain that were banal and certain that at least in their emphasis were distinctive and pathognomonic. Of any two movements that which depended upon the more extensive nerve mechanism was, other things being equal, the more liable to derangement in this infection. Where separate paths conveyed habitually correlated impulses to an associated group of muscles, sudden interference with any one path might disorganize temporarily the whole function. The initial result of the lesion might, therefore be wholly disproportionate to its cause. The widespread nerve supply of the motor mechanism of the eye seldom wholly escaped implication in lethargic encephalitis. The writer described in detail the effect of the disease on the ocular mechanism and on the facial muscles, and said that occasionally the motor root of the fifth nerve suffered and that the tongue was implicated almost as frequently as the face. The soft palate and the constrictors of the pharynx might be so weakened as to render swallowing difficult or impossible, and to necessitate feeding by the stomach tube. Of the cranial nerves the twelfth, the spinal accessory, was least commonly affected. As the cranial nerves were affected, in like manner the disease attacked the spinal motor nerves. Not rarely banal hemiplegias or monoplegias occurred. In these the distal muscles of the extremities were more involved than the proximal. Besides this banal hemiplegia, rigidity and loss of power in lesser degree, often hemiplegic in distribution also occurred. The characteristic tremor in lethargic encephalitis, like the tremor of Parkinson's disease visibly affected the extremities more than the head and trunk, and was exaggerated by emotional excitement and by indirect intention. The lethargic tremor, however, was not present "at rest"; it markedly increased by direct intention and grew in amplitude as the objective of the movement was approached, but was coarser, less symmetrical, and more irregular than the typical Parkinsonian tremor. In addition to the coarser tremor, the small, rapid tremor seen in most acute infectious diseases occurred also in lethargic encephalitis. Occasionally epilepsy developed. The most characteristic of these motor disturbances was instability of posture. The writer described how loss of muscle tone occurred and showed that in lethargic encephalitis the lack of power to preserve posture was not due to a general lowering of muscle tone for it affected only individual muscles or groups in particular areas, but that the nerve mechanism which subserved the sarcoplastic portion might be implicated, giving rise to the peculiar loss of power to maintain posture. Depression of the tone of the sarcoplasmic portion of the agonists was probably the basis of this postural fault, but the tone of the antagonistic muscles might also be unduly exalted. At present the exact seat of the defect was not known. This postural defect might arise when the lower motor neuron was demonstrably intact. It affected postures voluntarily assumed. There must exist, therefore, no one final path to voluntary muscle, as Sherrington taught, but two paths, namely, the lower motor neuron, its cell in the anterior horn and its white medullated fiber passing to the voluntary muscle; and the postural nerve of voluntary muscle. In poliomyeltitis the lower motor neuron was mainly and commonly affected, and the postural nerve as a rule escaped. In lethargic encephalitis the lower motor neuron as a rule escaped and the postural nerve was mainly and commonly affected.

DR. BERNARD SACHS said, in reference to a point touched upon by Dr. Flexner, he remembered very distinctly the epidemic influenza in 1889 and 1892, and recalled very distinctly that following that epidemic there were cases diagnosticated as basilar meningitis which to-day would be designated encephalitis or meningoencephalitis. He was certain, however, that those cases were not at all similar to the cases they had been seeing recently. He was certain, too, that if the cases at that time had been similar to those they were now seeing he would have taken cognizance of it. There was no lethargy. The lethargic condition as observed in the epidemic form was interesting from the clinical point of view. It was not like any other form of coma that was seen. In any other condition in which the patient appeared deeply comatose he could not be aroused, as he could be in this condition, and then fall back into deep coma. What we had encountered during the last year was a new disease entity, or at least one we had not been familiar with before. Dr. Sachs also called attention to the fact that we had known of acute hemorrhagic ecephalitis as an expression of infection. This subject had been discussed in connection with infantile cerebral palsies and it was noted that in connection with acute infections one might find an acute hemorrhagic encephalitis as a basis in a certain number of cases. He did not think the perivascular extravasation and mononuclear infiltration was pathognomonic of this especial epidemic disease. The proof as to the nature of the disease would have to come through new bacteriological and cultural methods. The disease had been very striking in that at no other time had they had the opportunity of having patients come into an office complaining of double vision without any other symptoms, and in such cases they had been able to predict that somnolence would follow. In that way it had been a unique experience. Before this epidemic if a patient came complaining of double vision one thought of cerebral lues or early brain neoplasm. Another impressive experience was the development of what appeared to be acute paralysis agitans. That type of the disorder seemed to be disappearing, but there was a recurrence of it during the past autumn and winter. In encephalitis lethargica one might meet with varying types of disease referable to the pons, medulla, or basal ganglia. Dr. Sachs said the term encephalitis lethargica did not accurately describe the condition, since it was not the encephalitis which was lethargic but the patient; it would be better described as epidemic central or basilar meningitis. Dr. Sachs also referred to another peculiar feature of the disease, namely, a recurrence of the symptoms weeks after the patient was on the road to recovery. There were many difficult questions in connection with the disease, and one of these was the difficulty of differentiating it from tuberculous meningitis. One could not say that as yet we had made any absolutely differential points between these two diseases.

DR. FOSTER KENNEDY called attention to the fact that Dr. Dana stated that in 1889 he saw cases that passed under the name of grippal catalepsy, and it seemed to him that this term might with certain reservations be applied to encephalitis lethargica. Dr. Flexner laid a great deal of emphasis on the laboratory discovery that the disease was not the same disease as poliomyelitis. He did not think it was out of place to say that those who looked to the laboratory *in vivo* had known for long that this disease was different from poliomyelitis. They were of course glad to have this confirmed by the laboratory, *in vitro*, though there had never been much doubt regarding the dissimilarity of these conditions. As Dr. Strauss had told them, Levaditi had produced the disease by inoculation of the virus into the sciatic nerve. This accomplishment opened up a great field of speculation with reference to the etiology and pathogenesis of many conditions which they had been thinking of as degenerations, such as disseminated sclerosis, where an infection might gain access to the central nervous system as in this disease.

DR. E. LIBMAN said that as regards the value of the animal inoculations for the purpose of diagnosis, only positive results should be used. The test was like many others that are useful in clinical medicine, which were disregarded when negative. As regards the history of the disease, it appeared that it had been known as far back as 1712, and possibly as far as 1580. Levaditi had confirmed all of the experimental studies made by Drs. Loewe and Strauss, and had also produce lesions by intraocular and intrasciatic injections of the virus.

Profuse Hemoptysis in Grippal Bronchopneumonia.—Derrippe analyses a number of cases of this complication in which it was by no means easy to exclude galloping consumption. Daily examinations of sputum should eventually make the diagnosis, along with the coexistence of epidemic influenza and thirdly the state of the patient before the attack is significant. In influenza he is often robust while in galloping phthisis he is pretty sure to be in poor general condition.—*Journal de médecine et de chirurgie pratiques.*

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

Texas State Board of Medical Examiners

November, 1919.

(*Concluded from page* 629.)

GYNECOLOGY.

1. Describe the symptoms and surgical treatment of subinvolution of the uterus complicated by retrodisplacement.
2. Give symptoms, diagnosis, differential diagnosis, and operative treatment of hematosalpinx.
3. Give symptoms, diagnosis, and surgical treatment of interstitial fibroid of the uterus.
4. Define cocygodynia and give symptoms, diagnosis and surgical treatment.
5. Give symptoms, diagnosis and treatment of lacerations of the cervix uteri.
6. Give etiology, symptoms and surgical treatment of prolapse of the ovary.
7. Discuss the differential diagnosis between a large ovarian cyst and ascites; pregnancy and fibroid tumor of uterus.
8. Give the causes of pelvic inflammation, and state its relation to involvement of the ovary.
9. Discuss differential diagnosis between acute oöphoritis and appendicitis.
10. Give differential diagnosis between cystocele and rectocele, and describe operation for cystocele.

SURGERY.

1. A bullet entering the third intercostal space, mid-axillary line of the right side, passing obliquely downward, emerging at the eleventh intercostal space, left mid-axillary line, would pass through what structures?
2. What would be the effect of severing the fifth cranial nerve?
3. Differentiate between concussion and compression of the brain.
4. (*a*) Define pes varus and pes valgus. (*b*) Discuss management of a case, and state age limit beyond which prognosis would be unfavorable.
5. What conditions make it advisable to defer an operation for incipient cancer of the cervix?
6. Describe a Thomas splint, and state when it should be applied in fracture of the humerus.
7. Describe the preparation of the patient for an acute appendectomy.
8. Give treatment of fracture of the lower third of the femur.
9. Describe an operation for umbilical hernia.
10. Describe the operation of ligating the femoral artery in Scarpa's triangle.

HYGIENE.

1. How is typhoid fever disseminated? Give the hygienic management of a case.
2. From a hygienic standpoint, what are the important questions to be considered in the location and construction of a school building?
3. What is meant by immunity and susceptibility?
4. In case the milk or water supply is suspected of being contaminated with some pathogenic germ, how would you prove or disprove your suspicion? What precautions would you advise pending your report?
5. What infectious or contagious diseases are communicated through the medium of the air? What through foods? Give method of combating the latter.
6. What are the characteristics of pure water? How would you render it wholesome when contaminated?
7. Give etiology and prophylais of ophthalmia neonatorum.
8. State the procedure for disinfecting mattresses, blankets and other heavy material of the sick-room.
9. Explain the presence of hookworm in the body. What do you recommend to lessen the prevalence of the disease?
10. As a health officer, what measures would you institute to combat the spread of influenza during an epidemic such as appeared during the winter of 1918-1919?

MEDICAL JURISPRUDENCE.

1. Describe the post-mortem appearance of the lungs in drowning.
2. How would you distinguish between smear of human blood and that of the blood of a lower animal?
3. From the physical appearance of a cadaver, how would you determine the probable time since death?
4. How would you distinguish between a wound made before and one made after death?
5. What evidence would lead you to suspect death by lightning?
6. Upon what physical signs would you make a diagnosis of probable rape?
7. Define (*a*) infanticide, (*b*) feticide.
8. In case of death by same accident of man and wife of approximately the same age and state of health, what is the legal presumption as to survival? Why?
9. Discuss the legal responsibility of person of unsound mind with reference to the execution of wills or contracts.
10. Differentiate morphine poisoning from (*a*) uremia, (*b*) apoplexy.

ANSWERS.

GYNECOLOGY.

1. In *subinvolution of the uterus complicated by retrodisplacement*, the following symptoms may be present: Backache, bearing down pains, a feeling of pressure in the pelvis, constipation, hemorrhoids, frequent or painful urination, leucorrhea, menstrual disturbances as dysmenorrhea or menorrhagia, sterility. There may also be general symptoms, as headache, indigestion, nausea, anorexia, neurasthenia, and general malaise. The treatment consists in first of all correcting such conditions as lacerated cervix or perineum, then in curettage, and replacing of the uterus and retaining it in position by pessaries or tampons, or some operative procedure such as ventral suspension of the uterus or shortening of the round ligaments.

Ventrosuspension: "An incision is made through the abdominal wall in the median line just above the symphysis publis and extending upward for a distance of two inches. The index and middle fingers of the left hand are passed into the peritoneal cavity and gently inserted between the uterus and the rectum. The adhesions are then carefully separated and the fundus of the uterus lifted forward into its normal position. The peritoneum at the lower angle of the wound is seized with hemostatic forceps and drawn into the incision and the first suspension suture introduced close to its divided edge on the left side. The index and middle fingers of the left hand are then passed into the abdominal cavity and the uterus securely held while the suture is passed through the fundus. The suture is now introduced into the fundus directly on a line dividing the uterus transversely into two equal halves and buried one-quarter of an inch deep in the uterine tissue with a distance of about half an inch between the points of entrance and exit. The uterus is then released by the fingers of the left hand and the suture passed through the peritoneum opposite to its point of entrance. The second suture is now passed through the peritoneum on the left side one-quarter of an inch above the first suture. It is then passed through the fundus about one-quarter of an inch behind the first suture, and finally through the peritoneum opposite to its point of entrance. It is not necessary to hold the fundus between the fingers while the second suture is introduced, as the uterus can be easily controlled by making traction upon the free ends of the first suture. After both sutures have been introduced their free ends are seized with forceps and placed on each side of the abdominal incision. The through-and-through sutures closing the abdominal incision are introduced and suspension sutures tied. The first three sutures closing the incision at the lower angle of the wound must be introduced so as to pass completely under the peritoneum at its points of attachment with the fundus, otherwise the weight of the uterus will cause stripping and a large dead space will result which will eventually become filled with serum or blood and suppurate. After all of the incision sutures are introduced the suspension sutures are drawn taut so as to take out the slack and bring the fundus of the uterus up against the peritoneum. The sutures are then tied and their free ends cut off close to the knots. The abdomen is closed and the wound dressed in the usual manner. The fascia is

first united with a continuous suture of catgut and the wound then closed by tying the through-and-through sutures. The sutures in the lower angle of the wound are tied first, and special care must be taken to remove the slack and bring the peritoneum, at its points of attachment with the fundus, snugly against the abdominal wall."—(Ashton's *Gynecology.*)

2. *Hematosalpinx.* "There is nothing distinctive in the symptoms of hematosalpinx; they are usually associated with others due to the condition causing the trouble. The distended tube causes no symptoms in some cases; in others there may be distress or pain in the affected side; the latter may be constant or intermittent, and probably depends mainly upon the associated peritonitis. Pressure symptoms relating to bladder, rectum and other structures are often present. Physical examination gives the same result as in the case of hydrosalpinx or pyosalpinx. Deep pressure in the iliac region of the affected side causes tenderness and resistance. When the tube is much enlarged it may sometimes be felt through the abdominal wall. The diseased condition is best made out on bimanual examination, when the swelling may be easily palpated, the patient usually complaining of pain. When there is inflammatory thickening near the tube it may be impossible to distinguish the latter with accuracy unless it be considerably enlarged. The distended tube may in some cases be felt as an elastic mass; in other cases as a firm swelling lying lateral to, above, or in front of the uterus, which may be much displaced. The mass may be movable, but is generally fixed. . . . Sometimes the fluid is forced from the tube into the uterus and vagina by the bimanual examination."—(Kelly and Noble's *Gynecology.*). The operative treatment consists in abdominal section with removal of the affected tube.

3. *Interstitial fibroids* present the following *symptoms:* Hemorrhage, first occurring as an excess at the usual menstrual periods, and later also occurring between the periods; leucorrhea; tumor, which may reach an enormous size, and may take up a large part of the abdominal cavity; pain, in the tumor and also in the surrounding structures; pressure symptoms in bladder and rectum, and general symptoms such as anemia, edema. The *diagnosis* is made by the history, the symptoms and a physical examination. The uterus is found to be enlarged, smooth, roughly symmetrical in shape. The condition is to be differentiated from pregnancy, displacements, and malignant tumors. The surgical treatment is hysterectomy or myomectomy. Hysterectomy is probably the better procedure.

4. *Coccygodynia* is a painful condition of the coccyx and surrounding structures, the pain being aggravated by pressure or movement. The chief symptom is pain, which is increased on movement, pressure, sitting, defecation. The diagnosis is made on the history of the case, the cause (traumatism, childbirth, neuralgia), and on the physical examination; the examiner inserts his right index finger into the rectum and the thumb externally over the coccyx. and by pressure and palpation detects abnormal sensibility. Treatment consists in removal of the cause if possible, and removal of the coccyx.

5. LACERATIONS OF THE CERVIX. *Symptoms:* Backache and bearing-down pain in the pelvis, leucorrhea, menorrhagia or metrorrhagia, and sterility or abortion. *Diagnosis* is made on the symptoms and a physical examination. A digital examination causes pain, and shows the cervix to be enlarged, indurated, and with everted lips; the eversion can also be seen. *Treatment* depends on the extent of the laceration and the severity of the symptoms. Slight tears may be let alone. Severe cases require trachelorrhaphy, or else amputation of the cervix. Grave pelvic disorders such as pus, adhesions, malignancy, contraindicate operation. The general condition of the patient must be attended to.

6. *Prolapse of ovary:* "Downward displacement without displacement of the tubes and uterus may result from prolonged congestion, inflammation, subinvolution, elongation, and stretching of the ligaments, or violent strain. The symptoms are constant with severe pain, which is increased by movement and at the menstrual period, nausea and indigestion, headache, and nervous disturbances. Bimanual examination reveals enlargement, tenderness, and the abnormal position of the ovary. In uncomplicated cases the ovary may be restored to its proper position by directing the patient to assume the knee-chest posture for ten minutes two or three times daily, or the infundibulo-pelvic ligaments may be shortened through an abdominal incision. Pelvic congestion will require the use of saline laxatives, hot vaginal douches, the application of iodine to the cervix and vaginal vaults, and the use of glycerin tampons. Diseased ovaries should be removed and uterine displacements should be corrected."—(*Pocket Cyclopedia.*)

7.

ASCITES.	OVARIAN CYST.
1. Previous history of visceral disease.	1. No such history.
2. Enlargement comparatively sudden.	2. Gradual.
3. Face puffy; color waxy; early anemia.	3. Facies ovariana. Anemia absent, or later.
4. Patient on back, enlargement symmetrical; flat in front.	4. Asymmetrical until tumor is quite large; prominent in front.
5. Sitting up, abdomen bulges below.	5. No appreciable change.
6. Navel prominent and thinned.	6. Navel usually unchanged.
7. Fluctuation decidedly clear, diffuse throughout abdomen, but avoids highest parts in all positions, and always has a hydrostatic level.	7. Less clear; limited to cyst; not modified by change of position. No hydrostatic level.
8. Intestines float on top of fluid; hence percussion gives clear tympanitic note over the highest parts of abdominal cavity, and dullness in lowest parts for all positions—*i.e.* areas of resonance and dullness change with position.	8. No change in areas of dullness and resonance with change of position. Dullness over cyst. Clear resonant note in all parts beyond cyst limits, *i.e.* in flanks and toward the diaphragm.
9. Vaginal touch detects fluctuation, bulging into vagina.	9. Vaginal fluctuation less clear or absent.
10. Uterus in prolapsed location, but position unchanged. Size and mobility unchanged.	10. Uterus displaced forward or backward, or laterally by pressure of cyst.
11. Hydragogues and diuretics temporarily remove the fluid.	11. Medicines have no effect.
12. Fluid light straw color and thin. Coagulates spontaneously.	12. Fluid light or dark and of varying consistency; albuminous, but does not coagulate spontaneously; may contain colloid matter.

—(From Dudley's *Gynecology.*)

Pregnancy: The tumor is hard and does not fluctuate, is situated in the median line, and may give fetal heart sounds and movements; the cervix is soft, and the other signs of pregnancy are present. The rate of growth of the tumor and the general condition of the patient's health may also help in arriving at a diagnosis.

Uterine fibroid: Menstruation is irregular and sometimes very profuse; absence of the signs of pregnancy; the tumor is nodular, firm, irregular in outline, and while generally placed somewhat centrally is not in the median line, and is not symmetrical; the rate of growth is irregular, being, as a rule, slow, and sometimes extending over years.

8. *Etiology of pelvic inflammation.*

"Since extra-uterine pelvic infection usually originates in the endometrium, its causes will for the most part correspond with those of endometritis. It may, however, start from infection in the intestines, bladder, peritoneum, or vagina. Inflammation of the uterine appendages may be a sequel of the acute infectious diseases. Pelvic hæmatocele may become the seat

infection and be the predisposing cause of a pelvic abscess. Laceration of the perineum and cervix, and other traumatisms of parturition and of surgery, may open the way for the entrance of infection through the blood and lymph channels. The puerperal and traumatic infections more frequently take this route. Infection may be carried to the uterine appendages from external cervicitis. . . . Circumuterine inflammation involves diverse changes in the Fallopian tubes, ovaries, pelvic peritoneum, lymphatics, lymph spaces, veins, and pelvic cellular tissue. Infection of Fallopian tubes or ovaries may have the closest relation with infection of any or all of these structures."—(Dudley's *Gynecology.*)

9.

APPENDICITIS.	TUBO-OVARIAN DISEASE.
1. No previous local disturbances.	1. Genitourinary functions previously disturbed. Usually a history of gonorrheal or puerperal infection.
2. Chill usually absent.	2. Chill may precede fever.
3. Pain in right iliac region, sudden onset, acute, and not radiating to thighs.	3. Gradual onset, pain dull, continuous, and radiating.
4. Fever of variable degree.	4. Fever often entirely absent.
5. Muscular rigidity on right side of the abdomen.	5. No muscular rigidity unless complicated by peritonitis.
6. Inflammatory exudate about appendix three to five days after onset of symptoms.	6. Inflammatory exudate in the pelvis felt by vaginal examination at the onset of the symptoms.
7. Vaginal examination is rarely painful in appendicitis.	7. Always painful in tubo-ovarian disease.

—(Findley.)

10. "*Cystocele* is really a hernia of part of the bladder into the vagina, the vaginal mucous membrane forming its outer covering; or it may be expressed as a deflection of the vesico-vaginal septum toward the vagina. It forms a smooth rounded swelling, which bulges through the vulvar aperture when the patient coughs or strains.

Rectocele is a hernia of the rectum into the vagina, covered by the mucous membrane of the posterior vaginal wall. It forms a swelling resembling that produced by a cystocele, except that it is on the posterior aspect of the vagina. If the finger be introduced into the rectum it can be passed into the pouch in the vagina, and similarly a sound introduced into the bladder can be passed into a cystocele. A rectocele is nearly always associated with a deficient perineum; and, further, cystocele and rectocele are often found together. When this is the case the vulvar outlet, when patient strains, is occupied by two smooth swellings placed one in front of the other: between them the finger can be passed up to the cervix."—(Sutton and Giles' *Diseases of Women.*)

For radical cure of cystocele: "The patient is placed in dorsal position. The posterior vaginal wall is kept out of the way with a weighted speculum. The cervix is drawn down with a bullet-forceps. With a pair of tenacula the sides of the prominence are drawn together in the median line in order to see how much of the wall is redundant and these points are marked with small nicks. Next, the whole surface is put on the stretch between four pairs of forceps—one at each of the sidemarks, one near the cervix, and one at the transverse ridge at the inner end of the urethra. With a pair of scissors curved on the flat, a strip about ¼ inch wide is cut out of the mucous membrane. Similar strips are removed on both sides until an oval is denuded. Finally a running suture of chromicized catgut is passed under the whole pared surface, uniting the edges from side to side." If necessary, a perineorraphy should be done at the same time.

SURGERY.

1. *The structures severed* are, probably: Skin, fascia, serratus magnus and external internal and intercostal muscles, right pleura, right lung, pericardium, heart, left pleura, left lung, diaphragm, peritoneum, descending colon, internal and external intercostal muscles and transversalis and internal and external oblique muscles, fascia, and skin.

2. *Effect of severing the fifth cranial nerve:* Loss of sensation to anterior part of scalp, face, nose, conjunctiva, teeth, mouth, gums, anterior two-thirds of tongue, external auditory meatus; loss of motion to muscles of mastication, mylohyoid, anterior belly of digastric, tensor tympani and tensor palati; loss of secretion of lachrymal gland; impairment of hearing.

3. *Differential diagnosis of concussion and compression of the brain:*

	CONCUSSION.	COMPRESSION.
Onset	Sudden.	Gradual.
General condition	Can be roused.	Cannot be roused.
Pupils	Equal, react.	Dilated, immobile, perhaps unequal.
Pulse	Slow and weak.	Slow, full, heaving.
Respirations	Slow, shallow, irregular.	Slow, deep, stertorous.
Muscular system.	Relaxed (functional paralysis).	Organic paralysis.
Reflexes	Present.	Absent.
Rectum	Incontinenece of feces.	Incontinence of feces.
Bladder	Incontinence of urine.	False incontinence.
Temperature ...	Subnormal, equal on the two sides.	Subnormal, rising in late stages; may be unequal on the two sides.

—(*Aids to Surgical Diagnosis.*)

4. *Pes varus* is a form of club foot in which the anterior half of the foot is adducted and inverted, and the inner side of the foot is raised, the patient walking on the outer side.

Pes valgus is a form of club foot in which the anterior half of the foot is adducted and everted.

The *treatment* of talipes requires persistent care and patience. In congenital cases the aim must be to rectify the altered position of the bones while they are still soft. The nurse should be taught to manipulate the foot into good position, and hold it so for some time daily as soon after birth as possible. This should be combined with massage of the foot and leg. If the leg is not treated in this way, some operation becomes necessary. In paralytic cases massage and faradization of the paralyzed muscles must be persisted in, and steps taken to prevent deformity by the wearing of special apparatus. If deformity has occurred, division of tendons, fascia, ligaments, and even bones, may be necessary to correct the deformity.

It is, however, only in the early stages that such treatment is advisable. At the age of eighteen to twenty-four months considerable growth of the limb has determined such osseous development as almost forbids one to expect benefit from it, without the exercise of undue force. Hence, if treatment is not commenced till the child is two years of age, and still more if the child has walked or is older, other methods must be employed. Of these, two chief plans have been advocated, viz., tarsectomy and Phelps' operation.—(From Rose and Carless' *Manual of Surgery.*

5. As a rule, it is only in the incipient stage of cancer of the cervix that operation promises the best results.

6. *Thomas's splint:* "This consists of a flat bar of malleable iron, about an inch and a half wide, extending from the lower part of the axilla nearly to the ankle; it is shaped so as to fit the varying curves of the body, and cross-pieces embrace the trunk at the level of the nipples, as also the thigh and the calf; it is firmly bandaged to the body and limb. A patten is

placed under the boot of the sound leg, and the patient allowed to get about on crutches. This apparatus should be worn for at least six months after all signs of active disease have disappeared."—(Rose and Carless' *Manual of Surgery.*) This splint is used for hip joint disease, and for intracapsular fracture of the hip.

7. In an appendicitis case the patient is moved with the utmost care and is prepared for operation most gently, because of the possible danger of rupturing an abscess. In an emergency case no prolonged or complicated method of cleansing can be employed. The abdomen and loins are scrubbed carefully with soap and water, special attention being given to the umbilicus; the pubic region is shaved, the soapsuds are washed away with sterile water, the surface is gently scrubbed with alcohol and then with a hot solution of corrosive sublimate (1:1000), and is covered with gauze wet with the sublimate solution. It is not necessary to "prepare" the abdomen the day before. The patient can be prepared antiseptically the morning of the operation, or can be shaved just before the etherization, and be cleaned when under ether."—(DaCosta's *Modern Surgery.*)

8. "In the *lower third*, when the lower fragment is tilted backwards, a Macintyre's splint, with a long thigh-piece and the knee well flexed, may sometimes be employed, together with a short anterior thigh-piece of Gooch's splinting; but in the oblique type, if the upper fragment has penetrated the quadriceps, operation alone holds out any prospect of bringing the parts into apposition, the muscular fibres being divided to allow the projecting end of the bone to be replaced, and fixed by screws or wire. In other cases the ordinary long splint or Hodgen's will be required."—(Rose and Carless' *Manual of Surgery.*)

9. *Operation for radical cure of umbilical hernia.* "(1) Incise at first through skin and fascia only; the incision is elliptical, with upper and lower ends in the median line, and widest part opposite the greatest width of the hernia. (2) Carefully deepen the wound on one side until the abdominal aponeurosis (sheath of the recti) is reached, aiming to come down upon it a short distance to the outer side of the hernial neck. (3) Having once reached the rectal aponeurosis, similarly expose this aponeurosis and the neck of the hernial sac all around the outline of the ellipse. All bleeding is controlled by clamp and ligature. (4) The hernial sac is now incised and its contents dealt with as indicated. Adhesions are separated. Excess of omentum is ligated and excised. All remaining contents of the sac are returned to the abdomen—and kept in place by a large, anchored gauze pad—which is removed just before the closure of the abdomen. (5) The entire sac, with the umbilicus and the coverings included in the ellipse, is now excised—dividing the peritoneum in an elliptical manner about the neck of the sac. (6) The peritoneum—or the peritoneum and transversalis fascia together—is sutured with interrupted or continuous gut sutures. (7) The borders of the abdominal ring—formed by the sheaths and margins of the recti muscles—are freshened with curved scissors. The edges of the ring are then brought together with interrupted sutures of kangaroo tendon or chromic gut—using either the plain interrupted suture, or the mattress type. (8) The skin and fascia (unless the fascia be thick enough to require separate gut suturing) are sutured with interrupted silkworm gut sutures. (9) The part is then well supported by an abdominal dressing."—(Bickham's *Operative Surgery.*)

10. *Ligature of Femoral Artery at the Apex of Scarpa's Triangle.*—A 4-inch incision is made in the line of the artery (a line drawn from midway between the anterior superior spine and the symphysis pubis to the tuberosity of the internal condyle, the limb being flexed abducted and everted) the center being about 4 inches below Poupart's ligament. The integument and and fascia are divided, the inner border of the sartorius exposed, and the sheath found immediately behind it, the muscle being drawn slightly outwards; the middle cutaneous nerve is perhaps brought into view. A muscular branch to the sartorius may be met with at this spot, and should be separately ligatured. The vein is placed behind the artery, so that the needle may be passed either way, special care being taken to keep it close to the vessel.—(Rose and Carless' *Manual of Surgery.*)

HYGIENE.

1. Typhoid fever is transmitted by contaminated water, ice, or milk; shellfish; stools and urine of the patient; flies, and "typhoid carriers." Its specific prevention depends on the use of the prophylactic vaccine.

To prevent the spread of typhoid fever: Flies should be kept out of the house as far as possible, by means of screens or otherwise; all discharges from the sick person must be disinfected; all utensils, dishes, etc., used by the patient must be thoroughly cleansed, and boiled every day; soiled linen must be soaked in a disinfectant solution before being washed; after each attendance on a patient, physicians, nurses, and others should wash their hands in a disinfectant; thorough sterilization of all bedding, etc., must be performed after the disease is over. Further, each household should boil all water that is to be used for drinking or for washing dishes, etc.; milk should be boiled also; and no ice should be put in water or other drink or food.

2. *Concerning schools:* The school building should be as near as possible to the center of the area which it is to serve; the site should be airy and open, of sufficient size, free from swamps, and somewhat elevated; it should not be too near factories, busy streets, or railways; the soil should be as free as possible from organic matter. The buildings should be so planned that the corners look towards the four points of the compass. In this way the sun will have access to each side and to every room during some part of the day. The building should have as few stories as possible. The walls should be of brick or stone, and should be pointed with cement; the inner surface of the wall should be cemented smooth. The foundations must be solid. The general arrangement will depend upon size of site, number of scholars, and number of required rooms. Fifteen square feet per child should be allowed. Details will have to be considered on: plans, accommodations to be provided, shape and size of class rooms, distribution of rooms, teachers' rooms, corridors, entrances and staircases, playground, ventilation, heating, lighting, and placing of windows, sanitation, lavatories, water supply, drinking water, sewage disposal, removal of refuse, sanitary appliances, and drainage.

3. *Immunity* is the power which certain living organisms possess of resisting infection.

Susceptibility is the condition in which the organisms are particularly liable to cause infection.

4. A milk epidemic is characterized by the suddenness with which it makes its appearance, the sufferers being for the most part attacked at about the same time. The infected houses will be found to have been supplied, almost without exception, by the particular milk vendor whose supply is at fault; but it will occasionally happen that infected houses are discovered to which milk has been supplied by a different vendor, this circumstance being often due to the fact that the vendors on their rounds very commonly buy small quantities of milk from each other. Sometimes valuable corroborative testimony implicating the milk is forthcoming in the circumstance that some of those in the infected households, who have consumed no unboiled milk, have escaped, and that households supplied from the implicated dairy, but in which no unboiled milk is consumed at all, have entirely escaped.—(Parkes' *Hygiene.*)

A thorough examination should be made of the suspected milk (or water), by a competent bacteriologist; and until such examination exonerates the milk, such milk should not be used.

5. *Air-borne diseases:* Tuberculosis, scarlet fever, whooping cough, pneumonia, measles, influenza, meningitis, anthrax.

Food may convey: Typhoid, tuberculosis, anthrax, glanders, erysipelas, septicemia, pyemia.

To combat the spread of infectious or contagious diseases through food, thorough and frequent inspection is necessary, with adequate and prompt punishment of offenders.

6. *Pure water* is colorless, odorless, cool, without disagreeable or salt or sweetish taste, and is free from bacteria, poisons, foreign bodies, etc.

Characteristics of a good drinking water: (1) It should be clear and limpid. Cloudy and muddy waters should be avoided. (2) It should be colorless. A green-

ish or yellowish color is usually due to vegetable or animal matter in solution or to organisms. (3) It should be odorless; especially free from sulphuretted hydrogen or putrefactive animal matter. (4) It should not be too cold, but should have a temperature of from 46° F. to 60°. (5) It should have an agreeable taste; neither flat, salty, nor sweetish. A certain amount of hardness and dissolved gases give a sparkling taste. It should contain from 25 to 50 c.c. of gases per liter, of which 8 to 10 per cent. is carbon dioxide and the rest oxygen and nitrogen. (6) It should be as free as possible from dissolved organic matter, especially of animal origin. (7) It should not contain too great an amount of hardness. A certain quantity of saline matter is necessary, however, to give it a good taste. It should not contain over three or four parts of chlorine in 100,000 parts of water.—(From Bartley's *Chemistry.*)

Domestic water purification can be accomplished by filtration and boiling. But the filter must be kept clean; and after boiling the water should be put in a perfectly clean container and covered.

7. OPHTHALMIA NEONATORIUM.—*Causes:* The gonococcus or some other pyogenic microorganism; the secretions of the mother contain the infecting agent, and transmission may occur directly during parturition, or indirectly by the fingers of physician or nurse, cloths, instruments, etc. *Prophylaxis:* Whenever there is the possibility of infection, or in every case, wash the eyelids of the newborn child with clean warm water, and drop on the cornea of each eye one drop of a 1 per cent. solution of nitrate of silver, immediately after birth.

8. Mattresses, blankets, etc., should be disinfected by steam, in a proper disinfecting apparatus. If the mattress is stuffed with excelsior or other similar material, the contents should be burnt, and the ticking soaked in some disinfectant and then boiled.

9. *Hookworm* enters the body through the skin, the embryos may also enter the body through the water and food. The infection leaves the body in the feces. *To eradicate hookworm:* All drinking water should be boiled; the hands should be washed before eating; shoes should be worn and none should go barefooted; proper toilet facilities should be provided, and people should not be allowed to scatter fecal matter around; mines should be disinfected with chloride of lime. A campaign of education is needed.

10. To combat the spread of *influenza* needs a wide and intensive campaign of education; where possible patients should be isolated and confined to bed during the period of fever; theaters, churches, and crowds should be avoided during epidemics; "carriers" and those liable to colds should guard against exposure and be careful in matters of personal hygiene such as spitting, sneezing, coughing, etc., in public places; ventilation should be enforced, and overcrowding of cars be checked; colds should not be neglected.

MEDICAL JURISPRUDENCE.

1. *The lungs, in death by drowning:* "On opening the thorax the lungs, gray in color, with reddish staining, are seen to be very voluminous, a condition known as ballooning, partly due to infiltration of the lung tissue with some of the medium in which drowning took place, and partly to true edema. The lung substance is inelastic and pits on pressure. On section, fluid and froth resembling that found on the lips exude from the divided air passages. Minute subpleural hemorrhages are not infrequently present, and the pleural cavities may contain fluid."—(Quain's *Dictionary of Medicine.*)

2. It is probably not possible to distinguish absolutely human blood from that of other mammals by examining a smear. By careful measurements of the red corpuscles under the high powers of modern microscopes, human blood can be readily distinguished from that of *some animals;* but in other cases, such as the differential diagnosis between the blood of a man and that of a dog, there is no absolute certainty.

3. *From the appearance of a cadaver to determine the probable time since death:* "It probably will be impossible in the vast majority of cases to make any very definite statement as to the elapsed time, but certain inferences may be drawn: (1) If the body be somewhat below normal in temperature but still higher than the temperature of the surrounding air, if rigidity be commencing about the jaws and eyes, death probably occurred from fifteen minutes to five hours previously. (2) If temperature be entirely absent from the body, rigor mortis present and complete, this time would extend from twelve hours to three or four days. (3) If rigidity is complete and cadaveric lividity is marked, death probably occurred from one to four days previously. (4) If evidence of beginning putrefaction is found, rigor mortis has disappeared, and the body has been exposed to the ordinary temperature of the season; in *summer,* death probably occurred from five to eight days previously, but in *winter* from eight to twenty, according to the temperature."—(Dwight's *Medical Jurisprudence.*)

4. A *wound inflicted during life* is generally characterized by hemorrhage, coagulation of the blood, eversion of the edges, and retraction of its sides. It may also be inferred that the wound was inflicted during life if any of the following are noticed: The presence of inflammation, swelling, pus, or gangrene on the edges of the wound, or if there is any sign of beginning cicatrization.

5. *Post-mortem appearances:* "In those cases of sudden death by lightning in which the body is left in the position occupied at the time of the shock post-mortem rigidity comes on at once. In other cases it may be slower in its onset, but usually is rapid as compared with death from ordinary causes. The conditions found after death from electricity are not consistent; neither are they such as in unknown cases would establish the case of death. Many observers have reported the rapid following of decomposition, but there seems in fact to be little evidence that such is the fact. The heart may be filled with blood, which may be liquid or clotted. The blood is usually dark, but a case has been reported in which it was of a 'rosy, vermillion' color. There is usually a passive congestion of the various organs, including the brain, and small hemorrhages into its substance have been found. Small superficial hemorrhages are usually found scattered over the surface of the lungs and heart."—(Dwight's *Medical Jurisprudence.*)

6. "Medical testimony in cases of rape has usually to do with three conditions: (1) The presence or absence of bruises, lacerations, or other signs of injury upon or about the genital organs. With regard to the evidence of lacerations of the hymen, it must be remembered that a certain number of hymens are so elastic as to permit of intercourse without laceration. (2) The presence or absence of spermatic or bloodstains upon the person or clothing of those concerned, and the presence or absence of spermatozoa in the vagina. (3) The presence of venereal disease in one or both."—(Dwight's *Medical Jurisprudence.*)

The physician can *never be certain* that rape has been committed on an adult, because the element of "volition" enters into the case. All he can do is to give evidence on the lines indicated above, and leave it to the jury to decide to what extent the complainant was "willing."

7. *Infanticide in a medicolegal sense* is the murder of a newborn child, which has a separate existence from its mother.

By *feticide* is meant the unlawful destruction of a fetus before it is born.

8. *Presumption of survivorship* in this case is in favor of the man. "While formerly it was held that where several persons died as the result of the same accident or condition, the presumption was in favor of the physically strongest, it is now generally accepted that there is no artificial presumption in cases of this nature. The question is one of fact decided by the evidence; the elements of strength, age, and sex very naturally have an effect on the decision, how great an effect depending upon the other conditions present and the character of the catastrophe. It is in fact usually held that when the death of a number of individuals occurs under the same circumstances with an entire absence of other evidence, it is to be presumed that in individuals of the same age the stronger outlives the weaker, that the young, strong adult outlives the aged and infants. Decisions upon these points have varied in different States and in different countries."—(Dwight's *Medical Jurisprudence.*)

9. "It is usually understood that the courts require

a less degree of mental capacity in making a will than in any of the ordinary civil duties. People with insane delusions, having made a will which is just and reasonable, have been held as having testamentary capacity, and wills made by patients confined in insane hospitals have been in several instances allowed by the courts. The law ordinarily requires that the testator shall be sane at the time when the will is drawn, so that temporary delirium or intoxication would, for the time being, disqualify him. It has also been held that the presence of disease would not invalidate his will, but that delirium or stupor resulting from such disease would."—(Dwight's *Medical Jurisprudence.*)

10.

APOPLECTIC COMA	UREMIC COMA	MORPHINE POISONING
Deep coma; sudden onset. If any injury, only a scalp wound.	Deep coma. Slow onset unless convulsions have preceded the coma.	Can be aroused unless very deep.
Pupils unequal or dilated. Contracted in hemorrhage into the pons.	Albuminuric retinitis.	Pupils contracted to pinpoint size.
Pulse full and slow, often arteriosclerotic high-tension pulse.	Pulse rapid.	Pulse rapid, may be irregular.
Respiration slow and irregular.	Respiration frequent and irregular.	Respiration very slow—may be 6 to 8 per minute.
Urine contains trace of albumin, but may be same as in uremia.	Urine shows albumin, casts, and low urea percentage.	Normal.

—(From Eisendrath's *Surgical Diagnosis.*)

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

INFECTIOUS DISEASES. By CLAUDE BUCHANAN KER, M.D. 627 pages with illustrations. Published by Oxford University Press, London.

OXFORD MEDICINE. Edited by HENRY A. CHRISTIAN, M.D., and SIR JAMES MACKENZIE, M.D. Volume I. 923 pages with illustrations. Published by Oxford University Press, London.

PLASTIC SURGERY OF THE FACE. By H. D. GILLES, M.D. 408 pages with illustrations. Published by Oxford University Press, London.

MASSAGE AND EXERCISE COMBINED. By ALBRECHT JENSEN. 93 pages with 86 illustrations and deep breathing exercises. Published by the author, 220 West 42d Street, New York.

THE SYMPATHETIC NERVOUS SYSTEM IN DISEASE. By W. LANGDON BROWN, M.D. 101 pages with illustrations. Published by Oxford University Press, London.

THIRTY-FIFTH ANNUAL REPORT OF THE DIRECTORS OF THE MONTEFIORE HOME AND HOSPITAL. (1919.) 99 pages with illustrations.

THE THEORY AND PRACTICE OF MASSAGE. By BEATRICE M. GOODALL-COPESTAKE. 265 pages with illustrations. Published by Paul B. Hoeber, New York.

THE INDUSTRIAL CLINIC. Edited by EDGAR L. COLLIS, M.D. 239 pages with illustrations. Published by William Wood & Company, New York.

MENTAL DEFICIENCY. By A. F. TREDGOLD, M.D. 531 pages with illustrations. Published by William Wood & Company, New York.

EXOPHTHALMIC GOITER AND ITS NONSURGICAL TREATMENT. By ISRAEL BRAM, M.D. 438 pages. Published by C. V. Mosby Company, St. Louis.

THE FUNDAMENTALS OF HUMAN ANATOMY. By MARSH PITZMAN, M.D. 356 pages with 101 illustrations. Published by C. V. Mosby Company, St. Louis.

AN ATLAS OF THE PRIMARY AND CUTANEOUS LESIONS OF ACQUIRED SYPHILIS IN THE MALE. By CHARLES F. WHITE, M.B., and W. HERBERT BROWN, M.D. 32 pages with illustrations. Published by William Wood & Company, New York.

THE NATURE OF ANIMAL LIGHT. By NEWTON HARVEY, PH.D. 182 pages with illustrations. Published by J. B. Lippincott Company, Philadelphia.

TRANSACTIONS OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION. Volume 34-35. 1918-1919. 294 pages with illustrations.

Therapeutic Hints.

Quinine by Mouth.—W. H. Willcox holds that cases of malaria where the general condition of the patient is good and there is no marked enlargement of the liver and spleen, and no marked anemia or jaundice (usually mild benign tertian or quartan infections) call for the oral administration of quinine only. After the treatment of the attack of malaria by a week's course of quinine 30 grains daily, subsequently for the next three weeks it is usually advantageous to give a smaller daily amount of quinine combined with arsenic and some suitable tonic. For this he recommends the following:

℞ Quinine bihydrochloridi.....10 gr.
Acid, hydrobromic, dilute.....10 mm.
Liq. arsenic hydrochlor..... 3 mm.
Syrup glycerophosph. co. B.P.C..1½ dr.
Aq. chloroformi, ad..... 1 oz.

Twice daily after food.

Afterward for a month the mixture should be given once daily after food, the arsenic being omitted, and if any anemia is present, Blaud's pills (gr. V) two or three may be given every night.—*The Medical Times*, London.

Hyperchlorhydria.—Rose, discussing the medicinal treatment of hyperchlorhydria, says drugs are used to counteract the effect of acidity by neutralizing the hydrochloric acid and by soothing the mucous membrane and relieving constipation. For average use he recommends the following:

Magnesia usta,
Soda bicarb., ää.....½ oz.

M. et sig.: One-quarter to one teaspoonful one-half to one hour p.c.

Frankly nervous patients are benefited by the following:

Soda bromide.....½ oz.
Glycerin .....3 dm.
Distilled water .....3 oz.

M. et sig.: One teaspoonful in water before meals.—*New York Medical Journal.*

Tinea Tonsurans.—W. P. Elford, as a preliminary step in the treatment of ringworm of the scalp, advises shaving the affected area and cleansing with liquid ethereal soap. The part is then gently and carefully rubbed with a piece of lint which has been dipped in liquor potassæ and dried with a piece of cotton-wool. Next the part is sprayed with ethyl chloride for about thirty seconds and allowed to dry; it is then painted with tr. iodi mitis. This procedure, omitting the ethereal soap, should be carried out morning and evening for three days and once daily during the subsequent four or five days.—*British Medical Journal.*

Miscellany.

Historical Notes on Histology.—In an inaugural lecture delivered by Policard at Lyon in the histolgoical course (*La Presse Medicale*, June 5, 1920, xxviii, 37), the author alludes to Jannsen's microscope, which appeared at the close of XVI. century and which was followed by the epoch-making work of Malpighi. The latter's reputation in his day is hard to visualize now. He was known as "the eye of Italy" and "Malpighi the Lynx." He was not, of course, a mere microscopist, but subjected everything to microscopic control. His discovery of the blood capillaries and circulating blood placed him second only to Harvey. His position as father of minute anatomy is unassailable. He was not a mere laboratory man, for he held, among other honors, the appointment of chief physician to the Pope. Credit as the first histologist of eminence must, however, be shared with Leuwenhoek, who to-day would be termed an amateur scientist. His use of the microscope extended far beyond the animal tissues and his title is really the "first micrographer." Bichat followed and had the advantage of the early chemical studies of Lavoisier. According to Gley it is Bichat who should be termed the founder of modern histology as well as of general anatomy, physiology, and human biology. The discovery of the cell was not made until long after by Schwann, and it is of interest to note that as professor in the University of Louvain this scientist is claimed by the French. A chair of histology was not established at Paris until 1862. Charles Robin and Ranvier, the early incumbent, were constantly engaged in controversies, and Ranvier founded experimental histology and wrote a text book on histology technique. Other French contributions to his science were made by Nageotte, the successor of Ranvier, whose "cell" is well known, and by Carrel in his experiments on the proliferation of tissue cells *in vitro*.

Blind to "See" by Ear.—Dr. Max Herz of Vienna has invented a system for the blind, and partially blind, which substitutes sound for touch, and which is read on phonograph records, by hearing, instead of on paper by touch. He calls the system "Typophonia." Dr. Herz came to this country at the request of a group of individuals and organizations interested in the welfare of the blind. His first demonstration in Baltimore, before an assembly of instructors for the blind, is reported to have been received with enthusiasm. The system is based on an alphabet devised by Dr. Herz from the Morse telegraphic code, the dashes being eliminated and the dots used in various combinations. A phonographic record is made of the subject matter, and the record is placed on an instrument, similar to a phonograph, which is equipped with a sound box. The blind person, after becoming familiar with the alphabet, is able to read by ear, instead of through the fingers, as in the braille or raised-letter system. A "typophonia" library, it is claimed, would occupy very small space and would be relatively inexpensive.

Contract Practice in Old Spain.—Doctor Diego Antonio de Robledo y Mendez was a resident of Coria in Spain, a practitioner of both medicine and surgery, physician to friars, and surgeon to hospitals. By reason of a vacancy he was offered the position of physician in chief to the Friars of Guadelupe for three years. The compensation was 6,600 reals a year, a residence, an assistant and medicines, two pigs, twenty-four bushels of wheat, twenty-four bushels of barley, etc. Only the first year of service was compulsory. The date of the document was November 12, 1673. Apparently he filled the contract with renewals for seventeen years, bringing his service up to 1690. During the first year of his contract he lost his wife, but remarried in 1675. A son and namesake, a recent graduate in medicine, also died during his incumbency. The account of this practitioner in *La Medicina Ibera* of May 8, xi, 131, states further that he was educated at Salamanca and that he published a work entitled *Compendio Cirurgico* at Barcelona in 1686 which went through six editions between 1686 and 1733. According to some of the Spanish historians he seems to have anticipated Boerhaave in teaching anatomy by regions. He also is said to have been the first surgeon to describe curved needles for ligating arteries, which were introduced by his colleague Fernando Diaz, whom he eulogized as a great surgeon. With the latter he lived on terms of friendly intimacy. Robledo seems to have done no private practice in Guadelupe, where Diaz was settled, but may have reserved the right to practice in his home town of Coria, where he continued to reside after the expiration of his contract.

Death of Armand Gautier.—This celebrated biochemist has recently died at the age of 82. His name may perhaps mean more to the former medical students of the world, so far as medical chemistry —as it was formerly called—is concerned, than any other, by reason of his text-books which went through many editions and translations. His father was a Montpellier physician and his mother died during his early childhood. He was handicapped as a student and always afterward by the condition of his eyes. His first masters in chemistry were Bérard and Béchamp. At Paris he also devoted two years to the study of mathematics and physics and was thus well equipped for the career of a modern chemist. He took his medical degree at Montpellier and obtained his licentiate in physical sciences in Paris, later, after a term in Wurtz's laboratory, acquiring the full doctorate. He continued his labors under Wurtz and Schutzenberger, the two eminent Alsatians; and had much experience as war chemist in 1870. Just after the conclusion of the war with Prussia, Wurtz had him appointed to the first chair of biochemistry created in France, and he at once distinguished himself by the discovery of ptomaines, leucomaines, etc., beating Selmi in this feat by a few weeks only. A very active period of writing followed which placed him in the front rank of biochemists, and on the death of Wurtz in 1884 he succeeded him as faculty professor of chemistry in the medical department of the University of Paris. He continued his publishing activities and so numerous and important are his writings that it is difficult to single out any one particular achievement. Perhaps his work in organic arsenical compounds was the most significant, he thus paving the way for Ehrlich.

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Original Articles.

A NEW AND SUCCESSFUL DIAGNOSIS AND TREATMENT OF CANCER.

BY WILLIAM F. KOCH, PH.D., M.D.,
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THE mortality from cancer has not been changed essentially by all the treatments ever used to combat it. The death rate still stands one out of eight for females, one out of fourteen for males, dying over forty. So far as the efficiency of the various treatments for cancer is concerned then, we make this observation, that no treatment yet devised meets the essential pathology of the disease.

It is the purpose of this paper to present certain physiological deductions which locate the essential pathology of cancer, and to describe a treatment that simply corrects the pathological condition on a physiological basis, and thus establishes cure. A few histories and microphotographs are selected to illustrate the various phases of the treatment.

In 1912, 1913, 1916 and 1917, I reported* the occurrence of toxic quantities of certain guanidine bases and other products of tissue degeneration in the urines of parathyroidectomized dogs. This finding has since been confirmed by Paton at Glasgow and by other observers. My autopsies showed in these animals extensive antemortem coagulation of the blood and also a coagulation of the tissue cells in the liver, lung, spleen and brain.

Such extensive coagulation of blood and tissues ensuing upon the loss of one physiological substance is suggestive that normal functional tissues are incoagulable so long as they receive and can build into their structure all the elements necessary for functionally co-ordinated activity, and that as soon as this balanced nutrition is disturbed they become coagulable. In this case after parathyroidectomy the tissues had lost a necessary special element and had become coagulated just as blood withdrawn from its endothelial encasement becomes coagulable.

Now, two types of substances are active in the coagulation of drawn blood, the thrombokinase and the thrombin.

The thrombokinase is a product of tissue-cell injury and blood plasma is constructed to have unsaturated affinity for it, so that when this product is liberated it can react with the blood plasma and initiate clotting. Therefore, thrombokinase produces intravascular and extravascular coagulation. This is a physiological function of the plasma to prevent hemorrhage. Likewise the plasma of tissue cells clots by reaction with a product of injury to tissue cells. This function of tissue-cell plasma coagulation serves to wall off destructive processes and also to lay a bed for ingrowth of angioblastic organization tissue, thus preparing for and promoting the healing process. This coagulation process is evidently, then, a highly specialized function in all normal tissues and an activity of their functional substrate.

The type of injury that leads to the production of thrombokinase may be an active, physical or chemical one, or a passive one, as occurred in my parathyroidectomized dogs, where failure to supply certain necessary elements (because of absence of the parathyroid activity) prevented the completion of the restoring of the cell functional substrate, and therefore the elements of this substrate already present, not being usable, were set free and were active as tissue injury or degeneration products, and initiated clotting not only of the tissue cells but of the blood as well.

The condition necessary for the initiation of coagulation in a tissue plasma, then, is the presence of a certain product of tissue-cell degeneration for which the plasma has unsaturated affinity.

The Thrombin. Now it happens in any physiological intracellular function that the initiation of a state of change and the propagation of this state are mediated by different substances, the propagation of the state being carried on by the products of the change induced, whether energy is liberated or not. We observe this in muscle and nerve cell function, and a good example is offered by blood clotting.

The process of clotting having been initiated by the kinase, some thrombin is formed by the clotting process, and this substance propagates the change of state in the fibrinogen. After blood is shed its functional substrate is removed from the nutritional support of its endothelial encasement and therefore is in the predicament comparable to the tissue of my parathyroidectomized dogs, and subject to thrombin activity. As stated above, coagulation of tissue plasma is a function of the tissue and therefore an activity of its functional substrate. The kinase acts on this functional substrate, starting the process; the thrombin, a product of the state initiated in the tissue functional substrate, propagates the process. Thrombin cannot act on an unchanged functional substrate as is illustrated by the fact that it will not change the coagulability of circulating blood where a state of coagulation has not been initiated. It can act only on a plasma associated with a change of substrate.

Since cancer is deficient in functional substrate, at least insofar as any specialized highly differentiated function is concerned, it was suggestive that this variation from the normally constructed sub-

*See Bibliography appended.

strate might constitute a susceptibility to coagulation and therefore to the action of tissue thrombin. That is, the change necessary to induce coagulation existed, but the functional substrate being deficient, no thrombin product could be evolved to propagate a

FIG. 1.—Section taken from the untreated squamous cell carcinoma.

coagulation state throughout the cancer cell plasma, and therefore the cancer cell plasma remained unclotted until it might receive the propagator of the state that virtually existed in it.

In line with this supposition, then, thrombokinase could not initiate coagulation in a cancer cell, although not clotted, being already prepared for the activity of the thrombin.

To test out this hypothesis cancer patients were treated with tissue thrombokinase and with tissue thrombin. Amounts varying from 1/100 grm. to ½ grm. of tissue kinase and tissue thrombin being injected subcutaneously, generally in the patients buttocks, the substance being dissolved or suspended in normal salt solution in from 1 to 10 c.c.

The kinases will first be disposed of.

Quantities of the kinase insufficient to cause extensive intravascular coagulation of the blood, and therefore immediate death in the patient, were found actually to increase cancer growth and, moreover, to cause so great a negative coagulation phase of the patient's blood that hemorrhages were profuse and the continuance of such treatment threatened the patient's life. The site of the injection showed tissue death. Therefore such therapy was discontinued as useless and harmful.

The use of the tissue thrombin, however, brought very different results. Locally, where injected in the hip, no sign of disturbance was produced—no more than if normal salt solution were injected.

There was no change in the patient's blood coagulation time, as the following experiment shows: Fifty mgms. of tissue thrombin were injected subcutaneously into a healthy man of 157 lbs.

	Coagulation Time
Before injection	2 min. 40 sec.
10 min. after injection	2 min. 40 sec.
1 hr. after injection	2 min. 42 sec.
12 hr. after injection	2 min. 40 sec.
24 hr. after injection	2 min. 43 sec.

Fifty mg. of tissue thrombin were injected into a cancer patient who had not had any severe hemorrhage.

Before injection	3 min. 12 sec.
1 hr. after injection	3 min. 20 sec.
12 hr. after injection	3 min. 14 sec.
24 hr. after injection	3 min. 8 sec.

The microphotographs show the effect of the injected tissue thrombin upon cancer cells. These sections were taken from a large squamous cell carcinoma of the neck (Case IV, reported in the *Detroit Medical Journal*, July, 1919). The usual dose of 50 mgms. was given in the hip.

Section I was taken before treatment and shows the normal squamous cell carcinoma. Fig. 2 shows a low power magnification, and the series 3, 4, 5 and 6 show the details of the changes induced after two treatments. The most pronounced changes are firstly, a disappearance of the cells lining the basement membrane. These are the cells closest to the blood supply, the germinal cells of the cancer. Naturally the tissue thrombin reaches them first and they are the first to be destroyed. As rapidly as they disappear angioblastic tissue replaces them. Apparently the carcinomatous clumps are being devoured by angioblastic tissue just as takes place in the development of bone and in the organization of a blood clot. Investigation of the chemistry of these three phenomena reveals that they are essentially the same process. The changes preparatory to organization of the cancer tissue are first as shown in Fig. 6, nucleolysis and a fibrin formation in the cells, and as is shown in Figs. 3, 4 and 5, a swelling of this fibrin which produces a hyalinization of the cancer protoplasm. This is a digestive change in the clotted protoplasm which accompanies the ingrowth of the angioblastic tissue (shown best in Fig. 3 and Fig. 4 at x). Fig.

FIG. 2.—Section from the squamous cell carcinoma, removed 24 hours after the second treatment (low power). The disappearance of the malpighian layer of cells, the hyalinization of the protoplasm, and the disappearance of the nuclei of the remaining cells and ingrowth of fibroblastic tissue are shown here.

7 was taken from a piece of the carcinoma removed after the fourth treatment. It shows the practically complete replacement of the carcimona by fibroblastic tissue. Whatever carcinomatous debris is left has undergone a calcification. This calcification

change also occurs preliminary to bone absorption in the development of bone. Here it occurs in the last remnants of the clotted cancer which have lain unabsorbed sufficiently long to have taken up lime

FIG. 3.—High power magnification of section (Fig. 2), showing chromatolysis, fibrin formation, and hyalin change in the cancer cells. This section shows the ingrowth of angioblastic tissue, the organization of the coagulated cancer.

salts. This change is a conclusive testimony to the complete death of the cancer moreover.

CLINICAL.

The clinical features that accompany this change induced in the cancer are for the first twenty hours after injection practically negligible. There is no change in the heart beat, in the respiration, or in the comfort of the patient. Locally, in the hip where the injection is given, there is no reaction at all. After twenty hours the injected material has been taken up by the circulation and lodged in the cancerous tissues where it now shows its work. The cancerous parts become swollen, more painful than usual, and reflexes associated with the part are augmented and fever develops, especially between twenty-four and thirty hours after injection, generally lasting from two to six hours, and as this subsides the affected parts become smaller and less tender than before treatment, and there is less pain. The patient, however, may be quite tired out for the next day, but the following day finds him much more normal and buoyant. As a rule, after two injections hemorrhages have stopped, not to return, and pain ilkewise, as treatment proceeds, rapidly passes away.

CASE I.—The first case is selected to illustrate the healing of a vesicovaginal fistula large enough to easily admit three fingers following upon the disappearance of the cancer tissue. It also illustrates the usual reaction features. This patient came under my care April 24, 1919, referred by Dr. Walter Hackett of Detroit.

Mrs. B., age 53, housewife. Normal weight, 125 pounds, five years ago. Patient's family state weight at present to be 70 pounds, having been weighed several weeks previously. *Family history*—Father died of cancer of stomach, age 61. Mother died of heart disease, age 57. No history of tuberculosis, insanity, or alcoholism in family. Four children alive and well. *Past history*—Two years ago (1917) patient noted vaginal discharge, which gradually became excessive, odorous and bloody. More notable were the occasional hemorrhages without period of menstruation. This bleeding was initiated by sudden movements, and even came on during sleep in bed. At this time her weight was 107 pounds. In March, 1919, patient was examined by Dr. Garber, Dr. Hurst and Dr. W. Hackett, who gave the diagnosis of carcinoma of uterus. Wassermann, negative; R. B. C., 2,700,000; Hem., 50 per cent.; urine, albumin, trace; sugar and casts, negative.

April 5, 1919, laparotomy and hysterectomy by Dr. Walter Hackett. As much of the carcinomatous tissue as possible was removed, although the subrenal lymph glands were infiltrated. Tissue was examined microscopically, and proved to be adenocarcinoma of endometral origin. On April 30 I found the patient very weak and anemic. She could not sit up in bed without help. It was impossible to get a satisfactory drop of blood by several deep punctures of the finger, and the attempt to withdraw blood by syringe failed, as the vein collapsed. Patient took about 8 ounces of milk per day and very little other food. The pain was severe enough to require between 3 and 4 grains of morphine per day. The discharge was excessive, of strong odor, and accompanied by the escape of urine from a vesicovaginal fistula large enough to easily admit three fingers. At the orifice of the vagina carcinomatous nodules were visible. Moderate but exhausting hemorrhages had occurred several times a week. She was given an injection of 50 milligrams of tissue thrombin in 2 c.c. of normal salt solution, April 30, 1919. Temperature, 96.2°; pulse, 110. The next day, 24 hours after treatment, her temperature rose to 101.4°; the pulse became feeble and 134. The pain in the back and abdomen was intense for 4 hours. Two grains of morphine had to be given by hypodermic injection to control it. The next day the temperature was 97.2°, and in the succeeding night an exhausting hemorrhage occurred. The blood clotted readily. This was the last hemorrhage. May 3 a similar treatment was given. Temperature, 98°; pulse, 120. In 24 hours the temperature rose to 102°, and was maintained for 8 hours. The discharge had increased considerably and had become more acrid. The patient suffered so much pain that 2 grains of morphine were necessary. On May 6 the third treatment was given, the discharge still increasing, but with less odor and no blood, accompanied by less pain than the former treatments. After 24 hours the temperature rose to 101.6°, the pulse to 103. The fever was maintained for 6 hours. The appetite started to improve after this treatment, and in four days she was able to sit up in bed without help. The succeeding treatments brought on similar

FIG. 4.—Shows the same changes as in Fig. 3.

reactions, but each time the fever and pain were less, so that after taking the ninth treatment, June 5, neither pain nor fever could be elicited and the patient has suffered none since, having also discontinued the use of morphine. The discharge had completely disappeared, and the patient was able to walk about the

house and sweep the floor. She then weighed 94.5 pounds. Treatment was discontinued.

On June 30 the patient weighed 112 pounds, a gain of 42 pounds in eight weeks (since treatment was started). At this time there was slight and controllable escape of urine through the

FIG. 5.—Shows the same changes as Fig. 3 and at x the ingrowth of angioblastic buds into a coagulated mass of cancer.

vagina. She was examined in the middle of July by Dr. J. H. Carstens, who stated that he found no evidence of cancer, and the vesicovaginal fistula was closed so as not to admit a finger. This region he found indurated. On August 8 examination was again made and fistula found entirely closed; weight, 116 pounds. She was then active at her household duties. The blood was taken for analysis: R. B. C., 3,970,000; H., 70 per cent.; noncoagulable nitrogen, 29 mgms. per 100 c.c.; alkalinity, 47 c.c., CO_2 per 100 c.c.

The alkalinity was normal and not increased, as is the rule in cancer patients. The noncoagulable nitrogen was normal, hence there was no diminution of kidney function. The patient had no symptoms of cancer, and examination elicited only some slight induration at the region of the previous fistula, which was to be expected as a result of the healing process. She was therefore pronounced tentatively cured, and remained so until November 5, 1919, when she suddenly dropped in an apoplectic stroke and died November 6 of apoplexy. Unfortunately, I was not notified of her death until two weeks later, and then an autopsy was out of the question.

CASE II.—The following case illustrates a variation from the usual type of reaction. Instead of the reaction coming on 24 hours after the treatment, in this case no febrile response occurred until twelve days after the first treatment and seven days after the second treatment. During this period a large carcinoma of the stomach, practically stenosing the pyloris, disappeared.

Mrs. P., aged 58, referred by Dr. Heavenrich of Port Huron, Mich., November 1, 1919. *Family History.*—Father died at middle age of heart trouble. Mother died at 85 years of old age. Brother died of typhoid. One sister died of pneumonia. Two sisters alive and well. No history of tuberculosis, insanity or cancer. *Chief Complaints.*—Pain in abdomen and right back, vomiting and tender mass in upper abdomen.

Past History.—Measles, whooping cough, chickenpox in childhood, well otherwise until present illness. Menses began at 14, have been normal until menopause at 49, were somewhat painful first day or two. Pregnant once; child died in infancy. No miscarriages; denies venereal infection. For past three to four years patient has been troubled with indigestion, pain coming on from two to three hours after eating, with burning pain and eructation of gas. *Present History.*—On this subject Dr. Heavenrich of Port Huron writes as follows: "She was taken ill August 1, 1919, with what was diagnosed gallstone colic. Needed opiates for relief of pain. During the following six weeks had repeated attacks—pain, nausea, jaundice. Was seen by several doctors, all of whom agreed in diagnosis and need of operation. I first saw her in September in one of these attacks. I found her emaciated and anemic, suffering severely with typical gallstone colic. Deep jaundice over entire body. Itchy skin, clay stools, and vomiting bile. Unable to retain any food. Temperature 98.4°; pulse, 112. Abdomen so tender as to make palpation impossible. I also advised operation and was requested to do so at once. I had her removed to the hospital, where she was operated on the following morning by Dr. Aldridge and myself. To our surprise we found the liver and gall bladder perfectly normal—no stones, no thickening of duct walls, etc. But the lesser curvature of the stomach was one large sausage-shaped tumor, hard in consistency, with some nodules at various spots. So much of the organ was involved and the patient was in such a weakened condition that we were both of the opinion that gastroenterostomy or any modification of such operation would be of no avail. We closed the wound and about November 1 sent her to you. At this time (August 8, 1920) she appears to be in splendid health, does her own work, and eats everything, and certainly is grateful to you."

On admission to the Womens' Hospital, Detroit, November 1, 1919, her weight was 119 lbs.; R.B.C., 3,100,000; H. 60 per cent.; Wassermann negative, urine negative to albumin, casts and sugar; volume 7 oz. in 24 hours. Stools loose, scanty and tarry, occult blood negative. Retention of food very slight, apparently all food ingested was vomited. Physical examination revealed mass in epigastrium raised to a level of an inch and one-half above the costal level. Palpation showed mass to be hard and very tender, which prevented outlining its borders. Light percussion showed the dullness to extend to the umbilicus.

For descriptive purposes her stay of forty-one days at the hospital is divided into three periods. The first, of eleven days, was reaction-free, although an injection of 50 mgm. of tissue thrombin was given on the first and fourth days. Temperature running from 97° to 98°, with at times severe abdominal pain and vomiting the daily food ingested. The second period started on the eleventh day, seven days after the second treat-

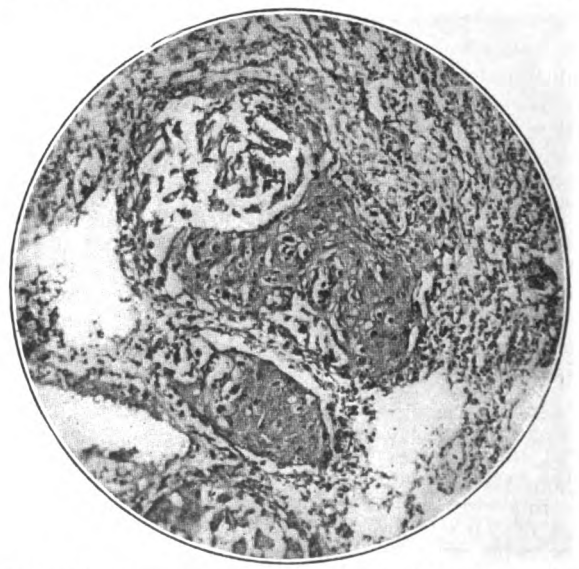

FIG. 6.—Shows same changes as Fig. 3, but more particularly the fibrin formation in the cancer protoplasm.

ment, with a fever of 102°, dropping in 36 hours to normal and rising for three successive days to 100°. On the third day of this period (the fourteenth day), a third injection was given, followed in 48 hours by a fever of 102°, which returned to 99° in the course of 24 hours, rising again for four more days to

100° and again to 102° for a number of hours. After a rest of two days she was given another treatment, and in 48 hours another fever of 102° was elicited, returning to normal within 24 hours and remaining there ever since. During this period there was much pain in lower right chest and shortness of breath and cough coming on in daily spells and accompanying the epigastric pain. With the disappearance of the fever at the end of this period all pain left. During the last six days there was no vomiting, nor has there been since. The appetite and digestion rapidly improved, and no epigastric mass was evident on inspection. The third or convalescent period of 14 days was painless and without vomiting or gastric distress, the patient taking the regular tray. Temperature running 98° to 98 3/5°. She rapidly gained strength. On the sixth day of this period a treatment of 50 mgms. was given, without any focal or febrile reaction. Examination of the epigastrium showed neither dullness nor rigidity and only slight tenderness. On deep palpation a suggestion of a tumor rather soft and not outlinable was found. She was kept in the hospital for eight days longer and her abdomen again examined. This time the examination was entirely negative. R.B.C. 4,000,000; H. 80 per cent.; weight, 126 lbs. Blood analysis: Non-coagulable nitrogen, 43 mg. per 100 c.c. Alkalinity, 40 c.c. CO_2

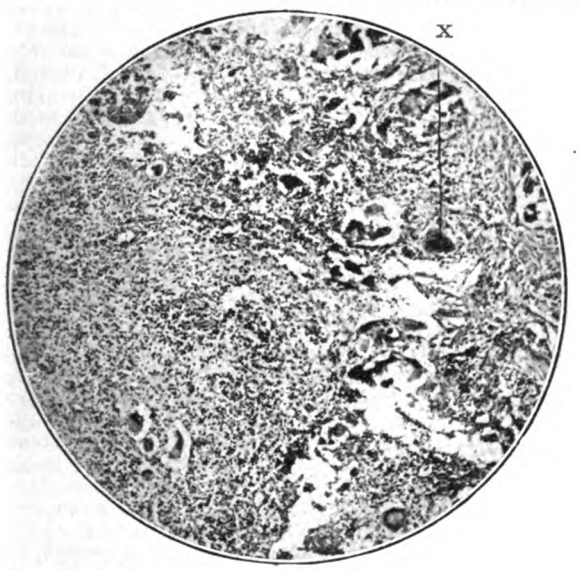

FIG. 7.—Low power view taken from a section removed after the fourth treatment, showing the fibroblastic replacement of the killed cancer. Also calcification (x) of as yet unabsorbed debris.

per 100 c.c. She was discharged, tentatively cured.

In March, 1920, the patient was requested to present herself for another examination. She appeared to be in splendid health, had a good appetite, ate everything, and weighed 142 lbs. She complained of slight distress after eating for the past week. She was given two more treatments four days apart, with slight focal reaction and a temperature of 100.2° in response to the first treatment, but no febrile reaction to the second. Within a week the indigestion had disappeared and has not returned to date. In July, 1920, her weight was 152 lbs., and she reported no trouble. Examined again August 1. Weight 159 lbs. She is still in excellent health.

CASE III—This case, with its control case and the case following, are submitted to illustrate the effect of doses of various amounts of tissue thrombin. These three cases came from the same region in Michigan, two from Bay City and one from a neighboring town. The first two are in patients of normal weight of about 200 lbs., the third a normal weight of 160 lbs. The first two have similar carcinomata of the large bowel, and the third a gastric cancer.

Mrs. B., referred by Dr. H. J. Meyers of Saginaw, Mich., January, 1920. *Family History.*—Mother died of heart failure at the age of 69 years. Father died of cancer of stomach, age 71. Two sisters died of tuberculosis. She has one son living and well. *Past History.*—Scarlet fever at 8 years, and a cervix repair operation about 25 years ago. *Present illness*, reported by Dr. Meyers, as follows: "Mrs. G. B., housewife, age 52, was first seen by me in consultation with her home physician in Bay City. This was in October, 1919. The story was as follows: A few days before, Mrs. B. had been very suddenly seized with intense abdominal pain, most marked in the upper left quadrant. There was nausea but no vomiting. The pulse became rapid and weak. There was great prostration, and the patient bordered on collapse when Dr. K. arrived and administered morphine and stimulants. This attack occurred about 3 P. M. The next morning at 2 o'clock the patient had a large hemorrhage from the bowel. Two hours afterward a second bloody stool was passed. There was no recurrence of the pain. At the time of consultation, a few days after the above attack, inquiry elicited the fact that the patient, who had been a very strong, robust woman, had lost 20 lbs. during the last few months, and that she had had a feeling of weight distress and pain in the left upper quadrant of the abdomen. Examination failed to disclose more than a feeling of rigidity over the left rectus muscle. There was also a tender area that could be mapped out on deep pressure, but no tumor could be definitely found by external diagnostic methods. Rectal investigation for a possible source of the hemorrhage was negative. *X*-ray investigation of the upper digestive tract with the bismuth and barium meals was negative, but tracing the meal through the colon we were impressed by the fact that there was marked angulation at the splenic flexure of the colon, and that shadow seemed to thin out markedly at this point, and also that the appearance of the chemical in the descending colon was appreciably retarded. A tentative diagnosis of probable malignant trouble was made and an exploratory laparotomy was advised. On November 4, 1919, the operation disclosed the following pathology: A large irregular fusiform tumor situated at the splenic flexure of the colon. This mass was in and surrounding the lumen of the bowel, and was bound down to the posterior abdominal parieties. The mesocolon and mesenteric glands were infiltrated. The entire mass was practically inaccessible to surgical interference, and after due investigation it was decided that the tumor was inoperable. The abdomen was closed and the patient returned to bed. When the patient regained consciousness there was an excessive amount of pain resembling in character the pain she previously suffered just previous to the hemorrhage at the beginning of her trouble. The subsequent convalescence was uneventful, and she was then referred to you for treatment."

Physical examination December 8, 1919. Weight 201 lbs. Urine negative to albumin and sugar. R.B.C., 3,400,000; H. 70 per cent.; stools tarry. Wassermann negative; temperature 97°-98°. Inspection revealed upper left quadrant of abdomen to be fuller than other side. Palpation revealed same to be very tender, rigid and with dull percussion note. Patient complained of inability to lie on the left side or to touch same with her arm, and also of severe pain most of the time in that region.

Treatments of 5 mgms. each were given on December 20, 22, 29, 30, and January 2. The reaction temperature at no time rose above 99°. On January 5, 50 mgms. were given. This was followed in 24 hours by a fever of 102.5°, accompanied by the severe focal pain that had previously called attention to her sickness. Twenty other treatments were given up to July 20, each of 5 mgms. In no case did a reaction follow with a fever of over 99.4°. The last four treatments elicited no reaction whatever. On January 20, she could lie on her left side and the tenderness to pressure was very much diminished. On February 9 the soreness had entirely disappeared. By May 12 her stools had lost the tarry color. On July 6 palpation of the abdomen, as deep as the posterior parieties, elicited neither tenderness nor pain, and no suspicion of a mass could be found. She weighs at present 219 lbs., and is apparently in perfect health.

CASE IV.—As a control case Mr. H., referred by Dr. Tupper of Bay City, is selected. Occupation, banker;

age 56; normal weight about 200 lbs. *Family History.*—Negative to cancer. *Past History.*—Besides fevers of childhood, was well until present illness. This came on early in 1919 with constipation, pain and tenderness in lower right quadrant of abdomen. Iliocolostomy was performed by Dr. Tupper in November, 1919, to sidetrack a large obstructing carcinoma of the ileocecal region. Examination December 1, 1919. R.B.C., 3,200,000; H., 60 per cent.; weight, 162 lbs.; pulse, 130; temperature, 95.2°; tarry stools. He was quite exhausted from his trip to Detroit. On December 3, the first treatment of 25 mgms. was given. On the next day he tried to walk but suffered a sinking spell. Twenty-four hours after treatment was given the temperature remained at 97°, pulse 110. Succeeding treatmentss of 50 mgms. of tissue thrombin given at intervals of three and four days were followed by temperature elevations which gradually came, after the ninth treatment, up to 102.5°. Two more such treatments were followed with a fever of 101.5° and 100° respectively, and the following treatment elicited no reaction at all. During this period the tenderness gradually left, and on December 31 examination could elicit neither tenderness, rigidity, pain nor mass. The patient was able to go about as he pleased, having gained 45 lbs., and holding a temperature of 98°-98.4°. Treatment was then discontinued. In March, 1920, three trial treatments of 50 mgms. were given in one week, with neither febrile nor focal reaction, abdomen apparently normal. Weight 205 lbs. R.B.C., 4,200,000; H., 85 per cent.

The case of Mrs. B. shows that small doses are effective, but require a longer period and a larger number of treatments. This case gave the usual response to the ordinary dose. The control case of Mr. H. demonstrates that after the exhaustion had been overcome, the 50 mg. dose of tissue thrombin brings on the usual reaction, with fever at 102°, and that with larger doses fewer treatments are required.

CASE V.—The following case demonstrates the activity of large doses as 100 mgms. of the thrombin:

Mrs. Z., age 53, referred by Dr. Friedlander, March, 1919. *Family History.*—Father died of dropsy at age of 71 years. Mother died of rapidly growing tumor of uterus when 71 years old. One sister died of cancer, age 65; one brother died of cancer of the stomach at the age of 63 years. Two brothers are living, one well, age 52; the other has heart trouble, age 56. Four children, one died as baby of "cramps," one boy died of scarlet fever, age 7½ years; two children living and well—a boy, 24; a girl, 23. *Past History.*—Scarlet fever at 6; la grippe and bronchitis at 25; repair operation after childbirth, age 34; hysterectomy for malignancy, age 47; otherwise well until 14 years ago. Had burning pains in stomach after and before eating, vomited often and occasionally vomited blood, one-half pint at a time. Stomach improved somewhat until present illness. *Present History.*—February 4, 1918, had attack of severe pain, doubled up and not relieved without morphine. The spells came on every two weeks until March 24, 1919. At that time her weight was 126 lbs. Gastric analysis at this time showed absolute achlorhydria. The stools were tarry, and practically all food ingested was vomited.

On March 24, an exploratory operation by Dr. Friedlander showed a very large mass involving the liver, stomach, gall bladder and intestines. From its physical characteristics it was diagnosed carcinoma of pyloric origin by Dr. Friedlander, Dr. Israel and some other surgeons who happened to be present. No specimen was removed for microscopic confirmation because there could be no doubt of the diagnosis, and belief in the inadvisability of such procedure.

Treatment started April 8, 1919. At this time the patient could take small quantities of liquids and even this diet caused vomiting. Examination revealed a hard triangular area 11 c.m. long and 12 c.m. wide at its base just below the costal margin and extending over the epigastrium. This area was very tender and the seat of the pain. At first 50 mgms. of tissue thrombin was injected. In 24 hours a fever of 102.2°, lasting 8 hours, was elicited. There was very severe pain and vomiting of much mucus. Six days later a second injection, this time of 100 mgms., was given, followed in 24 hours by fever of 104.2° and lasting 10 hours, accompanied by very severe pain in abdomen and aching in limbs and head. Every "bone felt broken," she complained, and there was vomiting of mucus. Four days late 200 mgms. was injected, the fever rose in 24 hours to 105.4°, and after an hour dropped to 104.4°, when it soon dropped to 103° and remained for 14 hours. The pain was again severe and the universal aching was very distressing. She was then given a vacation of two weeks. On her return she weighed 136 lbs., was much stronger, having eaten fairly well and vomited mucus only twice, but no food, during the two weeks. The tenderness in the abdomen was much reduced and the tumor palpable through the abdominal wall felt about the size of an orange. She was then given three treatments of 50 mgms. at three-day intervals. The reaction started 24 hours after treatment, fever being 103.5°, 101° and 100.2° respectively, and with less severe pain and no vomiting. After the last treatment the mass on very deep palpation was about the size of an egg. Five days after the last treatment the patient developed a tetanoid condition, with stiff neck and laryngeal spasm which I cannot explain unless it was due to some guanidine products absorbed from the killed cancer or possibly to a mild tetanus infection. The former diagnosis was favored by those physicians who examined the patient. This lasted for four days, but recovery was complete only after two weeks. At this time no mass was palpable on examination by Dr. Friedlander, Dr. Israel, Dr. Watkins and myself. She returned home in June, 1919.

In October, 1919, I examined her. No palpable mass or tenderness was found. She had no pain up to that time, was doing all her work, never felt fatigued, and her digestion was perfect. Stools, normal color. Weight 149 lbs. A sample of gastric juice was taken showing 0.9 per cent. free HCl. R.B.C., 4,450,000; H., 90 per cent. Blood analysis: Noncoagulable nitrogen, 33 mgms. per 100 c.c.; alkalinity, 52 C.C. CO_2 per 100 c.c.

March, 1920, weight 161 lbs., feeling perfectly well, no palpable mass or tenderness. She was given two injections of cephalin (0.5 gm.), which I believe promotes cancer growth. This was done to light up any hidden cancer tissue, if it were present. Patient remained well until June, 1920. Two more injections of cephalin (0.5 gm. each) were given. I heard from from her July 29, 1920. Weight 163 lbs., feeling well in every way, and her stomach perfectly well except that she complained of having had pain in lower abdomen at times and occasional diarrhea, which at present has nearly cleared up. She will be examined in due time and treated with tissue thrombin, if required.

This case illustrates, in support of the former, that the size of the dose determines the extent of the reaction, and that with larger doses fewer treatments are required.

These experiments show, then, that the tissue thrombin does not behave as a ferment but acts quantitatively. Moreover, the chemical properties are not those of a ferment. This is a matter of some interest, since ferments can induce the production of antibodies when injected into the animal body. Nevertheless the conversion of at least two pounds of cancer tissue by less than ½ gm. of tissue thrombin qualifies this substance, in some measure, as a catalyst.

CASE VI.—This case is presented, with the case following, to differentiate, by the type of reaction, a gastric carcinoma and a gastric ulcer; that is, a carcinoma and a precarcinomatous condition.

Mrs. S., age 72, referred by Dr. Watkins of Detroit. May 9, 1919. There is no history of cancer, tuberculosis, or insanity in the family. *Past history* shows, besides measles in childhood, a history of gastric ulcer, indigestion, intense hyperacidity, several hemorrhages 15 years ago, and the development since that time of a

peculiar arthritis in the fingers and in the bones of the feet, which more recently made walking difficult and limited digital motion. *Present illness* started with abdominal pain after eating and the inability to retain food for several weeks, and, in addition, several severe gastric hemorrhages repeated at intervals of a few days. She was admitted to Grace Hospital May 6, 1919, after a severe gastric hemorrhage. The diagnosis was made by Dr. Watkins from the clinical history, *x*-ray findings and physical examination as follows: Carcinoma of the posterior wall of stomach, involving the pylorus and causing considerable stenosis. He also gave a prognosis of only a few days to live. Examination of the abdomen showed some tenderness in the epigastric region, but no mass could be palpated. Because of the anemia a transfusion of 500 c.c. of blood was given. This raised the blood count to 2,850,000, and the hemoglobin to 37 per cent. The Wassermann reaction showed slight inhibition. Patient had been having a cardiac irregularity for some time. At this time her pulse was irregular and weak, and under the control of digitalis. She was able to take a half ounce of milk and cream hourly.

She was given an injection of tissue thrombin (50 mg.) May 9, 1919. In 24 hours a fever of 101.2° developed, and the abdominal pain was intense, the heart showing signs of failure. With sufficient stimulation the heart was kept going, and three days later another treatment was given of 50 mgms. tissue thrombin. In 24 hours the temperature rose to 102.8°, with considerable gastric pain for six hours, and some cerebral disturbance, perhaps due largely to the anemia, and with pains over the body as in la grippe, for 12 hours. This typifies the reaction in this patient. She received four more treatments at intervals of several days, to which the response was less for the second last, and *nil* for the last treatment. During this period of four weeks' treatment there was no hemorrhage, nor has there been any since, and the diet was increased to the regular tray. The pain rapidly disappeared, and she has not vomited nor had any hemorrhage since treatment started. In August, 1919, she was given a trial treatment, but neither pain nor fever could be elicited. She remains well to date, a period of 15 months, and is up and about, feeling better than she did five years ago, and without gastric symptoms, and the gainer of considerable weight.

CASE VII.—This is a gastric ulcer case, referred by Dr. H. Ulbrich of Detroit, who presents the following case history: "Mr. G., age 47 years; occupation, paint grinder, handles white lead. Father died at 73 or 74 of carcinoma of stomach (?). Mother died at 73 of pneumonia. *Past History.*—Smallpox at 12 years. Rheumatism in 1900 and in 1916. Lighter attacks in between times. *Present Illness*—Started two months ago with vomiting. Mucus aggravation morning on arising. wakens at night with dryness of mouth. Rolling in stomach ends up like a ball in hepatic region, with pains in right chest, followed by eructations, after which he feels relieved for five or ten minutes, and then the process repeats. Pain in the lumbar regions. Arises from chair with difficulty. Headaches—frontal. Vertigo. Malaise. Lost 5 lbs. that he knows of. Urination $\frac{4\ D.}{O\ N}$ Bowels, constipated. Sleep poor; appetite gone. Nauseated. Distress after eating. Eats bread and milk. Small amount of coffee—three cups a day and one cup of tea. Pain comes on from one to one and a half hours after meals, worse mornings than afternoons, and lasts until the following meal. Food relieves for one to one and a half hours. *Physical Examination.*—Teeth poor. Pyorrhea. Post-pharyngoceles. Enlarged turbinates, chronic rhinitis, abdomen-liver dullness at lower rib. Some pain in right iliac, slight over gall bladder. No tension of muscles, no tumor.

January 22, 1920.—Urine: Slightly acid. Sp. gr. 1030. Albumin and sugar negative. Temperature 98°. Pulse, 80. Bl. P. 128-78 sitting. Bl. P. 128-90 standing. Heart: Apex, fifth interspace inside nipple. Dullness ½ c.m. outside nipple. Heart not enlarged. Sounds normal, no murmurs. Lungs: Nothing abnormal found. Abdomen: Some tenderness, right duodenal region. Pressure below ensiform cartilage causes pain to gall-bladder region. No tension of muscles. Genito-Urinary: Normal, except for slight varicocele. Rectum: No hemorrhoids seen. Extremities: No varicosity. Differential Count: Poly. 65.3; small, 17.3; Large, 16; transi., 1.5. *X*-ray findings: February 1, 1920. The barium meal passes through the esophagus without note. There is a slight retardation at the cardiac end of the stomach. The barium readily settles to the fundus of the stomach, the greater curvature of which is lying on a level with the umbilicus. The barium readily enters the duodenum. There is no dilatation of the stomach. No niche or incisura is visualized. The pars pylorica shows a persistent spasm which does not interfere with the passage of the barium. The duodenal cap does not show the typical appearance, but is slightly flattened. However, no niche or incisura is visualized. The peristaltic action of the stomach appears normal. The duodenum is situated in the usual position and is movable, showing no adhesion around the duodenum. Palpation over the pars pylorica causes pain. The plates verify the deformity at the pyloric end, which is persistent in all the plates taken. The further examination of the intestines and colon do not show any deviation from the normal. Roentgen Conclusions: Pyloric ulcer or carcinoma, (beginning carcinoma), most likely an ulcer."

When patient presented himself for treatment he was not able to work and felt scarcely strong enough to come to the office. Treatments of 50 mgms. of tissue thrombin were given March 3, 10, 17, 21, 24, and April 5 and 12. The first four reactions consisted only of pain in epigastric region, with increased gastric symptoms for about 6 hours during the day following the treatment. But the temperature did not vary, running from 97° in the morning to 98° in the evening. The fifth treatment brought no response, and the patient was well enough to go to work, not having vomited and having had only mild gastric distress for a week. The treatments given April 5 and 12 brought on no reaction, and at the time the patient felt as well as he ever did, being able to eat anything on the table without any distress. He has had no hyperacidity, pain or vomiting since, and has gained 17 lbs. in weight.

This case demonstrates that in gastric ulcer focal pain and hyperreflexia are the only reactions to treatment, and that a febrile reaction is not attained in this condition. Contrasted with the preceding case, this fact is well brought out and the diagnostic value as well as the curative value of the treatment emphasized.

CASE VIII.—This case illustrates the reaction in a carcinoma of the breast, associated with Paget's disease.

Mrs. P., housewife, age 47. *Family History.*—Father died of old age, at 81 years. Mother died of old age at 79. One brother died of heart disease at the age of 55; another died of apoplexy at 42 years. One sister and three brothers are alive and well. One child, age 22, alive and well. *Past History*—Chickenpox before 10 years of age. One attack of rheumatism nine years ago and another two years ago, neither of which lasted more than a week. No other sickness until onset of present illness. Menstrual periods regular and not very painful. *Present Illness.*—In March, 1919, first noticed pain in the right arm, shoulder-blade and right breast, which grew worse, so that by June she could not use the right arm at housework. By this time she became rather weak and "inexpressably tired all the time," and the pain in right breast just behind nipple interfered with sleep. She became short of breath on slight exertion and coughed considerably. The tumor was first noticed in April, 1919, four weeks after the pain set in. It was about the size of a walnut, and she became cognizant of the fact that the nipple appeared fissured and smaller than the left one. She was examined by Dr. J. Davis in August and October, 1919, as well as by several general practitioners, who diagnosed the condition as carcinoma and recommended immediate radical amputation of the breast.

I first saw the patient on November 5, 1919, and found the right breast larger than the left, the nipple

fissured and retracted, and exuding some blood and a slight amount of thin pus. The upper right aspect of the nipple was eroded and the areola and surrounding area converted into a characteristic Paget's condition. Behind the nipple a very tender and hard mass about the size of an egg was found. Two other small masses, one along the outer edge of the pectoralis major muscle and one at the inner end of the third interspace of the same side, were both found to be tender and immovable. Only slightly enlarged glands could be palpated in the deeper axillary region. The left breast was normal. Her weight at this time was 157 lbs., temperature 97.4°. Wassermann negative. Blood, alkalinity, CO_2 combined, 84 c.c. per 100 c.c.

A treatment of 50 mgms. of tissue thrombin was given November 5, followed in 24 hours by a chill, fever of 102.4°, dyspnea, incessant dry cough, severe headache, smarting eyes and nausea, and a very severe burning pain in the areolar region and a severe aching pain in the tumor. This lasted five hours and eased up gradually until it disappeared. For the next few days there was less pain than she had before treatment. The second treatment was given November 9, followed by a similar reaction on the next day for four hours. After this treatment the Paget condition looked much less angry and the discharge had stopped. A third treatment was given November 14, and a similar reaction set in in 24 hours but was not as severe as the former two, and there was no dyspnea. The bleeding had stopped when she presented herself for a fourth treatment, and the Paget condition now looked like a mild eczema that was nearly healed. She still had a mass about the size of a walnut behind the nipple, but it was less painful and did not interfere with sleep, and the pain in the arm and shoulder had practically disappeared. Palpation could not locate another mass. After eleven more treatments with rather mild reactions, the pain, tenderness and mass had entirely disappeared, the nipple had gradually returned to its normal position, and the entire areolar region had become normal. A slight deficiency was left in the upper right corner of the nipple and the breast as a whole is noticeably smaller than the left breast.

I sent her to Dr. R. Wollenburg on March 5, 1920. He reported that he found her in perfect health, with normal breasts. I also sent her to Dr. James Davis January 25, May 5, and July 26, 1920, for examination. He reported not being able to find any suspicious tissue after thorough examination.

Patient has been given several treatments at intervals of four weeks without any reaction following, and has now remained tentatively cured six months. She has gained six pounds, and reports that she is not fatigable and can use her arm at washing cloths, etc., without any pain and as well as she ever could. Blood alkalinity, CO_2, combining power 57 c.c. per 100 c.c.

CASE IX.—The following case is presented to illustrate the type of response elicited in a rapidly growing squamous-cell carcinoma in a young patient.

Mrs. W., age 33, normal weight 130 lbs., three years ago. Referred by Dr. F. E. Thompson. *Family History.*—Father alive and well, age 75. Mother, age 68, alive and well. Mother's sister died of cancer of the stomach at the age of 68. Two sisters died in infancy, one of colera and one of dropsy. Another sister died of diphtheria when 5 years old. One brother died of diphtheria, age 8. *Past History.*—Measles, mumps, pertussis and diphtheria in childhood. Well until present illness. *Present Illness.*—Started in June, 1919, with severe pain in lower back and a urinary frequency of every 30 minutes, accompanied with severe pain on micturition, and severe, constant headache. Patient was "very tired and weak all of the time." Several times a day deep, cutting pains occurred in lower abdomen. Discharge was excessive, somewhat bloody, but not very odorous. She consulted Dr. F. E. Thompson and also Dr. Wm. Donald on October 1, 1919, who diagnosed the condition as carcinoma of the cervix. A specimen was removed by Dr. Donald for microscopic confirmation. The diagnosis returned was squamous-cell carcinoma of the cervix uteri.

On November 19, a vaginal hysterectomy was performed by Dr. F. E. Thompson. The tissue removed was examined microscopically and diagnosed squamous-cell carcinoma. For the first two weeks after operation, patient appeared to improve, but in the following two weeks this improvement gave place to a rapid decline. The rectum became so painful that the sitting posture was impossible. The very severe pain that developed in the abdomen increased, so as to cause reflex paralysis of the limbs and inability to either walk, turn over in bed, or reach for things. This was accompanied by intense pain in the hips and thighs, constipation and loss of appetite. The patient was examined by Dr. Thompson on December 20, as well as by myself, and found to have carcinomatous recurrence between the vagina and the rectum, in the rectum, and symptomatically in the region of lumbar and sacral plexes, and in the liver.

She presented herself for treatment December 21, 1919. She could not walk; weight 115 lbs. A treatment of 50 mgms. of tissue thrombin was given at 9 P. M., December 21, 1919. On the next day at 10 P. M., 25 hours after treatment, the patient awoke with fever of 104.3°; pulse, 120; intense headache, backache, grippy pains all over the body, and nausea all night until 10 A. M. next day. Within 3 hours after its onset the temperature rose to 105.2°, and did not fall below 104° until after 9 A. M. the next day. A drenching sweat followed the fever and the patient then felt much better than she had for the past four weeks. December 23, a second treatment of 25 mgms. was given. This was followed in 24 hours by a fever of 102°, lasting from 11 P. M. to 5 A. M. of the next day and accompanied by the other features of the former reaction, but not so severe. After the reaction subsided the patient could turn over or lie in bed on either side and was able to take a few steps. On the next day she could limp about, had a better appetite, and her bowels moved without so much pain. On December 28, 5 days after the second treatment, she walked ¼ mile without limping, and was without any pain whatever. Temperature 98.2°, pulse 80. On December 30, 1919, January 2, 6, 10, 12, and 27, 1920, she received additional treatments. The reactions gradually let up in severity after four of these treatments and then did not occur again.

She was examined by Dr. Thompson April 5, 1920, and no suspicious tissue could be found. She was likewise examined May 18 and July 1, and pronounced cured by Dr. Thompson (tentatively cured, of course). She was given a trial treatment July 16, 1920, but no reaction was elicited. The patient is perfectly well to date, her present weight being 149 lbs. She works hard all day without fatigue, pain, discharge, or any signs or symptoms of cancer.

DISCUSSION OF CASE HISTORIES.—*The Reaction.* Every carcinoma case presented, generally 24 hours after the treatment, developed a febrile reaction, accompanied by increased focal pain and hyperreflexia of the affected part. Moreover, a systemic intoxication is expressed in the grippy feeling accompanying the reaction. These phenomena are no doubt due to the swelling of the coagulated tissue and to oxidation of the absorbed products. That these products are to some extent toxic is illustrated in the case of Mrs. Z., who had severe reactions from the large doses given and who developed a temporary tetanoid condition.

I might cite briefly in this connection a case of very extensive carcinoma of the ovary. Mrs. W., referred in August, 1919, by Dr. Larson. This patient, from sheer exhaustion, was barely able to move about in bed, and after receiving three treatments died in a reaction from the intoxication of absorption of the killed cancer tissue. Autopsy showed that the large mass was entirely caseated and could be torn to bits without resistance. This toxic reaction has a diagnostic value, since it occurs constantly in cancer patients. I have not been able to obtain either a focal or a febrile reaction by injecting as much as 2,000 mgms. of the tissue thrombin in healthy men, or in noncancerous patients with gummata, tabes or tuberculosis.

Moreover the focal reaction is of value in determining the distribution of the cancer tissue. For instance, those cases of breast cancer with pulmonary involvement develop dyspnea and dry cough during the reaction, as in the case of Mrs. P. I may cite as an illustration of the possible severity of a focal reaction the case of Mrs. S., referred by Dr. J. H. Carstens in October, 1919. This patient weighed about 170 lbs. *X*-ray plates showed marked pulmonary involvement in both lungs and a dilatation of the heart, especially on the right side. In her right breast was a hard mass 9 c.m. long and irregularly 4 c.m. thick. The skin was movable above it. In the left axilla were a mass as large as a lemon and also several smaller masses. The left breast had been removed two years previously; the scar remaining appeared healthy.

This patient suffered quite severe dyspnea, the respiration running generally around 38, while the heart rate was variably 140. She was very cyanotic and the slightest exertion brought on intense dyspnea. Cough was incessant. The patient could not repeat more than two letters of the alphabet without taking breath. She was given six treatments, of 10 mg. each, weekly. The improvement in respiration was so marked that she could get up and walk about, only breathing twenty-eight times per minute. In the meantime the mass in the right breast disappeared, and the mass in the left axilla had diminished in size to that of a walnut. During the reaction periods she required constant stimulation, and even then the cough and dyspnea were almost unbearable. Her reaction temperature varied between 101° and 102°. After having improved so markedly, I risked a treatment of 50 mg., which proved to be too much for the patient, and she died in a reaction of cardiac failure. There was sufficient cancer left in the lungs, no doubt sufficiently swollen during the reaction, to obstruct the pulmonery circulation and cause failure of the right ventricle. An autopsy was not obtainable.

This illustrates that in very extreme cases the focal reaction also may be dangerous and that here the dosage must be guarded.

The gastric ulcer case showed no febrile reaction. We therefore now possess an additional means of characterizing cancer by the febrile reaction elicited by this treatment and, since this depends upon the chemical and physiological properties of the cancer tissue, it depends upon the intrinsic essential structure of the cancer and is therefore more valuable as a diagnostic feature than the microscopic characteristics. Furthermore, a good thermometer is the only instrument needed to estimate the fever and the personal equation for error cannot be so great as that to which the pathologist is subject.

The Results of Treatment.—These are, as illustrated by the cases presented, disappearance of the tumor and its attendant cachexia, return to normal of the blood chemistry—the alkalinity, for example; increase in the blood count and hemoglobin content—a doubling of the blood count in four weeks, for instance; increase in weight to normal or above normal, as in the case of Mrs. W.—often an increase of 40 lbs., cited in Cases I and IV; complete disappearance of pain and soreness and return of function, as in the case of Mrs. Z., where a previous achlorhydria gave place to a 0.9 per cent. HCl content in the gastric juice, incident, of course, to the return of the blood alkalinity to normal. The rapid recuperation of the patient after the carcinoma has disappeared, and the loss of easy fatigability, as demonstrated by these cases, are also significant.

The Sequelæ.—The sequelæ are also physiological. In a region as the breast of Mrs. P. (Case VIII), a deficiency exists in place of the cancer tissue. In a region where there is a necessity for replacement of the cancerous area by scar tissue this takes place, as in the case of Mrs. B. (Case I), where a large vesico-vaginal fistula was entirely replaced by scar tissue and the deficiency made good.

That the tissue thrombin itself is not injurious to the patient is illustrated in the cases presented by failure to obtain a reaction after the cancer tissue has disappeared, by the steady gain in weight during treatment and by the increase in the blood count and in the hemoglobin content during and after treatment, and by the normal noncoagulable nitrogen content of the blood after treatment, which indicates that no injury has been done to the kidney.

The isolation of the thrombin free from products that are injurious and that promote cancer growth is a matter of great difficulty and only after over three years of constant experiment have I succeeded in working out the only two possible methods that can yield a useful product.

The chemistry of the thrombin, its isolation and certain synthetic work will be reported in some chemical journal. I owe my deepest gratitude to the clinicians who have cooperated with me so kindly in this work.

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355 SHERIDAN AVENUE.

OUTLET PELVIMETRY.

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OUTLET pelvic mensuration is so important and yet is so little understood and practiced (in general) that its principles cannot be too often brought before the medical profession. It concerns every physician who attends a woman in childbirth, to know the size of the pelvis; both its "inlet" and its "outlet."

In 1915 I presented this subject, together with the description of a *pelvimeter*, for measuring the transverse, posterior sagittal, anterior sagittal, and anteroposterior diameters of the pelvic outlet; and the height of the symphysis pubis. During the five years that have elapsed the demands of the Government lessened the services of instrument makers for individuals; and as a consequence, the manufacture of the little instrument was stopped after a few had been produced. Meanwhile we have been

putting it to practical test in a large antepartum clinic and its general principles have been found to be as satisfactory as at first anticipated. Two changes, however, have been made in the mechanism: one, by which it will now measure a transverse of any length from 6 cm. to 11 cm.; and the other change, whereby the thumbscrews have been eliminated; the caps and transverse rod now working by screw thread action; making the instrument even simpler than when first constructed.

Description of the Pelvic "Outlet."—By the *outlet* is meant the bony outlet, which comprises the *two planes* which may be considered practically as one area, bounded by the pubic arch and the immovable *anterior* tip of the sacrum. When this area is too small, a child's head which normally fits under the pubic arch cannot pass uninjured. It is here that the forceps is so often used with destructive effects to both child and mother, owing to the narrowness of the pubic arch. If knowledge of the limited area is known beforehand, as it can be known by measuring it antepartum, or even in the early part of labor, other means of delivery may be substituted. The attempt to drag a head through an impossible pelvis is not warranted. We may not be able to measure accurately the child's head, but we can tell by measuring when a pelvis is too small for *any* head to pass.

The Pelvic Diameters.—The transverse diameter of the pelvic outlet is the distance between the lowest innermost margins of the tuberosities of the ischium; in the living, normally 10.5 cm.

The distance from the transverse to the *anterior* tip of the sacrum is the *posterior-sagittal diameter;* the distance in a straight line from the center of the transverse to the *sub-pubic* arch is the *anterior-sagittal* diameter; and from sub-pubic arch to the *anterior* tip of the sacrum is the *antero-posterior* diameter of the pelvic outlet. Geometrically these lines form a triangle.

In *funnel pelves* the *available outlet* is practically between the transverse and the anterior tip of the sacrum:

Transverse 8	cm.	Posterior-sagittal must be at least	7.5 cm.
Transverse 7	cm.	Posterior-sagittal must be at least	8 cm.
Transverse 6.5	cm.	Posterior-sagittal must be at least	8.5 cm.
Transverse 6	cm.	Posterior-sagittal must be at least	9 cm.
Transverse 5.5	cm.	Posterior-sagittal must be at least	10 cm.

The head of average size will pass the outlet if the transverse is 8 cm. or above and the posterior sagittal 7.5 cm., *the normal length.*

In pelves of normal size the subpubic arch is wide enough for the head to pass immediately beneath it; but with a narrow pubic arch, as shown in the table, the head must pass, if at all, below the arch at a distance from it down the pubic rami, varying according to the degree of narrowing; and in order to do this, the tip of the sacrum must be located farther back than it is in its normal position. If sufficient compensation exists, it forms a *new available outlet;* the *transverse,* tubero-ischial diameter being substituted for the pubic arch and the *posterior sagittal* diameter being substituted for the anatomical anteroposterior.

To Measure the Pelvic Outlet Diameters.—The pelvic outlet diameters are the *tubero-ischial* or *transverse,* the *posterior sagittal* and the *antero-posterior.* The transverse measurement is made between the lowest inner margins of the tuberosities of the ischium. The anteroposterior is *measured* from the subpubic arch within the vagina, to the tip of the sacrum *posteriorly* and deducting 1 cm. to allow for the thickness of the sacral tip. The *posterior sagittal* diameter cannot be measured directly, but may be approximated by carrying the tip of the pelvimeter backward over the tissues to the tip of the sacrum posteriorly and subtracting 1 cm. to allow for the thickness of the tip. It is impossible to measure this diameter without having a fixed transverse base line. *It was for the purpose of providing this base, adaptable* to the *varying widths* of the *transverse, together with a means in a single instrument* for *measuring from this base to the sacral tip posteriorly, that this pelvimeter was devised.*

Pelvic mensuration is not only practical, but *imperative!* Measurement of the pelvic outlet diameters should be included in every antepartum examination. This little instrument measures a transverse of from 6 cm. to 11 cm., and the other diameters as required. Figures are placed conspicuously at 8 cm. on the transverse rod and at 8.5 cm. on the curved rod to fix the attention upon these points, because they represent frequent limits of availability whereby the head may pass.

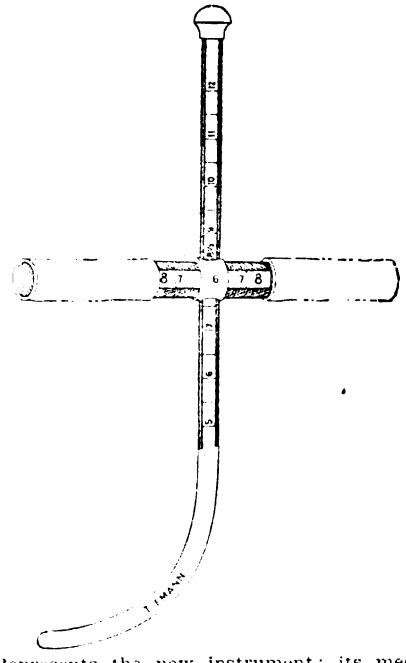

FIG. 1.—Represents the new instrument: its mechanism is by screw threads; set for the first tryout. (8 x 8½).

The mechanism of the instrument is by a screw thread action. The caps screw out and in, and the curved rod screws up and down through the transverse rod. The scale on the rods is marked at ½ cm. intervals.

To measure 7, 8, 9, 10 cm., etc., on the transverse rod, the screw caps are to be placed at corresponding figures on each side of the central rod to indicate the increase or decrease of 1 cm.

The normal length of the transverse, tubero-ischial diameter as measured in the living subject, *i.e.* over the tissues, is 10.5 cm.; and the normal length of the posterior sagittal diameter is 7.5 cm. Spontaneous birth of the head is still possible with the tubero-ischial diameter shortened to 8 cm.; the posterior sagittal remaining 7.5. if the tubero-ischial diameter is shorter than 8 cm. the head will

not pass unless the posteriol sagittal is lengthened.

If the tubero-ischial is 8.0 cm. the posterior sagittal must be at least 7.5 cm.
If the tubero-ischial 7.0 cm. the posterior sagittal must be at least 8.0 cm.
If the tubero-ischial 6.5 cm. the posterior sagittal must be at least 8.5 cm.
If the tubero-ischial 6.0 cm. the posterior sagittal must be at least 9.0 cm.
If the tubero-ischial 5.5 cm. the posterior sagittal must be at least 10.0 cm. —(Williams).

At the distance of 8.5 cm. from the tip of the curved rod on the pelvimeter in a straight line the figures 8½ are placed; because the measurement from this point on the cross bar to the tip of the sacrum externally, less 1 cm., represents the normal

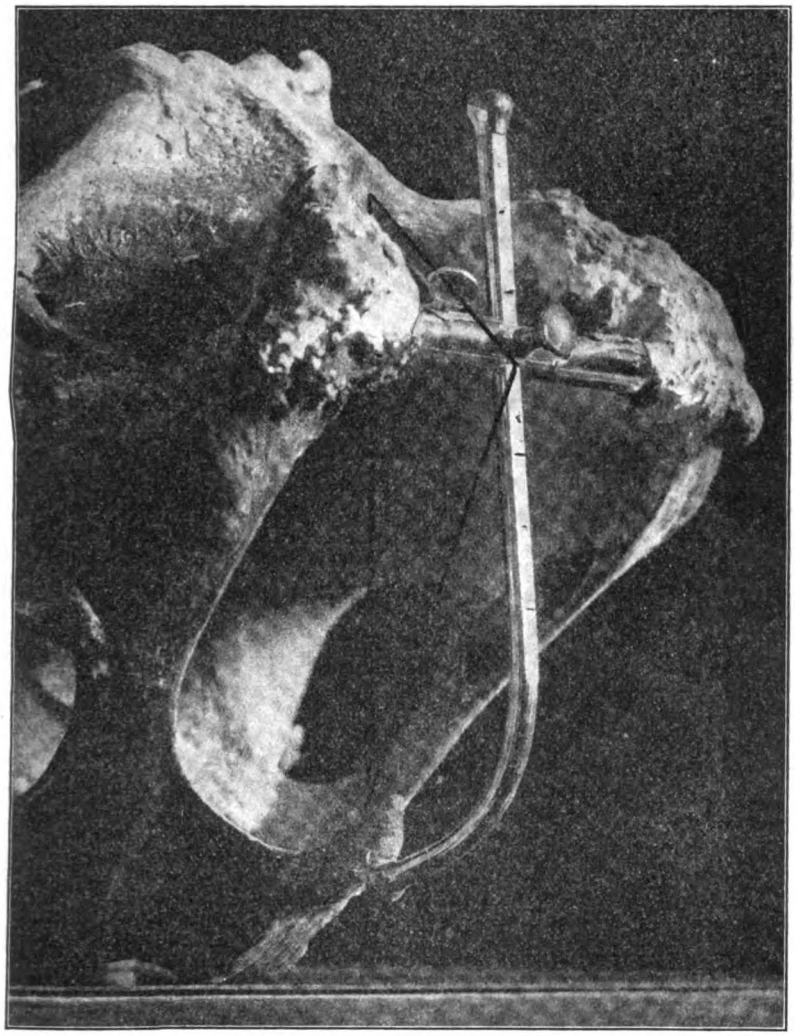

Fig. 2.—Represents the pelvimeter presented in 1915, measuring a transverse of 5.5 cm., and posterior sagittal of 10 cm.; connecting lines form a triangle representing the outlet diameters. The lower margin of the transverse bar of the instrument rests at the transverse of the outlet.

length of the posterior sagittal diameter 7.5 cm. (the measurement to the tip of the sacrum *internally*). *The posterior extremity of the true sagittal diameter is at the tip of the sacrum on its anterior surface, internally; so that* 1 *cm. must always be subtracted from the distance actually measured externally.* Other figures up to 13.5 cm. are similarly placed on the rod at 1 cm. and ½cm. intervals. *They indicate the other distances to which the posterior sagittal diameter must be lengthened to compensate for the variations in shortening of the tubero-ischial diameter.* Thus, for example:

If the reading for the
Posterior sagittal is 8.5 cm. subtracting 1 cm. equals 7.5 cm.
Posterior sagittal is 9.0 cm. subtracting 1 cm. equals 8.0 cm.
Posterior sagittal is 9.5 cm. subtracting 1 cm. equals 8.5 cm.
Posterior sagittal is 10.0 cm. subtracting 1 cm. equals 9.0 cm.
Posterior sagittal is 11.0 cm. subtracting 1 cm. equals 10.0 cm.

Use of the Pelvimeter.—A good light and posture of the patient are essential, especially if the patient is stout and the tuberosities thickly covered. One should not feel that he must hurry in defining the landmarks. A good method of procedure is to place the patient in the extended lithotomy posture on a table, with the hips well over the edge, so that the tip of the sacrum may be palpated. It is well to have the sacrum rest on a pad to protect the patient from the edge of the table. The lithotomy posture may be maintained with leg holders; or by having the feet with slippers on, rest against the top of the backs of two chairs, which are higher than the table; one chair being placed for the right and one for the left foot. This posture brings the tuberosities into prominence and prevents the *tendency to measure* the transverse diameter at a *point higher* than the tips of the tuberosities which would give a *false measurement,* viz., *one too narrow.* It is more convenient if the physician is seated. The instrument measures any distance transversely, from 11 cm. down to 6 cm. The pubic arch may be palpated from above downward with the thumbs. When the width is estimated in this manner or with the knuckles of the hand bent at the second phalangeal joint pressed between the tuberosities; the caps of the transverse bar are to be adjusted and their ends pushed up with the thumbs and trial made *to see if the distance between the tips of the tuberosities is as great as the bar drawn out.* If it is not, the instrument is taken off, and the caps set, and trial again made. (This is easier than attempting to measure the distance directly by holding the ends of the caps between the thumb and fingers and palpating and moving the caps at the same time.)

The bar now measuring the transverse diameter is held by the operator in position, and the *posterior sagittal* diameter is next measured by bringing the tip of the curved rod around to the tip of the sacrum, *and subtracting* 1 *cm.* from the distance measured. For trial the *upper* margin of the transverse rod may be fixed on the perpendicular rod at the 8.5 cm. mark.

To locate the tip of the sacrum.—If not easily felt externally, palpate the coccyx, by introducing the index-finger of one hand into the vagina; and making counter-palpation with one or two fingers of the other hand on the outside. The rectum should be empty. The coccyx is composed of four bones, which in my experience are partially movable, especially in young subjects.

Again, the coccyx is about 1¼ *in. long* (3 *cm.*);

so that, bearing in mind its usual length, its upper termination will be approximately 1¼ in. above its tip.

To Measure the Anterior Sagittal Diameter.—Place the tip of the short curve of the curved rod against the sub-pubic arch, within the vagina; and bring the transverse bar to the level of the tuberoischial line. Normal length, 5 to 6 cm. Measurement may also be made from the transverse rod upward to the sub-pubic arch.

To Measure the Anteroposterior Diameter of the Pelvic Outlet.—Place the tip of the short curve of the curved rod against the outside tip of the sacrum and measure in a straight line to the symphysis pubis within the vagina. Subtract 1 cm.

Essentials.—1. Posture: Place the patient in the dorsal or lithotomy posture with the tip of the

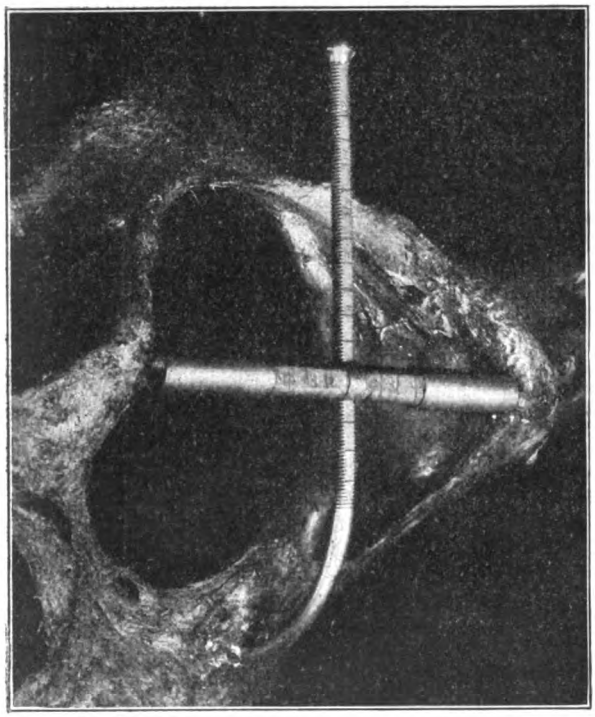

FIG. 3.—Represents the *new* pelvimeter measuring a transverse diameter of 9.5 cm. and a posterior sagittal diameter of 6¼ cm. The upper margin of the transverse bar of this instrument rests at the transverse of the outlet; being more satisfactory to push the upper margin of the ends up against the tuberosities when measuring. The respective outlets in these two pelves show different conditions. The first, a very narrow transverse; but with a compensatory sufficiently long posterior sagittal to admit the passage of the head (see table); the second pelvis has a sufficiently wide transverse outlet; but the posterior sagittal is so short that no head could pass.

sacrum well over the edge of the table. 2. Palpate the ischial rami downward with the thumbs to the *lowest innermost limits of the tuberosities* of the ischium at about the *level of the anus*, to estimate the transverse. 3. Note this distance with the eye and adjust the screw caps on the transverse rod to correspond with the distance estimated; then with the thumbs press the ends of the rod against the tuberosities at their lowest inner margins; making the adjustment until the distance is measured. 4. Having measured the transverse, lay the instrument aside for a moment and palpate the coccyx to locate the *tip of the sacrum.* Keep a finger here or place a small strip of adhesive plaster. Replace the *upper* margin of the transverse bar at the tuberoischial level and see if the tip of the perpendicular curved rod, *with the transverse fixed at the 8½ cm.* mark on the perpendicular rod, will swing around to the tip of the sacrum; if so, the length of the posterior sagittal diameter will be 7.5 cm., the normal length. If it does not reach this point, screw the rod down or up until it does reach it, and note its length. 5. Do not forget to measure the occipitofrontal diameter of the *child's head* through the abdominal wall (normal 11.50 to 11.75 cm.) and subtract 2 cm., which will give approximately the bi-parietal diameter (normal 9.25 to 9.50 cm.).

To simplify the idea of subtracting 1 *cm.* in measuring the posterior sagittal diameter, the *actual measurement* to the outside tip of the sacrum may be *substituted* as expressed in the table given for lengths of the transverse and posterior sagittal; which must be present in order that the head may come through the outlet; so that the table for *immediate computation without subtracting* would read as follows:

FOR AVAILABLE OUTLET—BY DIRECT MEASUREMENT:

Transverse 8 cm. distance to *outside* tip of sacrum must be 8.5 cm.
Transverse 7 cm. distance to *outside* tip of sacrum must be 9 cm.
Transverse 6.5 cm. distance to *outside* tip of sacrum must be 9.5 cm.
Transverse 6 cm. distance to *outside* tip of sacrum must be 10 cm.
Transverse 5.5 cm. distance to *outside* tip of sacrum must be 11 cm.

This means that if:

Transverse is 8 *postr. sagittal* would be 8.5 — 1 = 7.5 cm.
Transverse is 7 *postr. sagittal* would be 9 — 1 = 8 cm.
Transverse is 6.5 *postr. sagittal* would be 9.5 — 1 = 8.5 cm.
Transverse is 6.6 *postr. sagittal* would be 10 — 1 = 9 cm.
Transverse is 5.5 *postr. sagittal* would be 11 — 1 = 10 cm.

233 BROADWAY.

TRAUMATIC GENU RECURVATUM:

REPORT OF A CASE IN AN ADULT.

BY S. KLEINBERG, M.D.,

NEW YORK.

MRS. O., 36 years old, slipped while walking and injured her left hip. On account of a very severe nervous breakdown which followed immediately, treatment of the injured joint was suspended. After about three months a long brace was applied for the support and protection of the hip. We have very few details as to the exact diagnosis or progress of the hip condition, but the history very distinctly indicates that during the wearing of the brace, the knee was permitted to sag backward so that a recurvature was established. The patient stated also very positively that the inner bar of the brace continually pressed upon and irritated her knee. When this brace was removed another one was applied extending from the groin to the foot. This latter brace consisted of two upright bars with a continuous leather cuff from the middle of the thigh to the ankle, but it did not hold the knee straight, nor prevent it from bending backward.

When the patient first consulted me she wore this latter brace and walked with the aid of crutches. Without the crutches she could take a few steps, but only with great difficulty. The left lower limb was markedly deformed at the knee, the deformity consisting of a knock-knee condition and hyperextension to about 20 degrees beyond the straight line. The knee was immobile. The deformity appeared as shown in photograph (Fig. 1). The great trochanter was very prominent, elevated above the normal level, and the hip was ankylosed with the thigh in about 10 degrees of adduction. The *x*-ray pictures (Figs. 3 and 4) showed outward subluxation of the tibia producing the knock-knee, hyperextension of the knee and fusion of the femur and tibia through a curved bar of bone extending between and uniting the internal condyle of the femur and the inner aspect of the tuberosity of

the tibia. The articular surfaces of the femoral condyles and the tuberosity of the tibia were apparently undisturbed. The *x*-ray of the hip showed partial destruction of the head of the femur and bony fusion of the remainder of the head and the acetabulum.

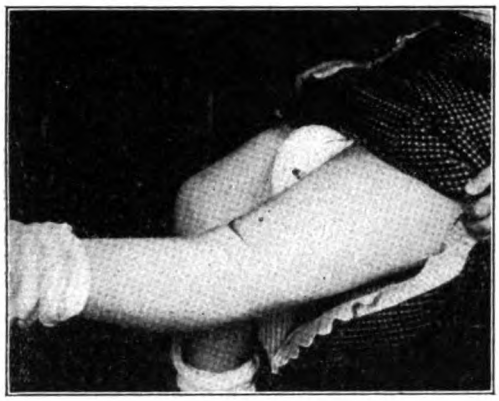

FIG. 1.—Mrs. O., before operation.

The treatment indicated was evident. No correction of the deformity could be hoped for without removal of the osseous bridge uniting the femur and tibia. Accordingly, the patient was operated upon. A vertical incision was made over the inner side of the knee and a very dense mass of bone was found uniting the femur and tibia. This bone was part of the capsule of the joint, and did not invade any of the subcutaneous tissue. It replaced the inner part of the joint capsule and the internal lateral ligament. The bone was chiseled away at the joint line, and then the joint could be moved through an arc of about 30 degrees. The limb was then manipulated and the deformity partly corrected. The contracture of the soft tissues about the knee was so great that complete correction of the deformity was impossible. However, as shown in Fig. 4 the extraneous bone was removed, the knock-knee partially corrected, the recurvature almost completely corrected, and, as seen in Fig. 2, the cosmetic result is very good.

FIG. 2.—Mrs. O., after operation.

It had been our hope, inasmuch as we obtained some motion in the knee at the time of operation, that this motion could be increased with prolonged after-treatment. However, observation showed that while we could and did maintain the correction, the knee was so sensitive that manipulation was impossible, and finally the ankylosis recurred, although it is probably fibrous.

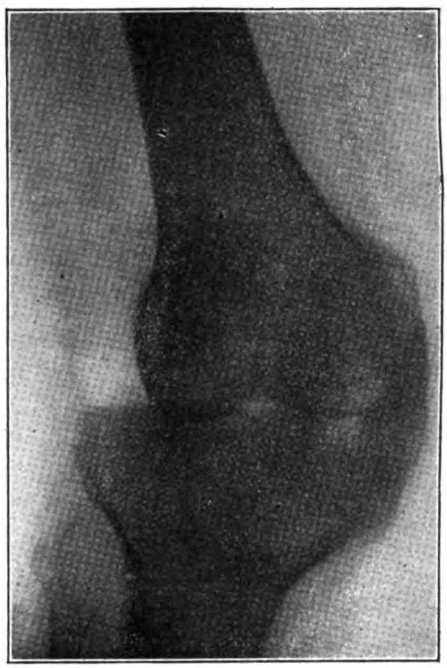

FIG. 3.—The knee-joint before operation.

This case is of special interest, first, because the deformity, a combination of genu recurvatum and genu valgum, is unusual in an adult, and secondly, the deformity resulted, as far as we could ascertain, from an improperly fitting brace. The brace had no provision for support of the knee, so that the knee sagged backward until finally a recurvature

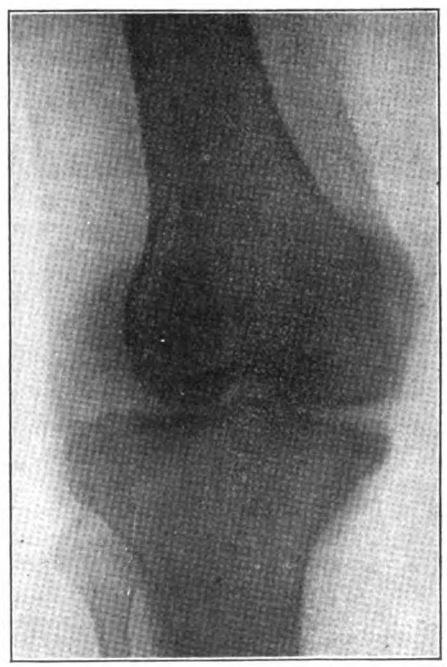

FIG. 4.—The knee-joint after operation.

was established. In addition the inner bar of the brace pressed against the knee, and by its irritation initiated a process of ossification which resulted in ankylosis.

In our daily experience with leg splints—either braces or plaster-of-Paris bandages—we have abundant proof that inefficient support of the knee, especially when support of the back of the knee is lacking, may result in a recurvature. We know, for instance, that in applying plaster or other splints for hip, thigh, knee or leg condition, the knee should be held slightly flexed, unless we are attempting to correct a flexion of the knee itself. Otherwise the knee will become relaxed and bent backward.

We do not, however, see ankylosis of a knee from splinting in cases where there was no inflammation or injury of the knee before the splint was applied. The localized ossification in this case is unusual, and we believe was the result of pressure irritation. It is also interesting to note that the ossification affected the inner part of the capsule of the joint and internal lateral ligament, but none of the other structures. It is, of course, possible that infection played some part in the ossification of the capsule of the knee joint. This is, however, unlikely as there is no history of a localized abscess or any inflammatory process on the inner side of the knee. Furthermore, the knee joint proper is free from adhesions, erosin of the articular cartilage or other evidence of infection or inflammation. The process in this case seems similar to that of ossifying myositis following a trauma.

The lesson emphasized by this case is that braces must fit accurately and should not produce continued and excessive localized pressure. Also that splints should support joints in a normal or neutral position and not in an attitude of deformity.

1 West Eighty-fifth Street.

RECOVERY OF A NEEDLE FROM TENDON OF FLEXOR LONGUS HALLUCIS.*

By W. HOWARD BARBER, M.D.,

NEW YORK.

THE patient, E. G., a young woman 25 years of age, gives a history of having driven a needle into the heel of the left foot while bathing ten years ago. The exacerbation of pain during the past few days on walking led her to believe she might have injured her foot again. Physical signs are negative excepting for tenderness over the left plantar arch. Stereoscopic and other x-rays represented the needle buried in the plantar fascia and lying parallel to the first metatarsal bone. An incision was made in line with the neelle, the foreign body was recovered, and the wound was closed, all within five minutes. The operation revealed a rusted needle 3 cm. long, impacted within the tendon of the flexor longus hallucis muscle and underlying the shaft of the first metatarsal bone. The stiffness of the tendon, as though calcified, drew attention to the possibility of the foreign body being within it. The tendon was split before the needle was exposed sufficiently to withdraw it. The instructive factors in this experience are:

1. The progression of the needle within the tendinous fibers of the long flexor of the great toe.
2. The sudden appearance of pain ten years after entry.

Roentgenogram of E. G. with tendon of flexor longus hallucis sketched in to illustrate the site of the needle lying completely imbedded within the tendon ten years after entry into the patient's heel. (Case referred by Dr. J. Kelly of Scranton.)

3. The value of stereoscopic pictures for preoperative study and the importance of anteroposterior and lateral views for localization at the time of operation.
4. The importance of searching aponeuroses and tendons in the long-standing cases of foreign bodies in the extremities.

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A SPINAL SIGN IN GASTRIC CRISES OF TABES;

THE POINT OF ORIGIN OF SUCH ATTACKS, AND THEIR TREATMENT.

By WILLIAM BROWNING, M.D.,

BROOKLYN, N. Y.

OF the various crises and episodes that occur in the course of tabes the gastric form is accounted the most frequent. And all the severer seizures of this kind are so distressing, exhausting, and sometimes even dangerous as to demand careful attention. The suddenness of onset and urgent character of these attacks do not favor careful observation. At least the customary descriptions mention little more than the emesis, prostration, and pain.

There is one sign in connection with these attacks, that has either never been noted or has not found general recognition. If observed at all it has doubtless been passed over as too insignificant for mention, but for many years the writer has found it useful as a diagnostic aid, and of recent years also as a therapeutic indication.

It is a relatively easy matter to elicit the sign, and it can be briefly described. It consists of a

point or small area of tenderness just to the left of the spinal column, corresponding to the fifth dorsal interspace or one at about that level. It is always to be found on the same side as the stomach. It may extend to more than one space, though usually most marked at a definite level. It rarely involves the other side, and then only in minor degree; I have seen but one such case.

The location relative to the spinal column is similar to that in so-called spinal irritation; but is distinguished by its unilateral character. A couple of slow searching strokes along the side of the spinal column by the tips of the thumbs or even of the fingers soon settles the question. An evident wince on the part of the patient or an expression of pain shows when the tender spot is reached.

Because a tabetic has a little nausea or gastralgia is not full proof of a crisis. In typical cases of this kind the sign appears to be regularly present for a time at least. Whether it precedes the onset of a crisis cannot be stated, but it has always been found as soon as a crisis case was examined.

Within a few days of the subsidence of the vomiting and concomitant distress this point of special tenderness rather rapidly subsides. And even towards the end of a prolonged attack the tenderness may become less marked. It is the more in evidence, as the tabetic is often relatively analgesic.

Point of Origin of these Attacks.—It is relevant to ask what is the point of origin of gastric crises? Although the systemic or luetic condition is the underlying etiologic factor, the immediate cause is more likely some intermediary process.

Whether the vomiting is of central origin, cerebral in type, a view largely held by Germans, or is due (Mills and others) to disease of the vagus, or is analogous to the pain and other crises of tabes and hence perhaps radicular in origin, does not seem to be determined.

Clinically there are several reasons for considering the "central" theory inadequate: (*a*) The initial symptom in some attacks is severe pain at the spine, preceding any evidence of disturbed gastric function, and in most cases there is at least attendant pain of spinal type, indicating that to be the primary or starting point. (*b*) Often these crises are accompanied by the occurrence or increase of pain elsewhere in the body. This suggests a flushing of the system with toxins or influences, and not merely a local process. And similarly in pain-crises elsewhere about the body, there is often evidence of a more general influence. (*c*) If these attacks are analogous (as is claimed and as seems plausible) to the pain crises of tabes, then they must be due to radicular or at any rate extracranial cause. (*d*) Furthermore, if this were a sequel, it might be expected to develop in other cases of persistent vomiting, whereas in fact it has so far proven to be a distinguishing mark. (*e*) The clinical facts given in this paper speak in the same sense.

While the material at hand may not give a full explanation of the way the vomiting is brought about, this much can be said,—that the evidence is sufficient not only to cast doubt on the completeness of the old or "central" theory of its origin, but to raise a question if it is applicable at all. It is another of those instances where the physiological and the clinical do not at first sight jibe. Physiologically the "central" interpretation may seem both necessary and sufficient. But no explanation is satisfactory until it accounts fully for the clinical facts.

This may parallel the idea, when emetics were first used hypodermically, that they acted centrally. Later this had to be modified somewhat when it was found that the agent had been excreted by the stomach.

As a corresponding herpes does not or not often attend a gastric crisis, and as the spinal tenderness so soon subsides, we cannot presume the existence of a full-fledged neuritis.

As irritative processes about the stomach and regions adjacent to the tender spot beside the spine may induce emesis, it is possible that such a result is produced along ordinary functional lines.

A convenient view is that both results are sequels of a widespread systemic influence (chemical, toxic, infective, nervous, or what not), including the spinal involvement as an integral part of the crisis complex.

The most certain conclusion is that these attacks are not in any strict sense "central" in origin, as has heretofore been so largely assumed.

Treatment of Gastric Crises.—Our common works on neurology give little or nothing regarding the treatment of these seizures. Pain, anorexia, and distress may terrorize the patient. Many have been subjected to operations in good part unnecessary. Occasionally prostration suggestive of a moribund state lasts for days, with but gradual recovery. Together then such cases make a record of suffering so severe and often recurrent as to warrant common sympathy and emphasize the need of something better than haphazard therapy.

The almost invariable way is to have prompt recourse to morphine or its congeners. But while this may numb the pain it greatly aggravates the nausea, upsets the digestion still more, and tends to prolong the attack. These patients also but too easily acquire a habit for such drugs. Some plan consequently is demanded that if possible does away with the use of opiates and anyway reduces their use to a minimum.

In fact Ostnakow (in Russian 1906; *v. Neurlgo. Centbl.* 1909, p. 14-17), after stating that the immediate cause of these crises had not been worked out, recognizes a toxic origin, and gives good reasons for attributing the development of gastric crises, in large part and sometimes wholly, to the use of morphine or other sedative.

As comparable crises have been reported in Graves' disease, in syringomyelia, and perhaps in other conditions, it is possible that the present plan is not then as applicable. In the tabetic form there are two general lines of attack that have proved useful:

(*a*) In the first place the irritation, presumably at the nerve root or ganglion, needs consideration. For even if the tenderness be but a sequel, some direct connection is evident, and a reverse influence is quite possible. Some form of counterirritation locally over the tender spot can be readily applied. For this doubtless any one of various favorite methods can be adapted to good purpose. The writer happens to be in the habit, for this particular purpose, of having blue ointment or else the 25 per cent

oleate of mercury rubbed in along the region of the tender spot. A half drachm or less suffices, and this can be repeated once a day as required.

It may be in part the massage and in part the mild skin-irritation, or some absorptive effect or some remoter action that does the most good. It is at least a rational method, and seems to be of material aid in limiting the crisis.

In other painful attacks in tabetics it is sometimes possible to find a tender point corresponding apparently to the exit of the respective nerve from the spinal column. In such cases also a similar plan over the tender spot beside the spine can be profitably adopted.

Where the pain is severe or an immediate impression is imperative, recourse can be had to the therapeutic *x*-ray locally at the region of the sensitive root. This has long been used in a similar way for other tabetic pains. Otherwise, as far as practicable, it is well to begin treatment with counter-irritation, and follow with the *x*-ray if necessary.

(*b*) Internal Remedies: Treatment by the stomach may seem hopeless. Though apparently favorable results have been obtained often enough to be fairly conclusive, the word "seem" is used because a seizure may cease spontaneously. Liquids of any bulk are not advisable. But some things will remain long enough in the stomach or leave sufficient traces of their substance to exert a favorable influence.

For this purpose a useful combination is a powder containing gr. 1-100 each of calomel, brucia, and powdered ipecac. This is given every half hour or oftener for brief periods, according to the urgency of the case or the degree with which it is rejected by the stomach. Sometimes the amounts in the above dose are doubled for a short time. It is usually gratifying to find soon that the attack is lessening or has stopped. Then the agent can be diminished or dropped.

In other forms of vomiting, notably that of alcoholism, similar combinations are invaluable. Hence it is not necessary to assume any specific influence of these remedies in the crisis cases.

Where the attack is less acute and there is prospect that a few drops of fluid can be retained for a time at least, or in cases where there is hypochlorhydria, it is sometimes well to give, instead of the above powder, a drop of compound tincture of iodine in a teaspoonful of water with the same frequency.

The results in cases that have been followed for considerable periods give the impression that this general method of treatment tends also to prevent repetition of attacks. Recurrences are, however, so lacking in rule, that even much experience may not be conclusive on this point. And if morphine is really a causative agent, its exclusion must have a preventive influence.

In any case a radical revision of the usual methods of handling these outbreaks is in order.

54 LEFFERTS PLACE.

New Signs of Sciatica.—Rimbaud directs attention to retromalleolar effacement and the reflexes of plantar percussion as signs of sciatica or lesions of the sciatic nerve. Retromalleolar effacement occurred in 70 per cent. of surgical lesions of the sciatic and in 25 per cent. of medical sciatica cases observed by Rimbaud. Disappearance of the reflex flexion of the foot is an early sign of a sciatic lesion.

ACQUIRED SYPHILIS IN THE AGED

BY BURTON PETER THOM, M.D.,

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VISITING SYPHILOLOGIST TO THE HOSPITALS OF THE DEPARTMENT OF CORRECTION, BLACKWELL'S ISLAND.

PRIMARY syphilis in the aged is comparatively rare. It is impossible to estimate its incidence because of the absolute lack of statistics. According to Sigmund, extragenital chancres are more frequently encountered in the aged than in those younger in years. From my own experience I can neither confirm nor deny this. I am quite certain, however, that extragenital chancres are not so frequent in the aged as they are in children. Strange as it may seem when we consider the importance of the subject, there is scarcely any mention of this aspect of the disease in American or English literature. It would seem that it has been studied only by the Germans and the French, especially the latter. It is from the writings of Continental authors, therefore, that most, if not all, of our knowledge is derived. A brief résumé of their observations in English appeals to me as a contribution worthy of regard to English speaking syphilologists and practitioners of general medicine.

Syphilis acquired in advanced life presents certain differences in its evolution and its impress on the organism from syphilis acquired in the more virile period of the life cycle. When contracted in old age syphilis is on the whole more severe than when contracted earlier in life. This is the consensus of opinion of all syphilologists. The only exceptions that I know of are Sigmund and Lagneau. Sigmund during thirty years collected one hundred and eighteen cases, of which eighty-seven were males and thirty-one were females. His analysis of these cases led him to conclude that the disease, when acquired in old age as compared to when acquired in youth or middle age, was milder and responded more readily to treatment. Lagneau, writing in opposition to Ricord, asserted that "The rigidity of the vessels walls and the diminished vitality of the tissues are an impediment to the quick development of the symptoms. For this reason venereal disease in the aged does not develop as rapidly as in younger persons." I am utterly at variance with their conclusions. Dulac from a study of forty cases noted that senility aggravated the disease and that its manifestations were more pronounced and more rebellious to treatment. Regoby observed that the course of syphilis in the aged was more severe than when occurring in younger individuals. Bumstead and Taylor in their work on syphilis published in 1883 remarked: "When contracted in old age, syphilis is frequently a very serious disease. . . . The tertiary lesions are prone to appear early, and visceral complications and nervous affections are frequent." Mendel reports three cases occurring in individuals of advanced age in whom hemiplegia developed shortly after the appearance of the initial lesion. Although unusual, this can and does occur in younger patients as well. Engelsted, Braus, Gjor, and Fournier have reported cerebral involvement within a few weeks of the appearance of the chancre. Udo J. Wile reports four cases of syphilis in patients sixty, sixty-two, sixty-four, and seventy-nine years of age.

All of these were genital infections following coitus. In two iritis and iridocyclitis developed shortly after the appearance of the initial lesion.

The great Ricord emphasized the severity of syphilis in the aged when he wrote: "Syphilis does not love the old; it plays them a hundred tricks which it does not try on the young." Fournier expressed the same opinion in the following: "Syphilis kills old persons and children in a way not to be found in regard to adults." Gailleton states that syphilis contracted after sixty years of age is nearly always fatal, because of rapidly developing visceral lesions or from the profound cachexia which the disease induces. The same opinion is maintained by Lebard, assistant to Gaucher at the *Hôpital de St. Antoine.*

From the array of authorities I have quoted the reader cannot but appreciate that syphilis acquired in senescence is much more active and formidable than it is in the earlier years of life. Let us now consider the course and behavior of the disease when it attacks in the evening rather than in the morning or noonday of life.

The period of incubation of the chancre when acquired in youth or middle age averages from three weeks to a month. It may be shorter; it may be longer; but such is the exception. In old age the period of incubation is long—five to seven weeks. In younger adults, unless cachectic from diabetes, alcoholism or tuberculosis, the chancre is almost invariably a benign, even insignificant lesion. Not infrequently the patient is unaware of its existence, and in after years denies with truth any knowledge of such a sore. In passing, I wish to say, that this happens more often than is usually supposed. In the aged the chancre is large and "beefy," often phagedenic, and not infrequently is mistaken for malignant disease if situated extragenitally. The induration is marked and persists long after the lesion has healed. This feature however, is not always confined to the chancres of aged persons. I have seen this nodular induration continue for over a year in a man twenty-seven years old. Although large and apt to show destructive tendencies, the chancre in the aged is of slow evolution and heals only after a protracted time. This was observed by Quinquaud many years ago, and with him I am in full accord. The lymph ganglia also show more induration than in younger individuals, and this applies not only to the glands in the immediate vicinity of the sore, as in the groin—the "pleiades of Ricord"—but those remote from it, as the epitrochlear and cubital glands. This glandular hardness also persists indefinitely.

The secondary eruption appears early and is almost always papular. The roseola which is so typical of beginning secondary syphilis in younger persons is conspicuous only by its absence. Papular syphilides of the palms of the hands and of the soles of the feet are frequently concomitant with the generalized papular eruption. Mucous papules on the buccal and lingual surfaces are also prompt in appearing, but strange to say, these lesions so typical of early syphilis are hardly ever found about the genitals or anus. Aside from the mouth and tongue they are most frequently found between the toes. A symptom of this stage is iritis. Lebard observed it in one-third of his cases. It is extremely characteristic of senile syphilis; so much so that it may be regarded as pathognomonic.

As soon as the secondary stage, as manifest by the eruption, is ushered in, the general health, which previously may have been excellent, undergoes a decided change. The patient rapidly becomes asthenic and complains of anorexia, insomnia, headache and vague pains in the limbs and joints, loss of flesh—the last is a symptom which should always cause alarm in the aged as it means that the vitality is ebbing and in consequence is no longer able to sustain the body weight. This profound cachexia which so quickly and suddenly supervenes is characteristic of the toxic effect of the disease in the aged. I wish to emphasize this, because it is nearly always present and unless promptly checked by antiluetic and supportive treatment will in a short time—a very short time in many instances—overwhelm the patient and cause death. While it is to be understood that not every aged luetic so reacts, yet in the majority this swift deterioration of the bodily forces is so marked that it may be considered a pathognomonic symptom of recently acquired lues in the aged. As noted by Quinquaud, the blood of aged luetics shows a constant and decided fall in the number of the red blood corpuscles—in many instances below two million—and an excessive diminution in the percentage of hemoglobin and of the albumin in the serum.

Tertiary cutaneous manifestations are frequent and precocious. Unless properly treated they may be very destructive. Before the days of the Wassermann these lesions were not infrequently mistaken for malignant growths, as has been reported by Tillaux, Mercklen, Sigmund and others. Lesions of the cerebrospinal axis, such as acute meningitis of the base or of the convexity, gummatous infiltrations of the nerves of special sense, hemiplegia, monoplegia and spastic paralyses, are frequent and often of startling promptness.

That syphilis of the aged attacks in the manner described can be readily appreciated if we realize certain determining factors which are present in old age. We must remember that in old age the body represents a machine that has been running for many years. It is worn out. If it had any flaws at the beginning they will be showing now; any diseases acquired during the journey of life will also be exerting their maximum effect. The cells composing the various tissue planes of the body are undergoing retrograde metamorphosis. Their tendency is toward fibrosis—sclerosis—shrinkage. The vital urge, once so full and overflowing, that enabled the body to overcome or withstand the noxious elements of disease, is slowing down. The mighty army of phagocytes that once could be marshalled in battle array are now but a broken remnant of war-worn veterans *sans morale, sans elan.* Thus it is when the diathesis of syphilis is grafted on a body rendered decrepit by arteriosclerosis, fibrotic kidneys, or kidneys permanently crippled by an ascending infection caused by a cystitis due to an enlarged prostrate or a strictured urethra, dyscrasias of rheumatism or gout, cardiopathies involving the musculature—myocarditis, or fatty degeneration—or the valves, chronic dyspepsia and constipation, pyorrhea and decayed teeth. There is ample reason why the disease is fulgurant and fraught with danger.

The treatment of syphilis in the aged should be attended with more circumspection than in younger persons. The reasons for this are the probable state of the kidneys and the cardiovascular system in the aged. It must not be forgotten that in order to combat the disease we must introduce powerful—I might say toxic—agents into a body debilitated with age as well as with disease. Treatment should commence as soon as the diagnosis is made; but along with the diagnosis there should also be a strict inquiry into the state of the kidneys and of the heart and vessels. Neosalvarsan should be given in every instance. The reason for this is that it can be given in a small amount of fluid and therefore will not strain the heart or arteries as when large amounts of fluid are used as in old salvarsan. The dose should be smaller also. If the weight of the patient indicated a dose of 0.6 gm. the dose should be 0.5 gm. or 0.4 gm. The intervals of injection should be three or four days apart. I am in the habit, in order to get the full sterilizing effect of salvarsan, of giving the injections on three consecutive days, but in the aged this cannot be done because it would be too much of a strain on the kidneys. As to the number of injections, it is impossible to say. The symptoms must be controlled, which includes the prostration, which should be replaced by a sense of well being. Supportive treatment should be given along with the antiluetic treatment. This includes tonics, abundant, concentrated nourishment—egg yelks, milk, milk sugar and small quantities of whiskey, fresh air and quietness of mind. I do not recommend mercury, since we have organic arsenic at our disposal. Iodide may be given with advantage in the later stages of the disease, and when given, the sodium salt should be the drug of choice. I do not often use it since the advent of neosalvarsan.

Syphilis in the old as in the young should be attacked boldly and persistently; but the attack should be planned with more caution as it were. Prompt diagnosis and prompt treatment will in nearly every instance save these patients from the ravages of the disease.

1632 Avenue A.

SIMPLE EVERYDAY SCIENCE ABOUT YEAST.

By LEONARD KEENE HIRSHBERG, A.B., M.A., M.D.,

NEW YORK.

SUCH as have need of milk, and not of strong meat, may learn much from the life history of the micro-small yeast buds.

What man is there of you whom, if his son ask bread, will he give him a stone? Or, if he ask a fish, will he give him a serpent? There are such men as you know. They will turn against their own flesh and blood, and even feed themselves the very food that is worst for them.

The old platitude, "What is food to one man may be fierce poison to others," is seldom considered by many who take recommended medicines that are never food at best, and only too often poisons to many. A food, however, that has proved to be almost, as Iago says, "as luscious as locusts," a morning incense in fact to most epicures, is the little compressed cakes of yeast obtainable at any grocery.

Yeast, you know, can be grown by anyone. High school students commonly plant it and grow it for study and experiment.

Under the 1000 fold magnification of the microscope, the tiny individual yeast units resemble oval or beer barrel shape bubbles with smaller bubbles or buds bulging out from each. It requires about 350 yeasts and buds to make an inch. That is to say, each one is a little larger than one-five-hundredth of an inch.

If one of these tiny units called "cells" is placed in sugar water, malted water, or some other simple fluid solution, it will begin to nurse or suck in nutriment through its bubble-like walls and form buds, which soon separate and in turn form buds of their own. This is the way they multiply and replenish the earth. The wall around the lymph-like plasma in the yeast's interior bulges out like a smaller bubble. This is the bud which swells by nourishment until it is large enough to break loose and thus itself become a parent which repeats the performance. Thus, in the proper pabulum, there will very quickly be a myriad of yeasts thriving, budding, and reproducing in kind, and in some hours there will be over a million of these little individual yeasts, enough to make the tin-foil covered squares of yeast obtainable at your grocer's.

In general, any one may make yeast by planting a non-contaminated yeast on a grain mixture of corn, rye, and barley-malt of the best quality. This grain is, in the best yeast factories, cleansed of all contaminating fungi, moulds, bacteria, microbes, animalcules and dust by special methods and kept so until sent to the mills. It is then cleaned again even more rigidly.

Before the yeast is put in its happy hunting grounds—the mash or nourishing solution—the grains are soaked in water as nearly sterile by filtration as it is possible to get it. This softens the sweet starch in the cereals and allows the yeast to absorb it from the solution through its walls all the more easily.

Corn is mashed at great heat, the rye is put in after the corn is "cooked," and finally, when cooler, malt is added to turn the starch of the corn and rye into sugar. There is in malt an "enzyme" or pepsin-like substance, which converts starches into sugar just as the saliva does.

There is no alcohol in the mash. The best cultivators of yeast add lactic acid, sour milk and certain bacteria to the mash to help keep it pure. Of course, this gives it a sour taste, but these bacteria make the solid, albuminous stuff the more easily digestible to the baby yeast buds.

Lactic acid, the sour-milk acid, is very helpful to the growth of yeast. When this is next filtered off, the mash is run into tubs with perforated bottoms, which allows the "wort" or clear fluid to pass through and holds back the thick grain. The "wort" is then heated to very high temperatures, finally cooled, and pipe-lined off into tanks 20 feet high.

Now at last, the domestic scientist, the student, the home-maker, or the manufacturer has a practically clean, sterile fodder—the clear wort—ready to receive a pure culture of yeast. The yeast is introduced into the sweet nectar, the

wort, and oxygen in the guise of air is forced into it. Thus "mother culture" or "mother yeast" begins to grow and bud and fructify over the face of the sweetened water. With the proper condition of temperature and air, an immense amount of the little yeast plant will have grown in twelve hours.

Then comes the task to separate the yeast substance from the "wort" or sugar water. It is accomplished in the way that cream is separated from milk—by the so-called "filter presses." The excess moisture and water is thus compressed from the yeast, which is retained between the large slabs of the press between cloths. Finally it is removed from the presses and put in refrigerators.

Yeast is alive, easily perishable, and just as easily contaminated. Millions of homes now depend on yeast for health and beauty and many physicians advise its therapeutic use in the home. Its value as a health preserver and a food now really exceeds its employment by housewives as a necessity for bread making.

Obviously, the dirty, ugly looking, huge hunks of yeast sold in many shops do not measure up to the necessary, scrupulous cleanliness which is required to avoid the chance of contamination. Yeast, like milk, ought to be certified as to its freedom from germs. It is a complete food, as easily polluted as fresh milk. Unless you can assure yourself that the yeast you eat before each meal and in your bread is made in tanks, pipes, and presses that can be and are sterilized with live steam, you may defeat the great good which pure fresh yeast will generally accomplish.

The small square of yeast which you ought to eat before your meals ought to be snugly in your grocer's or baker's refrigerator, fresh, firm, effective, active, and with its vigor and growth unimpaired. This is all accomplished, if delivered in its fresh state each day, iced and refrigerated. The long cakes—resembling, but larger than bricks of ice cream—are easily sliced with wires into small cakes and wrapped in tin-foil.

The dietetic and health value of yeast has been discovered in recent years, not by careless observers but by some of the most eminent, painstaking, diligent, unprejudiced research workers in the world. Each more or less without the help of the other and independently has found that half a yeast cake a day aids the health, growth. vitality, weight, repair powers, and personal beauty of those who eat it regularly.

Among the unbiased and distinguished investigators who have brought this to light from such places as Yale University, Rockefeller Institute, Columbia, Jefferson, Fordham, Johns-Hopkins, Minnesota Experiment Station, and the U. S. Government, are Casimur Funk, the discoverer of vitamines; Osborne, Mendel, Levene, McCasky, Hawk, Bergheim, and many others. They proved that yeast is, like milk and honey, a complete food in itself. It also contains vitamines. It relieves constipation. It adds weight and growth. It helps the red and white blood corpuscles to digest and to destroy the pathogenic germs causing pimples, boils, and other more serious skin troubles as well as those which are mere blemishes.

For infants, yeast is a pabulum superior to all but pure milk, and a great adjunct to boiled and pasteurized milk as a remedy and preventive of scurvy, rickets, backwardness of growth, flabbiness, obesity, and other maladies. Moreover, in adults it helps to ward off beriberi, pellagra, constipation, hemorrhages, certain joint pains from sugar disorders, the deformities of rickets, gout, and other digestive and deficiency diseases.

No small value of the staff of life—bread—depends upon the yeast planted in the gluten and starch as dough. It was a common saying among the Puritans, "Brown bread and the Gospel is good fare." They never really knew why. Scientists have at last uprooted the facts to prove this.

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ALLERGIES IN CHRONIC DISEASES.

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Sensitization of tissues to specific proteins has been demonstrated conclusively, but the use of protein preparations as a diagnostic measure in various indications is yet in its infancy. The purpose of this paper is presentation of what the writer considers one of the many indications for their use.

We believe that illness of a chronic nature induces allergies of different types, perhaps through the fact that the energy of the body is being directed toward combating infection, or bacterial protein of a more or less permanent nature, and its attention, so to speak, is directed from occasional proteins or special toxins with which that body may at times come in contact. In this paper the entire field of proteins is included. Those prepared from the animals (dermals), from foods, and from pollens, for the pollens are after all nothing more than the spawn of the plant, and should be looked upon as proteins.

Many of the interruptions, or so-called exacerbations, in the course of chronic illness can probably be explained by allergy. The patient can be made more comfortable, and the doctor, too, and perhaps the prognosis improved or altered entirely where this is proven.

The findings of the writer in some cases have been fairly simple, while in others the problem called for prolonged study and some, although seemingly anaphylactic, were so baffling that the etiologic factor could not be found.

In cases that are successfully worked out, the patient feels something real is being done for his prolonged suffering and he is encouraged to fight; faith in the profession is restored, and the physician has something worth while to work upon. It is the writer's opinion that the sensitizations are commonest in respiratory infections, and in the advanced tuberculous, unfortunately, the prognosis is so bad that little change can be expected in that stage of the disease. No claim whatever is made for the use of proteins therapeutically. All that has been done is the removal of the offending agent, thereby making the course of the disease smoother and the patient more comfortable. We do not know what might be done in chronic disease that has induced sensitizations by using solutions of the

proteins in a therapeutic way. All that we have done has been done for the comfort of the patient, rather than to affect the ultimate outcome.

The following briefly sketched cases will illustrate the point.

CASE I.—Male suffering from chronic bronchitis and frontal sinusitis which caused trouble with each fresh cold. By study it was found that clams or shrimps and often Irish potatoes in his dietary seemed to make the bronchitis very much worse and on one or two occasions the attack resembled asthma. He gave a mild positive reaction to cutaneous tests of clam and a strong positive to shrimp but a negative to potato. Elimination of these foods from his menu seems to have materially reduced the number of his colds and added greatly to his comfort. He had been a fairly frequent eater of these foods.

CASE II.—Young woman sent to a sanatorium for tuberculosis. Recurring rhinitis followed by increase cough and expectoration made her course a miserable one indeed. Finally it was noticed that the odor of celery made her sneeze, and it was following a meal containing celery that she had a severe rhinitis and bronchitis with increase of sputum. A cutaneous test of celery was positive. Total elimination of this vegetable from her food made her more comfortable and reduced the sputum to less than one-half. She was dismissed from the sanatorium as moderately improved, and was lost trace of for about six months, when she was seen and reported that she was free from her repeated colds and bronchial attacks, and that she had embraced Christian Science and was perfectly well although she had never eaten celery or even come in contact with it since the test.

CASE III.—A middle aged woman working in a ladies' clothing shop came to the office stating that she had had tuberculosis years before, but that it had been healed and was giving her no trouble, whatever, she felt she was not a danger to others but was sure her employers were viewing her with suspicion on account of frequent bronchial attacks, which caused considerable raising and often resulted in asthma; she was terribly worried for fear she would lose her position on account of the impression the attacks caused on her coworkers and the trade. Examination of the patient and prolonged observation proved that she was an old tuberculous case of an inactive type. The left upper lobe was well fibrosed, large bronchial rales were miscellaneously scattered throughout the lung. Dry rales at the base of the old lesion. Sputum was negative on repeated examinations. There was no marked variation in the temperature curve over a two weeks' period. One of these attacks occasioned a visit to her home and it was found that she owned a peripatetic cat and it was thought the attacks might correspond to the feline's home-comings. Cutaneous test with the cat hair product gave a decidedly positive reaction. The house and its furnishings were vacuum cleaned, Tabby was sent to the S. P. C. A., the patient's attacks disappeared, and the woman retained her job and her peace of mind.

CASE IV.—A middle aged woman suffering from pulmonary tuberculosis. Every convenience was afforded her. She was handled under seemingly ideal conditions. One day she was moved from one room to another on a cot. Two days later her nurse reported an acute cold with coughing and sneezing and blood in the sputum, probably from the strain of sneezing. She was feeling generally miserable. Inspection of the room showed nothing—checking the diet did not enlighten us. The following day she had a frank hemorrhage. While going into the house, the writer noticed a small red trumpet flowered vine climbing the wall under her porch. A bit of pollen was gathered from the blooms by brushing off the anthers with a camel's hair brush. This was mixed with a small amount of tenth normal sodium hydroxide solution and a cutaneous test was made upon the writer, the sister of the patient, and the patient. The first two were entirely without a reaction, proving that the pollen was not toxic of itself. The patient gave a very large wheal that wormed out in all directions. The plant was cut away, the room was well scoured, and all the hangings were removed. Within twenty-four hours she seemed practically comfortable, although the bleeding continued. She lived only four months longer, but was entirely free from this unpleasantness during the time remaining for her. She had had previous attacks similar to this that were etiologically undiagnosed. Early knowledge of them might have prevented her hemorrhages and changed the prognosis of her case.

It is realized that in all of these cases the sensitization may have existed previous to the outset of the infection for which the patients presented themselves for treatment. If so, there was no definite history to prove it. All were questioned on the subject and only one gave a history (Case IV), and she said she thought she used to sneeze when wild flower picking. It may be that the allergies play a part in preparing the ground in which acute infection is sown and help its growth to chronicity.

Conclusions.—Sensitization to various proteins is probably developed in chronic infections, especially those of the respiratory tract, more often than in the normal.

All increases of symptoms in chronic disease should not be pronounced exacerbations of the disease per se, but other causes should be thought of first.

Chronic sufferers can be made more comfortable, and the prognosis perhaps changed in some, by finding the real causes of so-called exacerbations.

207 DODWORTH BUILDING.

Medicolegal Notes.

Finding as to Fractured Skull Held Not Sustained.—In a proceeding for compensation under the New York Workmen's Compensation Act the evidence showed that the claimant on December 29, 1918, in the course of his employment, hit his head against a desk. He worked regularly thereafter until January 16, 1919. At the time of the hearing he was suffering from encephalitis. The Industrial Commission found that this disease was "caused by a fracture to the base of the skull, sustained by him when he hit his head." The New York Appellate Division on appeal found that there was no evidence of a fractured skull, and that the evidence was to the contrary. At one stage of the disease the physicians thought the symptoms indicated a fractured skull, but subsequent developments caused them to change their opinion. The court was of opinion that a tentative diagnosis in a partially developed case, subject to future developments, and which was changed by the later history of the case, could not have any probative force. At most a statement of a witness out of court, inconsistent with his testimony, discredits the witness, but is never received as evidence of the fact contained in such inconsistent statement. No physician in this case had ever testified to a fractured skull, and no physician connected the present disease with the blow to the head. The commission, in its effort to make such connection, was held to have based its finding on the erroneous hypothesis of a fractured skull, of which there was no evidence. The award was therefore reversed. Kellogg, P. J., and Kiley, J., dissenting.—Donovan v. Alliance Electric Co., 191 App. Div. 303, 181 N. Y. Supp. 823.

Compensation for Inguinal Hernia—Attempted Release of Employer.—The California Supreme Court holds that an employee was entitled to compensation under the Workmen's Compensation, Insurance and Safety Act of 1917 for inguinal hernia sustained during the course of employment, notwithstanding his agreement, made at the time of employment, releasing the employer from any claims arising on account of hernia. the existence of which then appeared as the result of a physical examination; such an agreement being ineffectual, under Section 27a, to exempt the employer from liability for compensation under the act.—Hines v. Industrial Accident Commission (Cal.), 188 Pac. 277.

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SENILE PERNIO.

CHRONIC senile chilblain is a much neglected minor medical topic, although not unimportant. The lesion is far from being similar to ordinary pernio met with in the young and in adults. Its nature is probably quite different because in reality the lesion is based upon a state of asphyxia of the limbs, accompanied by trophic changes with a chronic evolution, and is excited by cold. Permanent acroasphyxia and slowly progressive trophic disturbances —such briefly is the foundation of the lesion under consideration. All the fingers and even the thumbs are usually tumefied; the skin is rarely hard, often even it is abnormally soft; the cutaneous folds are effaced while the epidermis is thinned as if stretched. The fingers are a violet red, becoming almost black under the influence of cold. However, the tint is not always uniform because ill-defined maculæ of a more marked purplish tint can be detected. The swelling and cyanotic hue, more marked at the ends of the digits, occupies their entire length and to a certain extent invades the dorsal aspect of the hand. The integuments are always cold to the feel and the patients complain of a benumbed feeling. The fingers are semi-flexed, their mobility is limited, and any delicate work is out of the question. This condition becomes evident at the beginning of winter, subsides with the early heat, and almost completely disappears in summer.

To this basic circulatory disturbance accessory lesions become added. Erosions occasionally arise, especially over the exterior surfaces of the joints, but they are less deep and much less frequent than ulcers following chilblains in young subjects. At the extremity of the pulp small subepidermic abscesses are sometimes seen which are extremely painful and end in lenticular ulcers and small depressed cicatrices similar to those observed in Raynaud's disease. The nails are short, sometimes broader than they are long, undermined at the ends often to a considerable extent. The sensibility is preserved and if occasionally it is dull, this is due to the age of the subject. Pruritus, so common in the juvenile form of pernio, is wanting, but on the other hand pain is complained of similar to that of abscess in the pulp of the finger. When the acroasphyxia decreases with a change of season, the pain disappears, the swelling subsides, and the violet color fades out, but the nails remain deformed and the fingers are always somewhat cold.

When once the process has become established there is hardly any tendency for it to diminish. It continues to reappear with the advent of each winter, but there are, however, cases in which an amelioration in the general health has as a consequence a decrease in the gravity of the winter attacks. It is remarkable that in nearly all these cases the lesions are observed on the fingers. The feet are, in fact, much less frequently involved, and although they may offer a certain degree of cyanosis and coldness, these phenomena are less marked than on the hands and the patients do not complain of them. On the other hand, senile pernio on the ears may be observed, in every way analogous to other forms of senile chilblain, and finally end not only in cicatricial atrophy of the skin, but in calcification of the cartilage of the pinna of the ear.

CHEMOTHERAPY.

RICHAUD in a lecture on this subject published in *La Presse Médicale* for September 4, 1920, xxviii, 63, sums up as follows: Researches by Ehrlich and by Mouneyrat led to the discovery of a treponemicide activity of certain organic arsenical compounds. It is likely that in time other elements may be incorporated into similar compounds with analogous therapeutic effects—mercury, for example. But it is not necessary that such sterilizing remedies shall have an inorganic constituent, for we have in quinine and emetine two purely organic protozoicides. In other words, it is not necessary that a highly toxic substance be in the molecule. Why may we not have a treponemicide of purely organic composition? The future must seek such a consummation.

The author is led to look into the past for the purpose of tracing the evolution of what we now term chemotherapy. The first move in this direction was made by Cadel in 1760, whose "liquor fumans" was clearly an organic arsenical compound. Nothing new happened along this line until 1837, when Bunsen discovered cacodylic acid. Over 20 years later Bayer discovered methylarsenic, while in 1863 Béchamp, one of Gautier's early teachers, discovered arsenaniline. Up to this time such combinations had been looked on as laboratory curiosities, but Gautier, who came next, was led to surmise the existence of therapeutic possibilities in these substances. He showed that arsenic may be present normally in certain human organs and then proceeded to test the cacodylates as drugs. The author would award to him more credit than to Mouneyrat or to Ehrlich, for despite the great practical value of the labors of these scientists Gautier was the real pioneer on whose foundation the others built. It was he who first showed that organic arsenicals were less toxic and more effective. Mouneyrat, whose fame has been eclipsed by Ehrlich and his associates, worked on these problems independently and discovered hectine; but Béchamp had discovered under another name the substance later known as atoxyl in 1863, as already stated. Laveran in 1903 had shown the trypanocide properties of inorganic

arsenic in sleeping sickness. Ehrlich took up the study of atoxyl in 1903 but was dissatisfied with its action in the clinic and dropped it for 2 years, so that the Englishman, Thomas, seems to have deserved at least equal credit for the introduction of the drug into the therapy of both syphilis and sleeping sickness.

Articles like the one under review are clearly written with a view of upholding French prestige in the sciences, for the French now realize that it was largely their own fault that German science was better advertised before the war. Such articles are rather numerous at present and doubtless will increase rather than diminish. They may be classed as legitimate propaganda because absolutely free from misrepresentation. There is, of course, no attempt to present the German side, but so far as we have noted there is no deliberate suppression or misstatement.

RADIOSCOPY AND RADIOGRAPHY OF THE SPLEEN.

THE present means at our disposal for the clinical exploration of the spleen are susceptible of furnishing excellent data, but they are not to be implicitly relied on in each case, because they expose the clinician—as do all methods of exploration—to much uncertainty and to many mistakes. The radiological study of the spleen furnishes another diagnostic element that must not be neglected in practice. It completes the clinical examination of this organ and facilitates the recognition of affections involving it, and therefore procures the means of making a precise diagnosis; that is to say, the differentiation of affections seated in those viscera in proximity to the spleen.

Clinically, the spleen in the normal state may be percussed but it is inaccessible to palpation, hidden as it is under the diaphragm and protected by the thoracic walls. The data this furnishes are consequently incomplete. Radiologically, the opacity of the spleen stands out somewhat against the transparency of the overlying structures, but without technical contrivances it shades off on the radiograms and becomes mingled with the shadows of the adjacent organs. Gas distention of the stomach, as well as of the colon if necessary, reveals a light area on the plate showing the situation of the organ and by contrast the situation and size of the spleen, which gives a dark area on the plate. In some cases the gas distention need not be artificially produced because it is naturally present and is distinctly manifest in children, as well as in adult aerophage individuals. The exact shadow of the stomach showing its situation and displacements may also be obtained by radiography and radioscopy after a bismuth meal.

Radioscopy of the spleen should be done successively in profile, from the back, and in the intermediary oblique positions in order to see the organ on the screen in all its incidences. Orthodiagrams can thus be taken at the same time which will allow the surgeon to formulate an opinion. Radiography afterwards will fix the shadows seen upon the screen. It should be done with the subject in the upright position, seated and recumbent, but it must be done with a powerful apparatus because to give good results the exposure must be very short. In these circumstances only will a sufficiently distinct shadow be seen upon the plate because otherwise the physiological movements of the diaphragm would destroy the clearness of the shadow.

These means of investigation with Roentgen rays will allow one to observe *de visu* the changes in position, size, and shape of the spleen as well as its mobility or fixity. It likewise reveals its relationship to other organs that surround it, and when in a pathological state to recognize exactly if the spleen or neighboring viscera are the seat of the morbid process of which the patient complains. Briefly, for the clinician these methods represent a marvellous auxiliary which should invariably be consulted, as it will certainly complete the clinical examination when it does not do more.

FILARIAN ITCH.

UNDER the above title Montpellier and Lacroix have described in *La Presse Médicale* for September 1, 1920, xxviii, 62, an affection which they encountered among the negro troops from Western Africa. The cases were originally diagnosticated as ecthymatous scabies, but having proved refractory to antiscabic remedies it was then learned that the affection was due to the embryos of the *Oncocerca volvulus*. It is a strange coincidence that another skin disease, due to the same cause but of quite different character, has recently been studied in Guatemala (see MEDICAL RECORD, September 18, page 484). The marked difference between the two affections makes it probable that the Central American filaria is not *O. volvulus* but, as suggested by Brumpt, a special variety which he terms the *O. cæcutiens* from its ability to produce blindness in association with facial erysipelas. In the latter affection adult filariæ of both sexes are found in cutaneous cysts; in filarian itch the embryo seems to be the principal factor in causing the disease, although there are certain subcutaneous fibrous nodules which contain both sexes of adult filariæ. The authors describe filarian itch with extreme minuteness but it must be remembered that in the black these lesions would differ notably in appearance from the same affection in the white. Itching is a marked feature, and the consequent scratching leads to urticaria and various artifacts in a people who are naturally disposed to ecthymatous and other pyogenic lesions. There are no embryos in the blood, and it is evident that propagation occurs through the lymph channels. Enlargement of the lymphnodes is almost always present.

The authors attempt a sketch of our earlier information along the same lines. In 1875 O'Neil first described the so-called craw-craw, a condition much resembling scabies, which he claimed was due to the embryo of a filaria. He was evidently ahead of his time, for Manson, after studying the new

disease, asserted that the embryos were not in the skin proper but in the cutaneous blood vessels, from which they were extracted by the curette. The report of O'Neil was also lacking in scientific quality, so that the only credit handed down to him is for the name of the affection. But craw-craw is naturally a generic rather than a specific term, and since it doubtless includes filarian itch, the latter term might now come into use. Much remains to be done before the disease can have its autonomy proved, say the authors, who wrote in ignorance of the filarian facial erysipeloid of Guatemala. Under treatment the authors do not expect much from the organic arsenicals which have done good work in Guinea-worm disease. The subcutaneous fibrous nodules which contain the adults should be treated directly, for the embryos do not appear to develop in the cutaneous lesions and doubtless escape with the pus.

NON-MALIGNANT OMPHALONCUS.

THE umbilicus is the seat of certain neoplasms of entodermic origin which take the development in the embryonal remains of the abnormally persisting allantoid and omphalomesenteric ducts. During the development of the abdominal parietes, umbilicus, and cord, these ducts undergo an elongation which ends in their rupture, followed by the disappearance of their component elements. But occasionally the omphalomesenteric duct persists in various stages of its development, in the midst of the umbilical cord. When it persists in complete form the intestine opens at the umbilicus by a diverticulum—Meckel's diverticulum—which in other cases may not adhere to the umbilicus, ending in a cul-de-sac within the abdominal cavity. When the retrogression is more accentuated only some remains of the omphalomesenteric duct persist in the thickness of the umbilical cord, and it is these that give rise to an umbilical adenoma of the intestinal type.

The congenital tumor usually makes its appearance during the first few weeks following birth, but it may be overlooked in early life and not be discovered until the child is a year or more old. It is sometimes sessile, the size of a small pea or a cherry, at others it is pedunculated and projects at the umbilicus in the form of an appendix with a smooth swollen end. Occasionally the growth is composed of a central tumor surrounded by small accessory tumors, placed like a crown around it. Five of these accessory tumors were noted in a case recently reported by Bérard and Dunet, of Lyons.

The histological structure of non-malignant tumors of the umbilicus is that of the intestinal walls with all their elements—a superficial mucous layer with its characteristic epithelium, tubular glands similar to those of Lieberkühn, lymphoid tissue, and unstriated muscular layer.

The treatment consists in total omphalectomy, the only procedure which assures a free excision of the growth radically removing the omphalomesenteric débris susceptible of developing later on, while at the same time the intraabdominal malformations resulting from this anomaly can be properly dealt with, which otherwise might be the cause of occlusion from kinking or strangulation. The possibility of the transformation of a non-malignant omphaloma into a malignant growth is likewise a consideration favorable to free excision of this congenital tumor.

GANGRENE OF THE SULCUS PENIS AND SCROTUM DUE TO THE BACILLUS PERFRINGENS AND SEPTIC VIBRIO.

MASSIAS reports a case of the above affection in the *Journal de médecine de Bordeaux* for June 25, 1920, xci, 12. Since 1883, when Fournier described a case of fulminating genital gangrene, many like cases have been placed on record, but the nature of the process has remained obscure. In a few cases it has followed upon coitus or other external violence, but on the whole it cannot be brought into relationship with exogenous infection. It is far from apparent why in one case the penis, in another the scrotum, in a third case both structures should be involved; nor is it obvious why some cases appear to be instances of gangrenous erysipelas and others without the latter element. The patient in the present case was a man of 52, with ancient syphilis, and an inveterate alcoholic. The affection began with a redness of the prepuce which developed into gangrene and involved secondarily the entire sulcus penis. On the fourth day there was a sphacelus on the dependent portion of the scrotum. The case must be distinguished from the phimotic type, for there was at no time any difficulty in retracting the foreskin. There were no active manifestations of syphilis, which dated back ten years, but the Wassermann was strongly positive. There was no history of recent venereal exposure. Pus from the sulcus and the serosity of the scrotal lesion showed *Bacillus perfringens* and the septic vibrio. During the war these anaerobes were frequently accused in connection with gangrene. Treponemes and the Ducrey bacillus were alike present. An erysipelatous blush appeared over the buttocks but lacked something of being true erysipelas. There was no inguinal adenopathy. Hemoculture was negative. The case ended fatally. The author has recently seen two cases of gangrenous erysipelas of the scrotum, one of which recovered, and regards this affection as distinct from the present case. On February last Bloch and Schulmann presented at one session of the French Dermatological Society no less than four cases of perfringens gangrene of the sulcus penis.

AN ANOSMIC-EPILEPTIC FAMILY.

ALIKHAN of Geneva gives an account of this family in the *Revue de Laryngologie*, etc., for June 15, 1920, xli, 11. The family in question had a membership of 30 in 1914. All the members were in good health save that 2 were epileptic. Aside from frank epilepsy, however, there were cases of temperament which are closely affiliated with that malady. Thus one member was very impulsive, another irritable, a third changeable with brutal phases, etc.

The family sprang from a woman who married twice and had two sets of children. Nothing is known of the antecedent generations. By her first marriage she had one child, an anosmic daughter, who bore 8 children. These comprised six simple anosmics, one hyposmic, and one anosmic-epileptic. By her second marriage she had three children, of whom one was an anosmic. This one married and gave birth to three children with olfactory anom-hyposmic. The second child, while herself normal, gave birth to three children, one of whom was an alies. The third child of this brood was an epileptic dement. To sum up in the author's words, there was a family membership of 30, of which number one-half had troubles of olfaction, while, as stated, there were 2 epileptics. Transmission was effected by the female line entirely, but as none of the males married this fact loses its force. The association between anosmia and epilepsy is also seen in post-paroxysmal anosmia, which is sometimes encountered. The author's attempts to associate anosmia and dementia failed because an investigation of numerous cases of precocious and paralytic dementia did not show much incidence of troubles of smell.

Psycholepsy.

This term was devised by Janet to denote mental attacks in which there occurs a modification of the psychic tension. In *Le Progrès Médical* for July 17, 1920, xlviii, Laignel-Lavastine discusses the psycholeptic subject. The question is a large one, for many mental experiences of very different natures may be brought under this head. Many of these figure in psychological fiction, as when of two friends on their way to dine together one assassinates the other without motive. Such experiences usually fall under the head of psychic epilepsy and mental epileptic equivalents, but this is but a single aspect of psycholepsy. Others are presented by hysterical subjects and those in the hypnotic state; others again in the visions of ecstatics and in hallucinations, in the results of sudden mental trauma, even in revery and distraction and other every-day phenomena. In altered psychic tension we see one object and identify it mistakenly as another. The sense of unreality which overpowers at times belongs here. The mere repetition of a certain word may cause us for the moment to forget its meaning. Closely allied is the feeling of *déjà vue*. In the psychasthenic whose mental tension often relaxes one may see numerous and varied psycholeptic states and in the records of men like Amiel and Oberman, who were typical psychasthenics, one may recognize many such experiences.

Volvulus of an Ectopic Testicle.

Malignant degeneration is not the only accident to which an ectopic testicle is exposed. Hallopeau and Quenu report a case of volvulus followed by testicular atrophy in the *Bulletins et Mémoires de la Société Anatomique de Paris* for May, 1920, xc, 5. The patient was aged twenty-two with a history of right ectopic testicle till the age of twelve when it descended for the first time into the scrotum, but as it was not anchored anywhere could slip back into the abdomen. At seventeen and twenty after accidents the gland ascended suddenly into the inguinal canal with a painful crisis and it became necessary to reduce it. On the last occasion the patient was fighting at the front and was sent back with the snap diagnosis of strangulated hernia. Aside from these episodes he frequently replaced the gland when it slipped upward. In 1919 he had a third crisis much worse than the preceding and was unable to replace the ectopic gland. A diagnosis was difficult and after every other possibility had been excluded the authors thought of torsion of the testicle, but substituted at the last moment the diagnosis of acute tuberculous orchitis. Under ice and rest the condition slowly righted itself. The swollen and tender scrotum became normal and the testicle was felt to be in place. A couple of months later the man returned for examination and while the parts were chiefly normal the testicle was much shrunken in size and did not give the testicular sensibility on compression. It was now evident that the last attack at least had been one of torsion. After castration on the affected side examination of the preparation showed that the accident had been the so-called "low volvulus of Lapointe" which must be distinguished from the so-called high torsion, the latter being much more rare.

News of the Week.

International Society for the Prevention of Tuberculosis.—All nations signatory to the League of Nations covenant and the United States, at the International Anti-Tuberculosis Conference held in Paris last week, organized a permanent International Society for the Prevention of Tuberculosis. Sir Robert William Philip, of Edinburgh, was elected president of the new organization. The first annual meeting will be held in London next autumn.

Food Shortage in Central Europe Affects Hospitals.—William C. Mullendore of the American Relief Administration, who returned recently from an eight months' tour of Czecho-Slovakia, Austria and Germany, reports that hospitals in Central Europe are unable to care for the sick as a consequence of the food shortage. Some institutions have been compelled to close, while others receive only as many patients as they can feed.

"Save the Children" Fund.—This fund, started by Pope Benedict, for the relief of suffering children in Central Europe, is said to have grown to 15,000,000 lire.

St. Mihiel War Memorial Hospital for Children.—Under the auspices of the American Red Cross, and cooperating with the French Government, the Junior Red Cross will finance the erection and operation of a model hospital for children at St. Mihiel, France, in memory of the great American battle effort of the World War.

United States General Hospital No. 43, at Fox Hills, Staten Island, has been closed by the War Department. A part of the hospital facilities will be operated by the United States Public Health Service for the care of wounded ex-service men under the War Risk Insurance arrangement. The hospital, which covers 250 acres and comprises more than 150 buildings, has been inspected, according

to rumor, by representatives of the Ford Automobile Company with the view of transforming it into an automobile factory.

Medical Inspection of New York City School Children.—In a report published recently in the *Monthly Bulletin* of the Department of Health, Dr. S. Josephine Baker and Dr. Jacob Sobel, reviewing school medical inspection in 1919, state that 1846 cases of general contagious diseases were excluded from schools during the year, 149 more than in 1918. In 1919 there were found on "home visits" only 95 unreported cases of major contagious diseases, while in 1918 there were 368. In 1919 there were 237,437 contagious eye and skin diseases found in schools, an increase of 209,991 over 1918. This increase is attributed to the fact that at the first sign of any minor contagion the child is placed under treatment. The Sight Conservation Clinic has 699 cases under supervision and treatment at present, and there are 99 children in blind classes. There were 16,942 visits to the dental clinics during the year. A total of 37,677 visits were made by the medical inspectors. Nurses made a total of 288,158 visits. The number of children under supervision ranges from 4000 to 7000 per nurse. Inspectors held 18,412 consultations in schools, nurses 121,813. A special nutrition survey in forty-three schools revealed a percentage ranging from 17 to 61, or a general average of 32 per cent. malnutrition.

Pneumonia in New York City.—For the six weeks from Sept. 1 to Oct. 16, there were 483 deaths from pneumonia in New York City, this being about double the number for the same period last year, according to Dr. Copeland, Health Commissioner.

Request for Fund for Maternity Nurses Denied.—The Board of Estimate of New York City recently denied the request of Health Commissioner Copeland for the sum of $122,400 for the employment of sixty-eight nurses for maternity work. Dr. Copeland held that this appropriation would reduce the mortality of infants under one year by more than fifteen per cent.

Lectures on Industrial Health and Preventive Medicine.—The Long Island College Hospital College of Medicine announces a course of lectures and practical demonstrations on these subjects for practitioners of medicine, for which there will be no charge. Physicians desiring to attend should communicate with Dr. H. Sheridan Baketel, 350 Henry Street, Brooklyn, N. Y.

Institute on Venereal Disease Control and Social Hygiene.—A tentative schedule of courses has been issued by the United States Public Health Service for the Institute, to be held in Washington, D. C., Nov. 22 to Dec. 4. The Interdepartmental Social Hygiene Board and the American Social Hygiene Association are cooperating in the organization of the Institute.

Harvard Health Record.—Figures made public by Dr. Rogers I. Lee, professor of hygiene, Harvard University, show that the health record of the students in Harvard College is more favorable than in most industries and in the Army and Navy. The average student is absent from college work on account of illness at the rate of seven days a calendar year. The mortality statistics at Harvard for the last ten years show only 34 deaths in the total college population of 22,579, giving a death rate per thousand of 1.8 for the college year, or a corrected death rate for the calendar year of 2.7 per thousand. During the last ten years pneumonia has caused more deaths among Harvard undergraduates than all other causes combined.

"Annual Free Will Offering."—The United Hospital Fund has inaugurated its "Annual Free Will Offering," with the hope of collecting, through citizens, business concerns, trade bodies and churches, the sum of $1,500,000 for the fifty-five non-municipal hospitals of New York and eight of Brooklyn, which give free care to the poor. Officials of the fund hope to raise this amount by Nov. 29. Officers of the United Hospital Fund are: Robert Olyphant, president; George Blumenthal, vice-president; James McV. Breed, secretary, and Albert H. Wiggin of 57 Broadway, treasurer.

Next White House Physician a Homeopath.—Inasmuch as both candidates for the forthcoming presidential election employ homeopathic physicians, it is assumed, with rejoicing, by members of that school that the next White House physician will be a disciple of Hahnemann, instead of a rear admiral.

Drug Cure Clinic Evicted.—Deputy Commissioner Sara Graham-Mulhall, in a recent review of the work of the State Narcotics Commission, told of the difficulties encountered in treating addicts and the general lack of sympathy on the part of the public. Her own clinic, for example, had been driven from place to place by eviction notices, finally seeking refuge in the loft of the Bowery Mission. Only 7,000 of an estimated 20,000 addicts in New York City, she said, had registered.

Mental Clinics.—The Mutual Hygiene Committee of the State Charities Aid Association announces that a clinic will be held at St. Joseph's Hospital, New York City, for the examination and treatment of cases of mental diseases and mental defect among patients who have been paroled or discharged from the State Hospital. The purpose of the clinic, it is stated, is not only to keep in touch with such patients, but also to advise with members of the community suffering from mild or incipient forms of mental disease or nervous disorder which, with the aid of a specialist, may be overcome before a serious stage is reached. It is urged that children who are nervous and unmanageable or who exhibit peculiarities of behavior, be sent to the clinic for observation.

Flower Hospital Appeal.—In an appeal for subscriptions to insure its proper maintenance and to make it possible to add sixty-five beds, Flower Hospital reminds the community that it is the sole ambulance service covering a territory in the heart of Manhattan of over 275 city blocks from the East to the North rivers, with a resident and transient population of hundreds of thousands of people. Although this is a real life-saving public service, it is stated, it is operated at a big loss. A single day's record in the emergency ward shows seven little children brought in with fractured skulls.

First Aid on Pullmans.—The Pullman Car Service is giving the American Red Cross First Aid training to the entire force of colored maids em-

ployed on the transcontinental trains. Several of the women have already finished the course and now carry as part of their equipment the regulation first aid kit. The Pullman Company has arranged with the New York County Chapter of the Red Cross to give the course of training in first aid and home hygiene to some hundreds of maids reporting to its New York terminal.

Pipe Dreams in Danger.—The Pennsylvania Division of the Women's Christian Temperance Union, at its forty-sixth annual meeting held Oct. 20, ratified the national program for a campaign against the use of tobacco.

Obituary Notes.—DR. JAMES A. O'REILLY of Brooklyn, N. Y., died at Middletown, N. Y., October 13, at the age of thirty-three. He was graduated from the College of Physicians and Surgeons, New York, in 1912, devoting especial attention to tuberculosis. He served as interne at the Coney Island Hospital and visiting physician to the Brooklyn Hospital, and was commissioned First Lieutenant, Medical Corps, during the World War. Dr. O'Reilly was a fellow of the American Medical Association.

DR. ALONZO POTTER WILLIAMSON of Santa Monica, Calif., died recently, at the age of sixty-six. He was graduated from Hahnemann Medical College and Hospital, Philadelphia, in 1876, and specialized in neurology. He was a member of the American Medico-Psychological Association.

Obituary.

ISADORE DYER, M.D.

NEW ORLEANS.

DR. ISADORE DYER of New Orleans, La., died of heart disease on October 12, at the age of fifty-five years. He was graduated from Tulane University of Louisiana, School of Medicine, in 1889, served as interne in the New York Skin and Cancer Hospital and lecturer in the New York Post-Graduate Medical School and Hospital, returning to New Orleans in 1892. He became affiliated with Tulane University School of Medicine as lecturer on dermatology, 1892 to 1905, associate professor from 1905 to 1908, and professor from 1908 to the time of his death. He also served as associate dean and dean of the same institution. From 1893 to 1905 he was professor of dermatology in the New Orleans Polyclinic. In 1894 Dr. Dyer founded the first board of control of the Louisiana home for lepers, a work in which he continued to be active and interested. He was a fellow of the American Medical Association, of which organization he was vice-president and member of the Council on Medical Education and Hospitals at the time of his death. He was affiliated also with the American Dermatological Association, the Southern Medical Association, the Association of American Medical Colleges, the American Society of Tropical Medicine, and other state and national medical bodies. During the World War Dr. Dyer served as major, heading the local examining board for the Medical Reserve Corps. After his discharge he was colonel in the new Reserve Corps. Dr. Dyer was editor of the *New Orleans Medical and Surgical Journal* and a frequent contributor to the literature of dermatology and tropical medicine.

Correspondence.

THE CARBOHYDRATES AND ACIDOSIS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Your editorial in a recent issue of the MEDICAL RECORD, "The Cause of Dental Caries," was of interest to me. In 1912 I tried to call the attention of the profession to a condition designated "The Carbohydrate Diathesis"; tried to show that this condition was brought about by a faulty *carbohydrate* metabolism. We all know that the by-products of digestion are a vast number of different acids. The carbohydrates are the source of the larger part of these products; therefore when an almost exclusive carbohydrate diet is eaten, the quantity of these acid products is enormously increased. The continuous production of this abnormal supply of acids finally so cripples the liver that it is unable to perform its function of neutralizing this material; the failure of this neutralization is followed by pellagra, chronic rheumatism, chronic nephritis, gastric ulcer, acne, eczema, pyorrhea, and many other allied conditions. Just so soon as we diminish the quantity, and neutralize the remainder of these acids, all these conditions rapidly improve, and recovery is only a question of time. I have never seen a case of pellagra that was not accompanied by pyorrhea. They both recover rapidly as soon as the normal alkalinity of the fluids of the body has been restored.

In view of these facts, I think Dr. Harry Campbell of London is in error when he says "The jamming of saccharine material between the teeth is the most potent factor in dental caries." I am sure his indictment of the carbohydrates is correct, but I think his theory of method by which the damage is done is faulty. In my opinion it is not by jamming this material between the teeth; but, rather, by the continuous ingestion of the carbohydrates with the above mentioned overproduction of acids.

J. F. YARBROUGH, M.D.

COLUMBIA, ALA.

REGULATING THE MEDICAL PROFESSION.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—In its issue of Oct. 18, 1920, the MEDICAL RECORD noted a letter sent over my signature to the members of the Medical Society of the County of New York and to other members of the profession in New York City, setting forth the negative value of the efforts made by existing medical organizations and individuals in combating the enactment of unjust and injurious measures and laws limiting and harassing the legitimate practice of medicine. Among the many letters received in response to this appeal I have selected the following as one calling for publication at the present time when the very existence of the profession of medicine as an independent calling is threatened.

JOHN P. DAVIN, M. D.

NEW YORK.

MY DEAR DOCTOR:

I have read with interest the "Bulletin" No. 2, which you sent me and, although not engaged in the practice of medicine, I still retain such rights, privileges and prerogatives as have been left to me as a graduated and registered physician by latter-day legal enactments.

and I regret as much as you do that these rights and privileges have been so ruthlessly and unnecessarily curtailed through the misdirected efforts of idealists, would-be reformers, and political agitators and place-hunters. Speaking as a teacher in medical and pharmacy schools and other institutions, and as the registrar of the Albany Medical College for over thirty years, and as one who has kept in close touch with educational affairs and particularly with medical education, I am inclined to think that it would be better for the public, and better for the profession, if all regulatory and restrictive legislation of medical institutions and medical practitioners were annulled. I do not think that the effect of such regulation has been to uplift the profession, but that, on the whole, it has lowered it and ranks it with the trades. I think that the prestige, morale and influence of the profession of medicine has declined and that there is more commercialism in medicine than in former times. Quackery has not been suppressed, nor is dishonesty abated, but the regular and honorable practitioners, who constitute the vast majority of the regular profession, have supinely suffered their rights to be abridged and their independent action hampered and improperly restricted by unwise and impolitic legislation and the building up of a bureaucratic system which has put medicine under the control of examining and licensing boards, often incompetent and politically controlled. The passage of antinarcotic laws and such enactments as the Volstead act have well nigh destroyed the right which physicians should never have relinquished, to prescribe any medicinal agent whatever that they deemed proper in any case coming under their treatment.

I am opposed to most, if not indeed to all, the measures which you denounce in the Bulletin No. 2, and to the extension of the control of the profession by the State Board of Health, or other boards now existing or which may be proposed hereafter. My opinions are based upon long observation and careful consideration, and, as I am no longer actively engaged in any kind of medical work I speak as one who has no favors to ask nor axes to grind. I deem it high time that members of our profession awoke to a realization of the conditions confronting them and resented the implication that they are incompetents or crooks. Further regulation, registration, and supervision of regular practitioners should be opposed. Yours very truly,

WILLIS G. TUCKER.

ALBANY, N. Y.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, October 4, 1920.

Causes of Blindness.—The Ministry of Health has appointed a Departmental Committee to investigate the causes of blindness and suggest measures for its prevention. The report of the committee is intended to form part of a comprehensive handling of the blind problem by the Government. With reference to the causes of blindness it is known that inherited venereal disease is an important contributory cause. Accidents account for from 12 to 15 per cent of the blind cases and perhaps in the majority of instances, the accidents could be prevented by the employment of suitable occupational safeguards. Inflammatory diseases, such as measles, scarlet fever, and smallpox, are other contributory causes. It is said that while the committee will probably direct the greater part of their attention to these main groups they will undoubtedly also consider the question of the after-care of the partially blind people, among whom the boys frequently become clerks and the girls needle-workers, really the most unsuitable occupations they ought to follow. The question of the illumination of schools and factories will likewise be discussed and the committee will finally endeavor to find out how it is that so many defective spectacles are supplied to the public.

National Health Insurance.—The aggregate receipts of the National Health Insurance amounted last year to £9,167,552. Of this sum £4,076,810 was paid for sickness benefit; £1,111,200 for disablement benefit; and £921,490 for maternity benefit. The administrative charges reached a total of £2,110,289 or 23 per cent of the receipts.

Opening of the Winter Session of the London Medical Schools.—As usual at the opening of the winter session of London medical schools on Oct. 2, addresses were given by well known physicians and surgeons and by distinguished men and women in other walks of life. At St. Mary's Hospital, Dr. J. G. Adami, vice-chancellor of the University of Liverpool, and for many years professor of pathology at McGill University, Montreal, made the address. Dr. Adami said in part that if England were to keep its position among the nations above all was necessary the spirit of initiative and progress and adaptation to the needs of the new era, and St. Mary's Hospital and Medical School stood to-day as the exemplification of this spirit. That it might be of greater service to the community, St. Mary's had taken into alliance other hospitals and thus expanded notably both its treatment and teaching facilities. It had realized that maternity teaching was an essenial part of the course, and instead of sending its students to an outside institution which it could not control, had established an obstetric department with beds and out-patient clinic in the hospital itself, with results that were as excellent as they were appreciated by the student. It had at heavy cost to itself maintained its independence, and withstood the temptation to obtain aid from the Ministry of Education, with the loss of control and training of its students in their earlier years of medical and scientific study which would have ensued had it accepted that aid, with like independence and like loss of prospective revenue it had not slavishly accepted the scheme of full time professorships in medicine and surgery and establishment of the unit system, but had put into force a scheme of its own which it believed was adapted to its special circumstances and of greater benefit to its students. Doing this, it had for the time being cut itself off from Government aid. Recognizing the demand for medical training for women and the altered status of the sex, it had thrown itself wholeheartedly into coeducation. It had brought its Institute of Pathology into close association with the needs of the hospital, and, as a latest move sympathizing with labor and comprehending that during the coming generation industrial problems must be to the forefront, it was preparing to establish the first chair in industrial medicine in the Kingdom.

Dr. Adami went on to say that the universities and the professional schools of England found themselves to-day in a parlous state. Never indeed had their condition been more parlous. Students were pouring in to all the professions in numbers double those before the war, the demand for extra accommodation had soared to an unheard-of height. Like coal miners and bricklayers, univerity teachers must live, even if they managed to exist on stipends well below the wages received by coal miners. So great had been the increase in the cost of living that whereas a junior member

of the staff was content with £100 a year, his small personal fortune on what he could make by the side, and his expectations, to-day with the rise in the cost of clothes, lodging and boarding, £250 was the minimum that sufficed, and even then secondary schoolmasters with three years' university training were receiving as much and more. Was it a wonder with expenditure rising rapidly quarter by quarter, and income as steadily sinking, the universities and professional schools of Great Britain were at their wits' end? Was it a wonder that realizing the public duty performed by them, and knowing that in other countries, like France and Germany, the State had for generations assumed the cost of university and professional education, the universities and medical schools in their distress should turn to the Government and appeal for further aid? So the vice-chancellor and the university authorities and representatives of the teachers went before the Chancellor of the Exchequer and the Minister of Education, and placed part of their case before him, only to be told by the Chancellor, what was quite true, and to his great credit, that he had done more to aid the universities of England than any previous chancellor, that he was at his wits' end to meet the financial needs of the nation and that he could do nothing to help those who did not help themselves. He as much as directed them to raise their fees, and only when they had done all that was possible to secure income from other sources to come to him again. Immediately following this pronouncement the council of the University of Liverpool, just as did that of the University of London, resolved to follow Mr. Chamberlain's bidding. Here was the tragedy. As a loyal and public body they responded with open arms to the request of the Ministry of Education that they should accept ex-Service Students. They accepted them to the very limit of their capacity. Yet they were told very decidedly that the ministry would not meet the increase in fees of these ex-Service Students already on the roll. Thanks to the decision of the ministry they were now, what with ex-Service and Training College Students, faced with a deficit of nearer £15,000 than £10,000. From having carried out to the fullest extent the advice of the Chancellor of the Exchequer they found themselves, through the action of another ministry, placed in a most embarrassing, not to say ridiculous, position, unless with the full facts before it the ministry, reconsidered their decision. As a vice-chancellor, Dr. Adami was upon principle strongly opposed to seeking help from Government. What through the generations had distinguished English universities and university staffs was their independence of Government and Government control. The Chancellor of the Exchequer, Mr. Chamberlain, had done well to compare the results of English university education with those of the German system, to compare the sturdy independence and resultant initiative of the British system with the formalism and repression of the German machine system. In three years the English scientists not merely caught up but in every instance advanced further those positions in what he might term offensive science gain by the German through thirty years of laborious effort. It was through their subservience as Government officials that the Russian and Prussianized professors supported the military caste in leading Germany headlong into disaster. It would be an evil day for England when her universities and hospitals come under Government yoke. If they were forced to ask aid from the Government let it be with a clear understanding that this was but temporary, and with definitely expressed conditions that their hands were not tied, and that the officials of Whitehall were not empowered to interfere. Let the grants be of such a nature as not to give excuse for interference. The speaker suggested a plan by which this end might be reached. As for the unit system which has been adopted in many of the large hospitals of Great Britain and which has been hailed with pæans of praise Dr. Adami confessed that he was more than a little nervous about this strong movement, he would not say directed from Whitehall, but which had been blessed by Sir George Newman, a movement for full-time professorships in medicine, surgery, and midwifery, and the development of the unit system, which had come to Great Britain from Germany through America. Could this system be securely grafted on the English method of teaching medicine? At this stage it seemed to him that it would be wiser to let others make the experiment, and to observe the results. How had the system succeeded in Germany? The results, it seemed to him, had been very significant, not to say sinister; such results as none of them wished to accrue in the British Isles. The Germans had, it was true, excelled in detailed studies of particular diseases, but where they were to be credited with notable discoveries it was not a little noteworthy that those whose names were known to all were not the university professors of medicine and surgery, were not the clinical but the laboratory men, like Virchow, Koch, and Ehrlich. The less trammeled English system had favored the development of men of original mind, where the German system had repressed it. The German system made for the solitary leader, not for the establishment of schools. Here the human being was the first consideration but in Germany and Austria hospital patients might too often be so many animals. Heedless of modesty and natural emotion, man, woman, maiden, and child were ordered to expose this part or that to the crowd of students, and were subjected to this or that test. They might be a herd of cattle or a company of Prussian privates. The ordinary product of a German medical school had had a far less thorough and all-round general medical training than had the English medical student; he was a poorer practitioner. If the unit system were established the German defects would be encouraged, namely, neglect of good general all-round teaching for all, and over much encouragement of the student to specialize too early in his career. Why adopt this German system which had come to us through the United States when there was an English method, a method on right lines, the beginnings of which were in action in St. Mary's Hospital and Medical School?

At the opening of the Middlesex Hospital Medical School I. Swale Vincent, Professor of Physiology, gave the introductory address dealing with medical education and research and urged medical men to regard every case as a problem. He pointed

out, that most of the epoch-making discoveries in their profession had for some little time no direct application to medical practice. There was room for great improvement in the methods of medical teaching. Students heard so many lectures that they became almost immune to any influence that might be created by lectures, which should be explanatory of laboratroy work; and laboratory work should be considerably increased. The normal should be thoroughly known before the student proceeded to the abnormal. Professor Vincent referred to the lack of public support given to research work at the universities and the "miserable makeshifts" authorities there had often to be content with.

At the Royal Free Hospital School of Medicine for women there was a large gathering of lady students on the occasion of the opening of the winter session. The dean of the school, Miss Aldrich-Blake, M. S., M. D., who presided, spoke with pride of the success achieved by students of the school and she stated that the successes of the past year had been greater than those of any other school. Miss Maude Royden addressed the gathering on "Revolutionary Thought" and said they had achieved little less than a revolution for the world had now passed out of that period when women were regarded somewhat in the nature of natural invalids who were always suffering from "meagrims" and hysteria and similar troubles. That revolution was due to women being now skilled in surgery and medicine. The idea that progress and pain must go together in the staggering proportion that now existed was pure imagination due, she thought to its always having been so in the past. They had got to get into their own minds, and in the minds of the people, that when they wanted to make a new world they could not do it by mechanical means. They could not build a new world by merely turning the old one upside down. That was what appeared to be in the minds of the Russian people at present. When society was turned upside down, as, for instance, in the French Revolution, they possibly did get some little advance if only by the change; but at what an awful cost in suffering and chaos! Those who felt strongly opposed to international war would make no real progress if the only result of their efforts was to provoke a class war. Every effect has its cause, and it was by seeking the truth and finding the cause, and then scientifically applying the remedy, that they could make real progress; and it was revolution in that sense that she commended to the students of the Royal Free Hospital Medical School.

Progress of Medical Science.

Boston Medical and Surgical Journal.

October 14, 1920, clxxxiii, 16.

1. A Clinical Apparatus for Measuring Basal Metabolism. Francis G. Benedict and Walter E. Collins.
2. Orchitis in Mumps. Conrad Wesselhoeft.
3. Notes from the Ear, Nose and Throat Service, Provisional Base Hospital No. 1, Bazoilles-sur-Meuse, France. H. H. Amsden.
4. An Improved Method in the Treatment of Otitis Externa. Joseph Prenn.
5. Institutional Dentistry. Frederick A. Keyes.
6. Vincent's Angina—Stomatitis. John E. Ganley.

1. A Clinical Apparatus for Measuring Basal Metabolism.—Benedict and Collins describe and illustrate the latest modification of a portable respiration apparatus, which is reduced in weight, and provided with support and stand. Thus modified the apparatus is strictly portable and not merely transportable. Without gas analysis, without weighings of any kind, the oxygen consumption of patients may be studied by this apparatus in the customary ten to fifteen minute periods, with an accuracy fully equal to other standard methods of studying respiratory exchange. A simple method of timing the readings of the position of the spirometer bell eliminates the use of stop watches. Three series of comparison tests on two different subjects with widely varying basal oxygen requirements show that the most satisfactory results can be obtained.

2. Orchitis in Mumps.—Conrad Wesselhoeft, in this second paper, discusses orchitis preceding parotitis, orchitis without parotitis, clinical aspects of orchitis and the pathology of the affection.

New York Medical Journal.

October 16, 1920, cxii, 16.

1. The Relation of the Medical Profession to the Campaign for the Control of Cancer. Robert B. Greenough.
2. The Use of Radium in Esophageal Cancer. Henry Hall Forbes.
3. Treatment of Arterial Hypertension. John H. Musser.
4. What Is Disease? Casper L. Redfield.
5. The Doctor and the Neuropath. Charles R. Ball.
6. Impairments Regarding Family and Personal History. William E. Wehner.
7. The Therapeutic Value of Cupping. J. Epstein.
8. The Biochemistry of Drug Addiction. A. S. Horovitz.

3. Treatment of Arterial Hypertension.—John H. Musser points out that in spite of all that has been written and despite the facility with which medical men are accustomed to manage cases of hypertension, several new methods of treating this condition have appeared in the past two years. Particular attention is directed to these newer methods. The writer holds that hypertension for which there is no obvious cause is a symptom, not a disease; and yet it is a symptom which is so closely related to disease that it is not amiss to treat the symptoms. A high pressure, though merely a manifestation of some underlying pathological process, is so frequently the main symptom and the cause of so many closely related symptoms that it has come to be regarded as a definite entity, no matter whether the increased blood pressure is the result of a neuropathy, an endocrine dystrophy, or a narrowing of the smaller elements of the blood vascular tree. It is impossible in many cases, by the ordinary clinical and laboratory tests, to demonstrate renal changes, internal secretory disorders, or other causes to explain the pathogenesis of the condition of high blood pressure. One is accustomed to assume that there is present a glomerular nephritis or a renal sclerosis, yet one is unable to show any distinct evidence of kidney pathology. This absence of symptoms and signs, except those referable to the high pressure, has led to a variety of names being applied to the syndrome—cardiovascular hypertensive disease, hyperpiesis, essential hypertension. The last named is the term most frequently applied to the disorder. By essential hypertension one understands a condition of continuous high blood pressure, systolic pressure over 175 mm. of mercury, of unexplained cause. The patient may have many symptoms referable to the high pressure, yet on the other hand a high pressure may exist without symptoms and only be discovered when making a routine sphygmomanometer examination. Such an individual is objectively though not subjectively sick. The management of the cases is discussed with regard to general treatment; diet; physical effort; hurry, worry, and mental strain; sleep and rest; elimination; hydrotherapy; drugs; reduction of salt and water intake. An illustrative case is reported. The writer concludes that the management of a case of hypertension requires a careful study of the patient. Unless some threatened vascular cardiac or renal catastrophe seems imminent, physical and hygienic measures should be relied upon more than drugs. The reduction of salt and water intake forms a valuable adjuvant to these measures.

Journal of the American Medical Association.

October 16, 1920, lxxv, 16.

1. Effect of Tonsillectomy on the Recurrence of Acute Rheumatic Fever and Chorea: A Study of Ninety-four Children. William St. Lawrence.

2. Industrial Epidemiology. William Alfred Sawyer.
3. Influenza and Hypophrenia: The Interrelation of an Acute Epidemic Infection and a Chronic Endemic (Brain) Affection. Karl A. Menninger.
4. A Clinical Study of Epithelioma of the Lower Lip. Everett S. Lain.
5. Restoration of the Margin and Neighboring Portion of the Eyelid by a Free Graft from the Lower Part of the Eyebrow and the Skin Directly Below It: Report of an Illustrative Case. John M. Wheeler.
6. Condylomata Acuminata. A. N. Creadick.
7. Abscess of the Lung. U. J. W. Peters.
8. Retroperitoneal Perineal Lipomas. Walter R. Holmes.
9. Tetany Following Thyroidectomy. Peter H. Poppens.

1. Effect of Tonsillectomy on the Recurrence of Acute Rheumatic Fever and Chorea: A Study of Ninety-four Children.—William St. Lawrence. See MEDICAL RECORD, May 8, p. 813.

2. Industrial Epidemiology.—William Alfred Sawyer discusses certain practical problems concerning industrial epidemiology, which he defines as that phase of medicine which seeks to improve the health of individual workers and prevent the transmission of disease to their fellows. He outlines a plan which he thinks would help in curtailing the large waste due to the very frequent and all too common colds and their resultant conditions. The various communicable diseases come within the range of his consideration.

3. Influenza and Hypophrenia.—Karl A. Menninger outlines two methods of study of this subject, cites eleven cases, and draws, among others, the following conclusions: Influenza as a type of acute infection, with known neurotoxic potency, gave opportunity for study of its effect in relation to hypophrenia in the recent epidemic. Inquiries addressed to superintendents of State hospitals for the feebleminded afforded seventeen replies, representing more than 16,000 patients, but were almost entirely barren of important results, owing in part possibly to the burden and pressure of duties incident to the care and alleviation of the physical disease. This negative evidence is offset by data from the cases of the Boston series and from private practice, illustrating effects of influenza on hypophrenia. The uncomplicated cases represent: (1) Hypophrenia (feeblemindedness), with aggravation of intellectual lack prominent after influenza; (2) hypophrenia with emotional sphere disturbances notably intensified after influenza; and (3) hypophrenia with volitional and conduct disorders conspicuously aggravated by influenza; to which may be added (4) a single instance of symptomatic improvement, in all spheres, but notably that of intellect, following influenza. The complicated cases represent: (5) Hypophrenia with conspicuous neurologic manifestations after influenza; (6) hypophrenia with psychotic manifestations following influenza; and (7) hypophrenia with psychopathic manifestations prominent after influenza. Generic processes illustrated as to the rôle of the influenza are comparable to those observed in the study of the psychoses associated with influenza, namely, creation, precipitation, aggravation, and amelioration. In this the relation of influenza to hypophrenia differs from that of influenza to the psychoses, since aggravation in the latter was the least frequently observed phenomenon, and in the case of hypophrenia the most frequently observed. The usual effect of influenza on the brain is not the production or precipitation of hypophrenia, and if it ever produces hypophrenia it is probably by means of a more or less obvious encephalopathy. On the other hand, of those already manifesting mental lack, certainly a few are influenced adversely by influenza, and the symptoms of hypophrenia aggravated, an aggravation which may be predominantly in the intellectual sphere, in the emotional sphere, or in the volitional sphere. Psychoses of an indeterminate type are occasionally precipitated by influenza in the feebleminded, even as in normal persons. At least occasionally, though rarely, the effect of influenza on hypophrenia may be symptomatic amelioration.

7. Abscess of the Lung.—U. J. W. Peters. See MEDICAL RECORD, May 8, p. 807.

The Lancet.

September 25, 1920, cxcix, 13.

1. Some Clinical Points Connected with Gallstones. Arthur J. Hall.
2. The Lumelian Lectures on the Clinical Experiences of a Physician During the Campaign in France and Flanders, 1914-19. Lecture III. Sir John Rose Bradford.
3. On the End-Results of Peripheral Nerve Injuries Treated by Operation. Sir. William Thorburn.
4. Prognosis in Certain Affections of the Heart. W. T. Ritchie.
5. Effects of Hot and Cold Applications on the Superficial and Deep Temperatures. J. J. R. Macleod, A. R. Self, and N. B. Taylor.
6. The Complement-Fixation Test in Pulmonary Tuberculosis: Its Use as a Means of Diagnosis. A. L. Punch.
7. Public Health in Soviet Russia. IV. L. Haden Guest.
8. On the Need of a New Technique in Anthropology. Prof. Karl Pearson.

5. Effects of Hot and Cold Applications on the Superficial and Deep Temperatures.—J. J. R. Macleod states that while it is well known that the local application of heat or cold to the surface of the body is of value in the treatment of a variety of clinical conditions, no data apparently exist to show the extent to which the application causes actual change in the temperature of the underlying tissues. With the aid of the Research Committee of the Medical Services of the Department of Militia and Defence of Canada, a series of observations was undertaken to collect such data, and the interesting and definite character of the results has prompted the presentation of this brief report. The observations were conduced on rabbits. Heat or cold was applied over an area of shaved or closely clipped skin by means of an appliance called the "applicator." The technique of application of heat and cold and of measuring the temperature at the point of contact and of the tissues is described. The following types of observations were made with regard to the influence of local heat: 1. Temperature of skin of thigh on application of electric pad. With a difference in temperature of pad and skin of 12° C., the skin temperature rose about 5°, a moderately warm applicator having almost as great an effect as one that was considerably warmer. With the skin thoroughly shaved a similar relationship between the rise of skin temperature and the temperature of the applicator was not so evident. The extent of the lateral spread of the temperature change on shaved skin was found to be considerable. 2. Temperature of skin and underlying muscle of thigh on application of hot-water applicator, to overlying skin. Although the observations are insufficient to indicate the maximal depth to which locally applied heat may penetrate the tissues, they show at least that this is considerable (over 20 mm.). The rise in the muscles is more gradual than under the skin. The heat of a poultice or of fomentations must therefore penetrate for a considerable distance, even into relatively vascular tissues. 3. Temperature in various regions of the abdomen on the application of heat to the abdominal wall. The results in general show that when heat which is about 15° C. above that of the body is applied over approximately one-fourth of the surface of the abdomen a change in temperature may occur which may penetrate the abdominal viscera for a distance of about 75 mm., although it can spread laterally only for somewhat less than 20 mm. Observations on the effects of cold gave results equally as definite as those for heat, the temperature change, of course, being in the opposite direction.

6. The Complement-Fixation Test in Pulmonary Tuberculosis: Its Use as a Means of Diagnosis.—A. L. Punch, in this preliminary report to the Medical Research Council, states that the object of the investigation was to see if it were possible by modifications of the test to obtain results of sufficient reliability to warrant its being regarded as a specific reaction for the diagnosis of *active* tuberculosis. The conclusions drawn from the results are: (1) That in the complement-fixation test we have a specfic means of diagnosis of the presence of an active or recently active tuberculous lesion. (2) That a negative reaction is as reliable an indication of the absence of such a lesion as a positive reaction is of its presence. (3) That a positive reaction in the highest dilution of complement is just as reliable an indication of the presence of such a lesion as a positive reaction in all three dilutions.

British Medical Journal.

September 25, 1920, ii, 3117.

1. An Address on the Relation of Physiology to Medicine. Thomas Lewis.
2. Discussion on the End-Results of Injuries to the Peripheral

Nerves Treated by Operation. (Section of Surgery, British Medical Association). Opening Papers by Sir William Thorburn and Percy Sargent.
3. Results of Operations for Nerve Injury at the Edinburgh War Hospital. Maud F. Forrester-Brown.
4. Late Results of Operation. J. L. Joyce.
5. Discussion on Dementia Præcox and Its Relation to Other Disorders. (Section of Neurology and Psychiatry, British Medical Association.) Opening Paper by Bernard Hart.
6. Poisoning by Arsine. M. Bannister.
7. A Case of Erysipelas Terminating in Acute Thyroiditis. L. M. Weeks.

2. Discussions on the End-Results of Injuries to the Peripheral Nerves Treated by Operation.—Sir William Thorburn, after reviewing the results of various surgeons, stated that, after many years, he could only say that if a surgeon obtains 50 per cent. of really good economic recoveries after secondary nerve suture, he is doing well; if he obtains 75 per cent. of such recoveries which will bear investigation, his work is both brilliant and fortunate. On the other hand, he said not one word of death rates and of operation risks or disasters, because under modern conditions such things are and should be for all practical purposes unknown.

3. Results of Operations for Nerve Injury at the Edinburgh War Hospital.—Maud F. Forrester-Brown, after an analysis of 643 cases of nerve injury operated on in the Edinburgh War Hospital, 552 of which were traced and 396 personally examined, was led to the conclusion that every case of nerve lesion which has not recovered spontaneously within a reasonable time should be given a chance by operation, since regeneration of nerve fibers after suture can be looked for with confidence in the majority of cases, although progress must be expected to be slow. Whether recovery will ultimately be complete in the majority of cases it is too early yet to say, and the prognosis of any individual case is very hard to estimate.

4. Late Results of Operation.—J. L. Joyce confined his remarks to the late results of operations designed to bridge a gap in a nerve which cannot be repaired by end-to-end union. When one remembers the delicacy of an axon, our relative ignorance of their minute anatomical distribution, and the difficulties which must beset their transport across a gap in a nerve, the fact that the results are not good is not surprising. Rather is it to be wondered at that any recovery takes place at all; but that such does occur encourages him in the belief that the operations of pedicled autogenous transplants and of free autogenous transplants are deserving of further study and research, and still have a place in the operative surgery of injured nerves.

Western Medical Times.

October, 1920, xl, 4.

1. Pneumonia Patients—And How They May Be Saved. William Henry Porter.
2. Scheme for Aiding France in Regard to Her Million Single Women. George H. Tichenor.
3. The Value of the "No Good"—The Stove Pipe Principle of the Terminal Ileum. Douglas H. Stewart.
4. The Unexplained Cancer. W. J. Fairchild.
5. Some Pelvic Complications—A Clinic at the Broad Street Hospital, New York. Robert T. Morris.
6. Medical Nomenclature and Materia Medica. Judson Colby Brown.

1. Pneumonia Patients—And How They May Be Saved.—William Henry Porter holds that the successful treatment of pneumonia is a fairly simple procedure, but must be carried out along scientific rather than sentimental lines. In pneumonia, more than any other disease, the battle is won or lost by what is or is not done during the first forty-eight hours of the pathological process.

Le Progrès Médical.

July 31, 1920, xlviii, 31.

The Grand Dyspeptic Syndromes.—Ramond regards this subject as more or less neglected. First he isolates the vasomotor type characterized by bloating immediately after a repast. It is not a true dyspepsia, but a syndrome of a subjective character which may subside in a short time or persist, according as it is accompanied or not by spasms of the pylorus. It is called forth by substances which excite gastric secretion as well as by overeating, and the author could provoke it in one subject by giving a capsule of peptone alone. The bloating is usually accompanied by flushing of the face, drowsiness, heaviness of the head, amounting at times to a headache. Sometimes the subject falls into a distressed sleep. The dilated pupils give the eyes a bright look, the conjunctivæ are congested, the nose oily, while vertigo and tinnitus aurium seem to show that the congestion involves the ears. The hands tend to become livid, cool, marbled and damp. Cardiac symptoms are mostly absent, although there is a feeling of want of air. There is a marked sense of fatigue. In the syndrome thus sketched there is no disturbance of gastric chemism and treatment is unsatisfactory. The subject must learn to abstain from articles which contribute to the attacks. Belladonna may give some relief and warm hydrotherapy is also mentioned. Other syndromes comprise the early painful and the late painful or pyloric. In the former there is also a sense of tension, but it is accompanied by pain, waterbrash, heartburn, etc. Belching is not part of the syndrome, for escape of gas would relieve the tension and no syndrome would develop. During the war the fact of swallowing the poison gas led to many similar cases, and in at least part of the cases gastritis is present, but congestion and mere disturbance of innervation suffice in others. The late painful or pyloric type is associated with some lesion of the pylorus, usually a localized gastritis, and spasmodic closure, with more or less dilatation of the stomach. The author does not mention duodenal ulcer in this connection.

Le Progrès Médical.

August 28, 1920, xlviii, 35.

The Dubreuil-Chambardel Syndrome.—Feil thus designates a form of precocious caries of the upper incisors. The physician of that name, a disciple of Professor Ledouble of Tours, published the original memoir on this subject in 1919 before the Congress of Stomatology. In this paper he reported 44 cases. The affection is one of adolescence, occurring between the ages of fourteen and nineteen. All four upper incisors are attacked simultaneously with caries, the remainder of the dentures remaining quite intact. But sooner or later, perhaps after an attack of stomatitis, the remaining teeth are involved. The interval between the first symptoms of incisor caries and total necrosis of the same is four or five years. The teeth show no vices of development or implantation and there is at first sight nothing to explain the malady. The first cases seen by Feil occurred in mother and child, showing an hereditary element. The child, aged fourten, was the patient and examination of the mother showed that she had undergone the same experience. Another patient was twenty-two when seen, but his caries had begun at the age of thirteen. Thus far nothing has been said of the syndrome. The original discoverer noted the coincidence of ogival palate and harelip in some degree. Usually an operation scar is in evidence when first seen. He has also noted a persistence of the intermaxillary bone and an infantile arrangement of the local blood vessels which appear to stand more or less in a causal relation to the syndrome.

Schweizerische medizinische Wochenschrift.

August 5, 1920, l, 32.

Chemotherapy of Influenza.—Ryser contributes an article with this title, but the term seems ill chosen, for it should be restricted to drugs able to destroy the microscopic cause of the disease, and this is not even known, so that we cannot affirm that a sterilization is possible, much less that one has been effected. The author, however, may mean the term in the sense suggested, for he speaks of having aborted cases with it, and if we concede that the disease is due to Pfeiffer's bacillus (like the author), we can understand his contention that sodium salicylate destroys or paralyzes the activities of this organism. He believes in pushing the salicylate of sodium, and since this has some depressant action on the heart, he combines it with digalen and caffeine. He criticises the use of aspirin, but combines dionine, codeine, or morphine if there is much cough. He gives as much as ten grams of sali-

cylate in twenty-four hours to robust men, and not less than six grams to women. He breaks up the daily dose in small and fractional quantities, so that at the end of the first day the subject has incorporated the entire amount —in reality this has occurred after about eleven hours. He expects to cause mild salicylism and does not mention the development of delusions or delirium said to follow large doses in certain subjects. In nonpneumonic cases the results were surprisingly good, and the author treated a large material in 1918, 1919, and 1920. Of 98 pneumonias in the first pandemic he lost but 13.3 per cent., and in the entire material less than 3 per cent. The dead succumbed to severest sepsis. Considering the deadliness of the pandemic in Switzerland, the low death rate is attributed by the author entirely to the massive exhibition of salicylate of sodium. This treatment is very similar to that advocated by Dr. Beverley Robinson of New York City, who claims to have had excellent results therefrom.

Schweizerische medizinische Wochenschrift.

September 2, 1920, i, 36.

Is Ordinary Aphthous Stomatitis a Form of Foot and Mouth Disease?—Margulis calls attention to the name "epizootic apthae," used to designate foot and mouth disease in man, and this name may suggest a possible sporadic incidence in a mild and noncontagious form. The epidemic incidence in association with an epizootic is due to the consumption of infected dairy products and infected raw meat. Now and then milkers and slaughterers may be directly infected. Transmission to mankind has been known since 1764, but not until more than a century had elapsed did the profession consider this fact seriously. It has been the custom in diagnosis of this disease to exclude ordinary aphthae. The lack of a microscopic criterion has, of course, been a great drawback in the joint study of simple and epizootic aphthae. The author recently treated a bad case of aphthous fever or stomatitis of unknown origin in a girl of fifteen. Mercurialism could be excluded, as could all other known stomatitides. There was foot and mouth disease in the next farm and the animals showed the same type of stomatitis. Despite the close proximity all evidence of a direct or mediate transmission was negative. Had there been no knowledge of cases in the dairy animals the case, of course, would have been termed stomatitis of unknown origin. This again suggests that any case of sporadic aphthae may have been exposed through dairy products or otherwise to genuine epizootic stomatitis, or that man and animals may derive the infection from a common source. In practice, however, the unusual severity of the author's case and the ability to exclude other forms of stomatitis should certainly have led to a presumption of foot and mouth disease on general principles.

Il Policlinico.

August 9, 1920, xxvii, 32.

Should Cancer of the Stomach Be Subjected to Operation?—Cavazzani answers this query in the affirmative, being actuated largely by the results published from the Mayo Clinic. He reports five cases from his private hospital as follows: The first patient had an ulcerated cancer of the stomach in which perforation developed spontaneously with secondary peritonitis. It was necessary to intervene and the author resected the pylorus. The cancer mass was very large, but was still technically operable. The intervention occurred on October 4, 1919, and was successful in every way. The tumor mass was found to be the seat of an ulcer 9 cm. across, with involvement of the regional lymphnodes and numerous adhesions. The second patient had cancer of the greater curvature, and was first seen in May, 1918. The tumor in the epigastrium was palpable like the previous case and "as large as a kidney." The woman was cachetic and her cancer had been pronounced inoperable in 1917. The author could find no absolute evidence of inoperability and performed a gastrectomy by Billroth's second method. This was successful and patient was discharged in good condition. The third subject had severe symptoms of gastric cancer and was cachetic, but the author could find no suggestion of inoperability. The woman was discharged in good condition ten days after the resection of the pylorus. The two other operations were of the same sort, ending in operative recovery. Of the five patients one is alive and well after two years, but the others had only a limited survival. One had metastases of the liver at the time of intervention. The four cases all ended fatally with metastases after a period of relief, with the exception indicated. In other words, in five cases there was no operative death and 20 per cent. of survival to the third year.

La Presse Médicale.

August 21, 1920, xxviii, 59.

Is Rickets a Deficiency Disease?—Nathan anticipates by the statement that while rachitis seems to be a deficiency disease proofs have not been forthcoming. According to the vitamine theory the disease is the result of deprivation of the lipo-soluble vitamines; but so simple an explanation is discarded by authorities. The author has been experimenting on young dogs by withholding this species of vitamine. As controls served other puppies fed on food in which fat-soluble vitamines abounded, as whole milk, cream, and butter, and cod-liver oil. Another set of animals received water-soluble vitamines only. The results showed that the fat-soluble vitamine is antagonistic to rickets. Geographical pathology seems to bear out laboratory results. Among certain very poor people in tenements of large cities Jews show much immunity based on extensive use of oil in the diet, and in communities where cattle raising is the principal industry the disease is unknown. But Hess and Unger are only partly satisfied with this view because rachitic children may be robust and in general do not behave as if they were being deprived of anything essential to life. The author does not accept this definition of a deficiency disease and this point seems the crux of the debate, which the future must clarify. The public and largely the profession have always looked on a rachitic child as substandard, especially in its earlier years. Numerous functional disturbances are said to accompany the bone disease and the subject is more prone to suffer from the infectious diseases of childhood. But in later years these children may become robust adults, bearing only certain stigmata of the disease.

Journal de Médecine de Bordeaux.

September 10, 1920, xci, 17.

Case of Pluriglandular Insufficiency.—Caussimon describes the following case: Patient was a single woman a "stenodactylographe" (or combination stenographer and typist). For two months she had complained of vertigo and palpitation, which caused her to seek treatment. At the age of twenty-four she had had amenorrhea for eight months, and afterward menstruated not over once a year. At twenty-seven evidences of acromegaly appeared. The enlargement of the fingers interfered with her occupation. Thus far the symptoms pointed to the pituitary and ovaries, but later profound asthenia set in. There was nothing in her ancestry or early history to account for these disturbances. Examined in the clinic there were evidences of both acromegaly and hypothyroidism of somewhat atypical character. The skin and hair and the mental state suggested myxedema and there was abundant evidence of acromegaly. The sella turcica showed no abnormality, but the coincidence of acromegaly with apparently intact hypophysis is not unknown. The eyes were intact and the blood count was not that commonly seen in acromegaly. The thyroid was atrophic and symptoms of hypothyroidism are not usually encountered in acromegaly. There was no evidence of persistent thymus. The early amenorrhea showed apparently that the ovary had been primarily involved. The extreme prostration evidently had no connection with hypoadrenia, but must be attributed to myxedema. Before trying polyvalent extracts the patient was given thyroid extract with remarkable results. Menstruation was resumed normally and the enlarged tongue of acromegaly coincidently became smaller.

Society Reports.

AMERICAN ASSOCIATION OF OBSTETRICIANS, GYNECOLOGISTS, AND ABDOMINAL SURGEONS.

Thirty-third Annual Meeting, Held at Atlantic City, N. J., September 20, 21, and 22, 1920.

THE PRESIDENT, DR. GEORGE W. CRILE, IN THE CHAIR.

Some Interesting Surgical Conditions of the Liver and Biliary Tract.—Dr. JOSEPH H. BRANHAM of Baltimore said that a healthy gall-bladder should never be removed, nor should it be subjected to operation. When symptoms were severe enough to warrant operation, in most cases the organ was so diseased as to be of little or no value and was a menace to future health. For several years he had made the removal of the gall-bladder by a method that was almost subperitoneal. After the abdomen was opened the ducts and neighboring organs were carefully examined. This could usually be done by palpation. If the disease was confined to the gall-bladder, an oval incision was made over the lower anterior surface of the organ; the peritoneal coat was dissected from the deeper tissues; when the duct was reached it could always be known by the well-marked sphincter. A considerable margin of peritoneal coat was left at the liver attachment; the duct was severed, and after being explored and emptied of stones, a large catheter was fastened to it by a twenty-day catgut suture; the peritoneal coat from each side was stitched together, and then to the ventral peritoneum. This left the catheter outside the peritoneal cavity and gave a smooth serous surface over the entire wound, thus preventing adhesions. By confining the incision to the accessible part of the organ, the suturing was made easier. A small cigarette drain left in for one or two days was all that was needed in most cases. After operations were done in this way, there were few adhesions, and the patients were left usually in good condition.

Dr. ORANGE G. PFAFF of Indianapolis stated that we all aimed to be conservative in the treatment of gall-bladder diseases, but in the last few years the statement had been made that a gall-bladder once diseased, always diseased, but this was not always the case. If the abdomen was opened on account of symptoms and no stones were found, and very little demonstrable pathology, if we found a gall-bladder that was not easily emptied by pressure, such a gall-bladder ought to be drained, but in most instances, instead of draining the gall-bladder that was grossly diseased, all were now agreed that the thing to do was to remove it.

Where the Rubber Glove Is Behind the Times.—Dr. ROBERT T. MORRIS of New York City said that the rubber glove represented one of the best advances of surgery in general. It interfered with the sense of touch in some kinds of work. In abdominal work the rubber glove was not necessary if the hands of the operator were otherwise well prepared. It required a longer incision, and consequently was not in accordance with the principles of the Fourth Era of Surgery.

Dr. HERMAN E. HAYD of Buffalo, N. Y., thought that Dr. Morris did the profession a good service when he taught them to do surgery through small incisions and to develop tactile sense. He was rather surprised that a man with a judicial mind like Dr. Morris should have put before the association so strongly the results of the work of Kennedy without the use of rubber gloves. It was hard for him to believe that 99 per cent. of the cases that other surgeons operated upon who wore gloves had adhesions, while those operators who did not wear gloves had only 7 per cent. adhesions. To him this was ridiculous. Out of 100 cases, probably 60 to 75 per cent. were the simplest kind of operations and would not have taken but a short time to accomplish. He did not believe it was possible that such results could take place in the hands of 99 men with adhesions and Dr. Kennedy had only 7 per cent. adhesions from operating without gloves.

Dr. CHARLES L. BONIFIELD of Cincinnati could not believe that the rubber glove in and of itself caused adhesions. He could conceive of a man with rubber gloves on being rough, and a man without rubber gloves scratching tissues with his finger nails. One thing that induced him at an early age to wear rubber gloves was the fact that his finger nails were very hard to keep clean, and he seldom knew whether he had them clean or not, and he felt it was better to cover them up with something that he could boil. While rubber gloves might impair tactile sense a little, still they should be used in operating.

Dr. GORDON K. DICKINSON of Jersey City stated that Dr. Morris wanted to standardize operating by cutting out gloves. Why did we use gloves? Because we got infection. Why did we have infection? If one went the rounds of the clinics one would see the most incongruous things perpetrated, such as putting on soap and washing it off again. If one wanted to get his hands free from germs he must not wash the soap off and must not scrape it off. It did not do any good. Put soap on, rub it in, and one would kill the germs, and there was no germicide more potent than potassium soap.

Dr. JOHN W. KEEFE of Providence, R. I., said that a surgeon's tactile sense was not as acute with a rubber glove on as it was without it. When rubber gloves first came into use he used them in most all cases he operated on. Now and then he slipped the rubber gloves off because he thought he could feel better without them. At one time he was in the habit of going to see Dr. McBurney, who was one of the greatest surgeons America had ever produced. He told him about his difficulty, and he said that was exactly where the mistake was made. The rubber gloves should be kept on in a difficult case and the fingers ought to be educated as to how differently things felt with the gloves on. He went home and had practiced that ever since.

Dr. JAMES N. WEST of New York City stated the essayist spoke of the great tendency to standardization, with the result that it stifled originality. There were times when the surgeon could operate to greater advantage without the use of gloves than with them, particularly if he was very careful in the preparation of his hands.

Dr. ABRAHAM J. RONGY of New York City said in a large city like New York it was not only unsafe to operate without gloves, but unsafe to examine patients in the office without gloves, and as a measure of protection the use of gloves was one of the best things for the physician.

Rupture of the Bladder During Labor.—Dr. JOHN W. POUCHER of Poughkeepsie, N. Y., reported a case, stating that rupture of the bladder during labor was very rare. It might be caused by instrumentation or spontaneously by overdistended bladder. The immediate symptoms simulated those of rupture of the uterus. It was important that the bladder be frequently emptied during severe and protracted labor. Recovery of the patient depended on prompt operative treatment.

My Method of Performing Version.—Dr. IRVING W. POTTER of Buffalo, N. Y., stated that for the year ending August 31, 1920, he had personally delivered 1113 women, 920 of whom were delivered by version. Of the 920 versions, 400 were primiparæ, and 520 were multiparæ. He showed lantern slides demonstrating his method of performing podalic version. He emphasized the importance of proper preparation of the patient for delivery, the condition of the bladder, cervix and vaginal canal. He laid stress on the position of the patient during delivery, and the degree of anesthesia necessary.

Dermoid Cysts of the Ovary; Etiology, Diagnosis, and Treatment.—Dr. BENJAMIN R. MCCLELLAN of Zenia, Ohio, gave a brief review of dermoid cysts of the ovary, saying that recent research into the etiology of these strange neoplasms, especially the work of Goodall, had added new interest and emphasis to the parthenogenetic theory. As to the diagnosis, the question of possible infection and malignant potentiality in these growths demanded more careful study of all tumors arising from the pelvic basin. The *x*-ray should be more generally utilized. In the treatment the utmost care should be exercised in removing the tumor en masse, without the use of trocar or aspirator. The case reported by the author only added another example to prove the fact that these tumors did not prevent pregnancy or interfere with parturition as long as the pedicle remained untwisted.

Certain Procedures in Vaginal Surgery.—Dr. SAMUEL W. BANDLER of New York City described an operation for cystocele and prolapse of the uterus, modified by partial hysterectomy and complete perineorrhaphy. He exhibited numerous lantern slides and made a running comment on the same.

Case of Congenital Absence of the Vagina with Other Abnormalities.—Dr. DAVID HADDEN of Oakland, Cal., reported the case of a girl of 18 with absence of menstruation. The symptoms were indefinite. Examination showed external parts normal with unperforated hymen. A body felt through the rectum occupied the position of the uterus. Operation revealed the absence of a vaginal canal, the pelvic mass being the right kidney fixed in position. The cecum and appendix were undescended and located in the right kidney fossa. A general consideration of the factors involved was discussed.

Luteum Extract.—Dr. ADAM P. LEIGHTON, JR., of Portland, Maine, spoke of the necessity for combining thyroid extract with luteum in many cases. He spoke of the use of these extracts in cases of menorrhagia, dysmenorrhea, functional amenorrhea and obesity. The climacteric symptoms and others were due to ovarian insufficiency. He pointed out the great necessity for prolonged administration of luteum extract in order to obtain results.

Submucous Adenomyomata.—Dr. OTTO H. SCHWARZ of St. Louis stated that submucous adenomyomata were comparatively rare. There were only a few cases described in the literature. The condition was primarily a localized adenomyoma in the uterine wall. These tumors were usually diffuse in character. The tendency for these growths to become submucous was quite unusual. He described a very large submucous adenomyoma, unusual in structure, with marked cystic dilatation and intracanalicular projections. A subserous tumor, described by Robert Meyer, arising from the Wolffian duct or the parovarian tubules, was mentioned. The submucous tumor in the author's own case, although identical in structure with the tumor described by Meyer, was definitely of Muellerian origin.

Endocrine Influence, Mental and Physical, in Women.—Dr. JAMES E. KING of Buffalo, N. Y., pointed out that the endocrine system supplied stimulus for the fulfillment of the two fundamental laws of nature. The secretions prompted in the human being many mental attributes. In women, both the physical and mental phenomena associated with reproduction were the result of glandular secretion. There was some fact and much theory bearing on this. Woman would be better understood when we had further knowledge of the complicated operation of her endocrine system.

Case Reports.—Dr. GEORGE VAN AMBER BROWN of Detroit reported (1) papilloma of the bladder in a woman, 45 years of age; (2) a case of advanced carcinoma of the uterus in a woman of 38; (3) hydrosarcoma, mucocellulare carcinomatodes (Krukenburg type of tumor) in a woman, 57 years of age; (4) chorioepithelioma malignum with multiple fibroid tumors in uterine tissue in a woman, 35 years of age; (5) lymphoblastoma primary in the parovarium of a child 5 years of age.

Accidental Hemorrhage; Cesarean Section; Hematuria in Pregnancy.—Dr. JAMES K. QUIGLEY of Rochester, N. Y., reported two cases, one of accidental hemorrhage in which a cesarean section was done. The interesting points in this case were: (1) of the several causes advanced as factors in the etiology of accidental hemorrhage, this patient presented three, viz; trauma, a marked pregnancy toxemia, and a short umbilical cord (17 cm.); (2) extreme intrauterine pressure; (3) gross appearance of the uterus in situ, corresponding to that described by Wing and by the author in a previous publication; (4) relatively large amount of free peritoneal fluid; (5) leukocytosis and clinical improvement following the two tranfusions.

The second case was one of hematuria in pregnancy in a woman, aged 30, primipara. Of the various causes offered for hematuria and for hematuria in pregnancy in particular, it seemed to the writer that the most plausible etiological factor in this case was toxemia of pregnancy, as evidenced by increased blood pressure and edema.

Hernia of the Ileum Through a Rent in the Mesentery.—Dr. WILLIAM EDGAR DARNALL of Atlantic City, reported the case of Mrs. D., aged 46, married, one child, weight 200 pounds. She had never been seriously sick. Family history was negative. She was well developed with splendid physique and the picture of health. She had had no symptoms until recently when she noticed a "lump" in the abdomen and suffered with menorrhagia. Examination revealed a fibroid tumor of some size freely movable and uncomplicated and there was a very slight laceration of the cervix. On July 18, 1918, a supravaginal hysterectomy was done by him. From this she made a most perfect and smooth recovery and was in due time sent home. On August 12, a month afterward she ate a large dinner. The next morning about 6 o'clock she was seized with a most agonizing pain in the epigastrium and vomited. The pain was so severe that morphin was administered. Her bowels were irrigated producing a copious stool. The next day her pains were considerably improved but distension appeared. During the afternoon there was an absence of peristaltic sounds on auscultation, her pulse was increasing in rapidity and her temperature had risen to 101° F. Dr. Hobart A. Hare, of Philadelphia, saw her with the speaker in consultation and was of the opinion that in spite of the temperature there was some form of obstruction, although enemas still brought away some feces and gas. Operation was decided upon and performed at 5 P.M. The findings were as follows: Through an opening in the mesentery of the second convolution of the ileum there had slipped a loop of the ileum belonging to the first convolution high up on the left side under the spleen. There was a volvulus of this loop and it was gangrenous and perforated. There was an abscess in the left kidney pouch and foci of pus at various locations in the upper abdomen. The whole abdominal cavity was filled with fluid and intestinal contents. The hernia was released and the rent in the mesentery closed. Twelve inches of ileum was resected and a Murphy button used for anastomosis. Drainage and counterdrainage was used. Proctoclysis with Locke-Ringer solution instituted Fowler position ordered. An opportunity was afforded of inspecting the lower abdomen and pelvis which were found in perfect condition with no adhesions or constricting bands anywhere. Indeed it was rather exceptional to find everything so smooth and free from adhesions of any sort just a month after her first operation. He was unable to account for the rent in the mesentery so far away from the site of the pelvic operation, which made this unusual hernia possible. She had led a very quiet and well ordered life since her first operation and seemed in perfect health. The patient succumbed to shock in about five hours.

An Unusual Abdominal Cyst.—Dr. ORANGE G. PFAFF of Indianapolis on March 20, of this year was consulted by a young married woman on account of a large abdominal cyst which had been tapped ten days previously, twelve quarts of thin fluid having been drawn off at that time according to the statements of the patient and her husband. Her history had been one of good health. The first menstruation occurred at the age of fourteen and this function had always been normal. She had passed through three normal pregnancies, the last one three years ago, which was followed by phlebitis affecting both legs. This had, however, practically disappeared when he first saw her. She had noticed some abdominal swelling about four months before she came to him. This had not given her very much trouble until about six months before she consulted him when she began to suffer severely from pressure. Her appetite was also impaired and she had lost a few pounds in weight in that time. The abdomen was greatly distended and fluctuation was readily elicited in every part. Dullness on percussion was general with the exception of a slight indistinct resonance at the epigastrium. The case was considered one of large ovarian cyst, and on March 22, she came into the hospital and he operated on her the following day. Through the usual median incision he came directly upon the sac, which was so densely adherent to the parietal peritoneum that it required some care to develop a line of cleavage, the further separation, however, being accomplished with only moderate difficulty and he was then able to pass his hand freely in every direction, widely on either side

and almost from the diaphragm to the pelvic brim. Retracting the lower angle of the abdominal incision the bladder came into view and appeared to be normal and was free from adhesions. Its wholesome color contrasted strongly with the dark, purplish red of the cyst wall, which was firmly adherent across the brim of the pelvis, in front of the uterus on a line corresponding to the vesico-uterine fold. Upon separating the sac along this line a gush of several quarts of water occurred. He continued the separation and lifted up a flap of the material constituting the anterior wall of the cyst, which was now recognized as a perverted and greatly thickened omentum being in places more than half an inch thick. With the lower omental flap held up he came upon a number of peritoneal cysts varying in size from that of a walnut to a large grape-fruit which filled up the pelvis on both sides. The intestines were held down and away from the anterior abdominal wall by innumerable strands of adhesions, so that even when distended by gas there would be no note of tympany elicited on percussion. This was one of the puzzling elements in diagnosis. The laboratory report on the specimen removed for examination stated the condition to be one of proliferating tuberculosis with much newly formed fibrous tissues. The case which he reported was unique in his experience. The great thickening of the omentum, the extensive fibrinous formation and the restrained viscera were unusual and the resultant absence of tympany regardless of posture constituted a complex which was very puzzling indeed and very misleading in diagnosis.

Obstruction of the Superior Mesenteric Vessels from Bands, with Threatened Gangrene of the Greater Part of the Small Intestine; Recovery.—Dr. JAMES N. WEST of New York City stated that cases of gangrene of the small intestine, due to thrombosis of the superior mesenteric vessels, might have been cases of this kind. The distribution and anastomosis of the superior mesenteric vessels was such that, if they were destroyed, death must necessarily ensue. The patient, female, aged 20, had general abdominal pain for three days, then she suddenly developed violent and uncontrollable pain with elevation of temperature, increase of pulse rate, and moderate distention. Abdominal section revealed the small intestinal tract in a state approaching gangrene and a firm band, which proved to be a cecal mesentery, extending across the superior mesenteric vessels. In the inflammatory process of the appendix the cecal mesentery undoubtedly became tightly constricted across the superior mesenteric vessels, obstructing them completely, and resulting in a swelling, edema, and bloody effusion in the mesentery of the small intestines. Appendectomy was performed. The abdomen was closed without drainage. Protracted recovery ensued. Union was by first intention. Collapse on the second and third days was successfully combatted by intravenous saline infusions with adrenalin. Mild septic temperature on the fourth day. On the sixth day there was diarrhea, continuing violently until the sixteenth day. Malpositions of the cecum were frequent, and might be hypo-descent and hyper-descent. In hyper-descent volvulus of the cecum was favored and at times necessitated operation. The collapse, diarrhea, and septic temperature were probably due to autolysis. The chief lesson in this case was that when, on opening the abdomen, one found a small intestine in a state approximating gangrene, the abdomen should not be closed without careful search for the cause.

The Toxic Thyroid; Its Treatment by Ether-Oil-Colonic Anesthesia.—Dr. GORDON K. DICKINSON of Jersey City said that mental stress required a strong thyroid, adrenal, and liver. One or more might fail and produce symptoms. To handle such a case skilfully required a careful surgeon and an adept at applied psychology. Excessive action of thyroid was always associated with an overactivity of adrenal and glycogenic function of liver, and a mental state analogous to fright. Surgery of the thyroid under these conditions demanded recognition of component states. A slight affront to the mind overreacted on thyroid and adrenal. Proper technique demanded elimination of such possibility. Anesthesia cone to the face and surgeon working at the neck were mental traumatisms. In ether-oil-colonic anesthesia we had the ability to anesthetize patients safely without their knowledge.

Gehrung Pessary.—Dr. EDWARD J. ILL of Newark, N. J., drew attention to the value of the Gehrung pessary. In Vol. 13, page 513, 1880 of the *American Journal of Obstetrics and Diseases of Women*, Dr. Eugene C. Gehrung of St. Louis wrote an article on the mechanical treatment of cystocele. He urged the use of the pessary in those, who were old and decrepid, for those with decompensated heart disease, diabetes and extreme renal affection. Also for those with pulmonary affection that contraindicates anesthesia and lastly the timid ones. It was by no means to take the place of the Watkins operation of which he spoke in the highest terms.

Enuresis.—Dr. JOHN W. KEEFE of Providence, R. I., said that viewing the subject of enuresis broadly, he arrived at the following conclusions: (1) Considering the multiplicity of measures that have been found to assist in the cure of enuresis, it would seem that underlying them all, must be some common factor, which is a psychophysiological impression made upon the brain. (2) Heredity undoubtedly plays an important rôle. (3) These patients have a neurotic, unstable nervous system accompanied many times by mental retardation. (4) Psychotherapy, mental suggestion and education of the subconscious mind should supplement any other form of treatment to the end that we may anticipate involuntary or voluntary micturition. In a word his contention was that the cure was the result of the mental awakening and stabilizing of the brain cells that controlled the act of micturition.

Pathological Leucorrhea and Its Treatment.—Dr. FRANCIS REDER of St. Louis said that all pathology had physiology as its basis. A leucorrhea which was physiological must be differentiated from one which was pathological. To gain an exact knowledge of the condition of the genital tract it was well to take an existing leucorrhea as a starting point. The character of the discharge, and the various states upon which the discharge depended, might reveal the seat of the disorder. The term leucorrhea grouped together a large number of lesions, and although it was the most common and prominent symptom in the majority of utero-vaginal cases, the fact that certain constitutional disorders had important relations with the different forms of leucorrhea must not be overlooked. Under such conditions it was not merely the expression of a symptom, but of the disease itself. Different periods of female life presented different kinds of leucorrhea. Forms of leucorrhea which were not pathologic were easy to diagnosticate and readily yielded to proper treatment. A pathologic leucorrhea often presented great diagnostic difficulties. Its response to treatment was frequently unsatisfactory.

The Female Pelvic Ureters.—Dr. DAVID W. TOVEY of New York City said that palpation of the ureters should be a part of every vaginal examination. Ureteritis, because of the nerves irritated, might simulate disease of any of the abdominal organs. Palpation would make the diagnosis. There was nothing between the palpating fingers and the ureters but the anterior vaginal wall. They were marked on the anterior wall by the ureteral ridges, and could be felt from their entrance into the bladder to the pelvic brim. They were felt as flattened cords the size of a leather shoe string, and could be displaced in the loose cellular tissue. In ureteritis, periureteritis, stone, pyelitis, and tuberculosis, the ureter was thickened and tender. Ureteritis and periureteritis were commonly due to infection from the cervix, and it might follow hysterectomy. It was a condition often mistaken for cystitis. Palpation showed a thickened tender ureter with intense desire to urinate. Treatment should be applied to the cervix and parametrium and not to the bladder, as cystoscopic examination showed the bladder to be normal.

Pseudocholecystitis.—Dr. HAROLD D. MEEKER of New York City drew the following conclusions: (1) The occurrence of adventitious bands in the upper abdomen has been established beyond question. (2) These bands give rise to definite symptoms. (3) The gall-bladder is the viscus most frequently involved; the resulting symptoms simulate a cholecystitis. (4) Plastic surgery has given definite relief. As complete freedom from symptoms has been recorded ten years after

operation, it is reasonable to suppose relief may be permanent. (5) It is illogical and unfair to patients to withhold a chance of relief because the origin of these bands may not yet have been definitely established. (6) The frequency with which adventitious bands in other parts of the abdomen coexist with those of the upper abdomen, emphasizes the importance of a thorough search of the entire gastrointestinal tract for abnormal bands and fixed points. (7) It is to be hoped that a comprehensive discussion of these bands will be found in the surgical textbooks of the near future. A knowledge of the condition will be the means of restoring to a life of comfort many individuals otherwise condemned to continued suffering.

Double-Flap Low Cesarean Section Results.—Dr. THURSTON SCOTT WELTON of Brooklyn, N. Y., stated that as a result of the findings in this series of a total of 55 cases he had concluded as follows: (1) The double flaps and low incision offer great protection against extension of infection to the peritoneum from an infected uterus. (2 As a result this should be the operation of choice in all potentially infected cases. (3) This fact, also, should extend the field for cesarean section to include such cases as have been long in labor with the membranes ruptured and potentially infected from frequent vaginal manipulation in which most men would elect to do a craniotomy on a living child rather than do a classical section. (4) The double flaps, likewise, so completely peritonealize the uterine wound that adhesions and post-operative disturbances are greatly minimized. (5) From the results obtained and the reasons given, the two flap low cesarean section should be the operation of choice even in elective cases.

Pyelitis in Pregnancy, with Report of Cases.—Dr. GREER BAUGHMAN of Richmond, Va., reported three cases of pyelitis complicating pregnancy. He showed lantern slides and charts and pyelograms indicating the progress of the cases. All of the cases were treated with pelvic lavage. Living babies were born to the two patients upon whom labor was induced at a selected time, while in the case of the patient who entered labor before the time set for the induction of labor, the child died. With the exception of a few treatments the patients after the first reaction showed marked improvement in symptoms. In all of the cases the right pelvis was primarily involved. In two the bladder was early involved, in the other the bladder signs were not prominent. Bacillus coli was the exciting cause of two; staphylococcus albus of the other. In all of the cases the curve representing the right and left pelvic sizes were parallel. A most marked improvement was noted in all symptoms, pelvic size, and urinary findings following delivery, showing that the obstruction did take place from the uterus and its contents. It was found possible to irrigate all of these cases within two weeks after the time of their delivery. None of the cases had any rise of temperature during the puerperium.

Borderline Carcinoma of the Cervix and Its Treatment.—Dr. EDWARD A. WEISS of Pittsburgh said that when a diagnosis of cancer of the cervix has been made, appropriate treatment should be given at the earliest possible moment, nevertheless haste in operating was not always advisable. He had found from practical experience that preliminary preoperative rest in bed for several days resulted in a marked diminution in the size of the diseased cervix, but more important still, there was often noticed a decidedly less thickening and fixation of the broad ligaments, proving that the fixation was inflammatory rather than malignant invasion of the lymphatics of the broad ligaments. As a result of this observation he had frequently found that the supposedly inoperable case was really operable or borderline. During the period of rest in bed, more careful study of the patient's resistance could be made and should radical treatment follow, the condition of the patient was greatly improved and offered a better operative risk. In the borderline cases, the improved Byrne cautery technic, which was practically the first stage of the Werder radical igni-extirpation, had given him the best results in many years, and while only a few so-called permanent or five years cures were obtained, yet he had had several instances of complete freedom from symptoms for periods of from three to five years. In thirty-eight borderline cases so treated, there was recurrence with death in one case at six months; two in nine months; five in twelve months; five in eighteen months; eight in two years; five in two and one-half years; two in three years; three in three and a half years; two in four years; one in five years, and four were not to be traced after the first year. In this series one death resulted on the fourth day from embolism. The results obtained by him with radium in a series of advanced or inoperable cases were so striking that a series of forty-five borderline or Group IV cases, radium instead of the cautery was used, and while the results were disappointing in some instances, he was forced to admit after taking all factors into consideration, that in a small series radium had proved to be a most valuable adjunct, both as to immediate and remote results. To say that radium used in the cervix was a harmless procedure, it was not in accordance with facts and its indiscriminate use would bring discredit on a very valuable adjunct in gynecological therapy. In using the cautery in the treatment of borderline cancer a clear distinction must be made between the so-called Percy cauterization and high amputation by the cautery. In the former the cervix was not removed, but a deep charring resulted which was often followed by fistula formation and severe constitutional reaction. The subsequent use of radium would not only be of little value, but would increase the tendency to fistula. Cancer of the cervix was still to be classed as an operative condition when discovered early and the patient a good risk. When a doubtful borderline condition was presented treatment by radium was advisable and the question of subsequent operation should be decided by the reaction obtained; but if the operation was contraindicated by age, general condition, heart, kidney, or blood vessels, radium alone should be used.

Splenic Leucemia Associated with Pregnancy.—Dr. GEORGE W. KOSMAK of New York City said that a survey of the reported cases of leucemia complicating pregnancy in which a fairly definite diagnosis from the blood picture was made, disclosed a total of 12, including 2 of the writer. The ages of the patient varied from 24 to 40, the majority being between 32 and 36. With the exception of Peterson's case all were multiparæ. A possible hereditary history was mentioned in only one case. The parity varied from three to nine. In most of the cases he got a history of living children that showed no tendency to the disease up to the time of the report, but in a few instances he was told that the babies died at varying periods after labor, from a few days to five months. In four cases mention was made of the birth of macerated or stillborn fetuses. Among these twelve cases the mother survived in but two, but how long these mothers lived was not stated, nor the subsequent course of the disease. In the majority of cases he found that the woman survived but a short time after labor. One of his patients died before delivery took place. In Peterson's case, death came on an hour after labor and in Hilbert's case ten hours, and Lauenburg's forty hours after labor. There was a record of death in Stillman's case one month after delivery, his second case died in two weeks and Jaggard's case eleven months after delivery. In every instance but one (his own case) in which the definite diagnosis was presented the splenomedullary type of the disease was observed. It would be noted that in many cases the authors mentioned a prodromal period in which progressive emaciation, anemia, and loss of strength were noted soon after a pregnancy, from which no recovery resulted, and during which period the woman again became pregnant. The leucemia itself did not therefore appear to be a deterrent factor to conception. Although the presence of a true leucemia as a complication of pregnancy was from all available records a very rare condition, nevertheless one ought to be on his guard against it. Probably a considerable number of cases of marked anemia in which no satisfactory blood count had been made might have been true instances of this disease. In many cases where an anemic patient failed to recover under proper treatment, a more minute and detailed examination of her blood should be made with reference to the possible diagnosis of leucemia. The occurrence of pregnancy in this disease indicated a most unfavorable outlook for the mother and conception must therefore not be allowed to take place where the condition was

suspected. The prognosis was undoubtedly worse in the pregnant than in the nonpregnant and whether the association was accidental or not was immaterial. Where the disease was already present abortion seemed to be the rule, with a rapidly progressing course and a fatal issue. The presence of an enlarged spleen was an almost constant factor in the disease and should lead one to look for this sign in every anemic patient. The value of the *x*-rays in leucemia had been brought forward but in the event of a pregnancy its application, as a cure for the disease might work an undoubted harm on the fetus and the induction of labor should be done before radiation was begun. It was necessary to distinguish between the acute and chronic forms of leucemia. Pregnant women might contract a rapidly fatal leucemia if the evidence of the cases thus far reported was to be believed, although it seemed possible that the disease was present in a milder form in many of these patients before their last and usually fatal pregnancy occurred. It would be noted that there were apparently cases of chronic leucemia in this series in which pregnancy and labor occurred, and for this reason conservative treatment had been advised under such circumstances. In view of the rapidly fatal ending during the puerperium it would appear that this advice was not justifiable and that in order to avoid such an outcome labor had better be induced in all cases.

Benign Mammary Tumors and Intestinal Toxemia.—Dr. WILLIAM SEAMAN BAINBRIDGE of New York City reported a series of 25 cases of abnormal mammary changes apparently caused by autointoxication. Each of the patients who suffered from abnormal breast conditions had, in addition to the breast changes, coexistent chronic intestinal toxemia, the mammary gland frequently registering the degree of toxic poisoning. He divided the cases roughly into three classes: (1) Patients with a condensation of lobulated induration of the upper, outer quadrant of the breasts, usually along the edge of the large pectoral muscle and where the dependent breast dragged on the upper axillary margin. These were lumpy, toxic, or stasis breasts. (2) Patients with breast changes as in Class 1 but with the added condition of localized degeneration of the mammary gland, such as adenomata or cysts. (3) Patients with breast changes as in Classes 1 or 2 and in conjunction an abnormal discharge from the nipples. The majority of the cases were patients with marked intestinal toxemia. A few had complicating pelvic condition. Cases cured with medical measures, 5; cases cured by surgical relief of the chronic intestinal stasis and without operation on the mammæ, 15; cases cured after operation for adenoma or cystoma and for the intestinal stasis, the remaining indurated, lobulated portion of the breast returning to a normal condition, 1; cases cured by the removal of an adenoma or cystoma from a toxic breast, and by preliminary and after-treatment for the intestinal toxemia, 3; and a case in which stasis breasts were removed, the underlying intestinal toxemia not being recognized, 1. The following were the author's conclusions: (1) There are definite abnormal conditions of the breast tissue due to intestinal toxemia. As the thyroid gland is changed by toxemia, so the mammary gland may be altered completely by chronic intestinal stasis. (2) Under medical treatment an appreciable number of these cases with abnormal breast conditions are cured. A proper uplifting abdominal corset applied for enteroptosis, careful diet, catharsis, breast supports for dependent organs, digestives, intestinal antiseptics and certain physiotherapeutic agents are among the corrective measures which often cause even well defined tumors of the breast to disappear. Any element which tends to diminish the gastrointestinal fermentation is of value. A preliminary lessening of the general toxic condition of the patient materially aids the surgeon in determining the true benign neoplasm and saves a considerable amount of recoverable breast tissue too often unnecessarily sacrificed. (3) Surgical procedure frequently is required for the correction of the intestinal stasis and the removal of the cystoma or the adenoma before the indurated, lobulated tissue resumes a healthy gland condition and the breast is brought back to normal. (4) When these toxic cases are seen early the beginning changes in the breast are often overlooked or, when the condition is well developed, the incorrect diagnosis of malignancy is made. One question naturally forced itself upon the profession in this connection: Would an early recognition of the toxic breast and the timely and efficient treatment of the underlying cause tend to lessen the danger of malignant degeneration of the mammary gland and thereby render unnecessary much of the mutilation of the human breast?

Some Cases of Thrombophlebitis During the Puerperium Following Influenza.—Dr. LEWIS F. SMEAD of Toledo, Ohio, said that the present interest in septic, puerperal, pelvic thrombophlebitis dated from a paper by Trendelenburg in 1902. The condition was not infrequent in the puerperium, because of the slowed blood current and the opportunities for infection. The disease consisted usually of a streptococcus infection entering, as a rule, through the placental site, extending by the ovarian and uterine veins, and resulting in pyemia and death in about 50 per cent. of the cases. The acute cases were rapidly fatal, but in the subacute ones the prognosis was better, largely because the progress of the infection was delayed or blocked by a thrombosis in the pelvic veins. Perivascular and uterine abscesses were common multiplications. The clinical course of the disease was marked by a suddenly fluctuating temperature, severe chills, a relatively low pulse rate, and a prolonged course of the disease. A sharply defined, painless, slightly tender, cord-like induration in the region of the pelvic veins could be made out sooner or later. The results of the blood cultures were uncertain. A striking feature was the surprisingly good condition of the patient between the rigors. The diagnosis of pelvic thrombophlebitis was fairly accurate. Differentiation must be made from septicemia, pelvic lmyphangitis, uterine infection, and thrombophlebitis in other vessels. The operative mortality was undoubtedly somewhat lower than the nonoperative. The indications for operation were hard to define, but cases with septicemia, metastatic foci, and vena cava involvement were not operable. Prophylaxis consisted of intelligent obstetrics, careful asepsis, complete evacuation of the uterus, and good drainage, with a minimum amount of traumatism and hemorrhage. The circulation in the puerperium was kept active by good food, fresh air, early rising, and heart stimulation if necessary. The nonsurgical treatment consisted of general supportive measures with the avoidance of anything which might dislodge a thrombus, such as douches, enemata, and pelvic examinations. Vaccine and serum treatment had been disappointing. The surgical treatment consisted in the ligation or excision of the involved veins by the transabdominal route and by the drainage of perivascular abscesses. Opinion upon the question of surgical intervention in pelvic thrombophlebitis was still divided, but all agreed that great conservatism must govern the choice of cases and the decision for operation. The report of three cases of pelvic puerperal thrombophlebitis following influenza accompanied the paper.

Fibroma of the Ovary.—Drs. EDMUND D. CLARK and WILLIAM E. GABE of Indianapolis drew the following conclusions: (1) Ovarian fibromata are sufficiently rare to warrant the report in all carefully studied cases. (2) The diagnosis is dependent solely on microscopic examination. (3) In presence of a hard, unilateral, movable tumor with ascites, where the more common causes of ascites can be ruled out, ovarian fibroma is highly probable. (4) The treatment is operation; the prognosis good. (5) The gross pathology of the condition is extremely variable; the microscopic pathology, as pointed out by Hellman, must show a certain regularity of the individual fibers or muscular cells and strands, despite varying quantities of cells, fibers, vessels, and degenerative changes.

Some Indications for Hysterectomy.—Dr. JAMES F. BALDWIN of Columbus, Ohio, said that very many women suffered from chronic uterine hyperplasia, frequently complicated with laceration of the cervix, retroversion, a tendency to procidentia, with leucorrhea, dyspareunia, sterility, backache, and general ill health. In this type of disease no treatment effected a cure, and little could be accomplished in palliation. Other women suffered from imperfect development of the uterus, with sterility, painful menstruation, and other disturbances. The paper was a plea for the radical cure of these two classes of cases by hysterectomy, but with saving of appendages so as to obviate the symp-

toms of the menopause, except as to the absence of menstruation.

The Treatment of Abortion Complicated by Sepsis.—Dr. GEORGE A. PECK of New Rochelle, N. Y., drew the following conclusions: (1) The conservative treatment of abortion complicated by sepsis is based on pathological entities and clinical end results. (2) Hemorrhage is the only symptom that may demand a prompt and thorough emptying of the uterus for its control. (3) Every intrauterine manipulation or procedure should be executed with the greatest care to avoid traumatizing and otherwise injuring the endometrium. (4) Late cases, and especially those already subjected to curettement, are eminently suitable for this form of treatment.

Missed Abortion.—Dr. JENNINGS C. LITZENBERG of Minneapolis stated that missed abortion was the retention of a dead fetus before viability retained *in utero* more than two months after birth. It was a common condition. It was dangerous. (*a*) Temporary ill health until the uterus was emptied; (*b*) permanent ill health. The diagnosis was not unusually difficult. The uterus should be emptied before the above symptoms became a menace to health and life.

The Preparation of the Skin for Operation, with Special Reference to the Use of Picric Acid.—Dr. H. W. HEWITT of Detroit said that it seemed clear that a good preparation for disinfection of the skin should possess the following properties, namely, (1) it should be simple and easy of application. (2) It should be efficient, *i.e.* it should have the power of destroying the common skin organisms in a comparatively short time (not over three minutes), and it should be sufficiently powerful to keep the skin sterile during the operation. (3) It should not macerate or injure the skin in any way. (4) In laparotomies it should not injure the peritoneal coat of the intestine, should the intestine accidentally come in contact with it. (5) It should be of universal application. (6) It should contain no proprietary preparations, since these were of unknown strength and could not be depended upon. (7) It should be standardized, so that its antiseptic value might be known. (Solutions might be standardized by the Walker-Rideal method.) Now, of all the methods and chemicals in use to-day, very few approached this standard. Bichloride of mercury in aqueous solution would not sterilize the skin; in Harrington's solution it was efficient, but Harrington's solution contained hydrochloric acid and injured the skin to a greater or less extent. The speaker had used this solution extensively and had discarded it. About three years ago his attention was attracted to picric acid as used in the British Army. Chemically, picric acid was known as trinitrophenol; it was soluble in 95 parts of water and 16 parts of alcohol. It had been used to a large extent in the treatment of burns, and was known as a parasiticide. It was also astringent, and deeply penetrated the corneous layer of the skin. Its only disadvantage had been in staining the skin, an effect which would last from twelve to eighteen days, but might be removed by the application of a 5 per cent. solution of carbonate of soda or a 25 per cent. solution of ammonia in ethyl alcohol, provided this was done immediately after the operation was finished. The picric acid solution used in these experiments and in his clinic was made by saturating a 70 per cent. ethyl alcohol solution with picric acid, which made a 6 per cent. solution. The merits of this method of preparation were many, namely, it was simple; it was cheap; it was efficient; it did not injure the skin in any way, and might be used on any part of the body; it did not injure the peritoneal coat of the intestine; it contained no proprietary preparation, and its antiseptic strength might be standardized. This was only a preliminary report. The staff of Grace Hospital, Detroit, had used this preparation, up to August 1, 1920, in 926 cases, and it was now the adopted method of skin preparation in that hospital. The number of cases reported was still too small to justify definite conclusions, but the writer hoped at some future time to report a series sufficiently large to be of clinical value.

Pathology of Common Puerperal Lesions.—Dr. JOHN OSBORN POLAK of Brooklyn, N. Y., stated that in order to thoroughly grasp the physiological pathology which actually took place, one must appreciate that the uterus was a puerperal wound during involution. Its interior was undergoing the normal process of repair and inoculation of this wound would produce either a toxemia or a definite inflammatory reaction depending largely on the character of the infecting organism. (1) At first, this wound infection was a local process which might be illustrated in the infected perineum, or the infected cervix tear, or the infected endometrium. In each there was an inflammatory reaction in the adjacent tissues, which limited extension of the infective process and confined it to a circumscribed area about the wound or within the uterus. In these localized lesions the pyrexia and other constitutional symptoms were due to two factors. The toxemia resulting from an absorption of the toxins liberated by the bacteria and second, to the tissue reaction excited. (2) On the other hand, the process might be a spreading infection extending beyond the wound area. This was due either to the increased virulence of the infecting bacterium or to the diminished resistance of the tissues. This spreading infection might occur by extension through the lymphatics within the walls of the uterus, spreading to the lymphatics in the parametrium producing a parametritis, or a peritonitis, or even a bacteriemia, or the infection might extend through the blood vessels, in which case it manifested itself clinically as a thrombophlebitis, an embolic pyemia or a bacteriemia. Clinical experience had shown him that a well contracted uterus in normal anteversion was capable of emptying itself of its contents if infection was not introduced from the outside. Experience had taught him that any sort of trauma to the delicate granulation wall of the puerperal uterus which was confining the infection within the cavity, opened avenues of extension, and that lateral parametritis was a constant sequel of attempts at digital or instrumental evacuation. It was important to note that the encapsulated germs did not always lose their virulence, but might on the occasion of subsequent traumatism or operation break out with increased virulence and cause a bacteriemia. In blood stream infections the local pathological reaction was considerable, consequently the local symptomatology was insignificant; for whether the bacteria entered the blood stream via the lymphatics, or via the veins, their transit was so rapid and the reaction caused so insignificant, that appreciable local lesions must necessarily be absent. For the entrance of bacteria into the blood stream, there must be a puerperal wound which was inoculated by bacteria. Broadly speaking, the treatment depended on the pathological diagnosis and might be considered under the following heads: 1. Local measures which secured drainage and uterine contraction. 2. General supportive measures that increased the patient's resistance. 3. Specific remedies, especially of value in blood stream infections. 4. Finally, surgical measures. These were only applicable to abscess formations and thrombotic lesions of the pelvic veins.

Some Factors That Determine Tissue Resistance to Cancer.—Dr. JAMES E. DAVIS of Detroit said that the life of a complex organism was the result of cell interactions and the internal metabolism of the individual cells. Factors altering cell interactions were tolerated by the high vertebrate forms only when it was possible to accomplish conformation within a limited period of time. Convincing examples of this fact were observed after amputations, resections, traumatizations, autotransplants, homotransplants, and heteroplastic grafts. Loeb transplanted thyroid into subcutaneous tissue, removed it seven days later, and found the transplant surrounded by a connective tissue capsule rich in fibroblasts. Inside the capsule a large vessel was proliferating. In the capsule and about the vessel a few thyroid acini in contracted form were persisting. Necrosis, hemorrhage, and organization were going on elsewhere, conforming the transplant. The transplantation of tumors in the higher species of animals had failed, excepting the infectious sarcoma of dog. In the normal tissues resistance was adequate for control and destruction of inherent neoplastic dynamic growth power which was uncontrollable in its autogenetically prepared tissue. The cell and its surrounding fluid possessed interactive and retroactive properties. The most convincing proof of this was given by Carrel who had grown connective tissue *in vitro* for almost eight years. The plasmatic jelly medium when used too long became

liquefied, its fibrin disappeared, and the air rarified, effecting a marked slowing of growth. Fresh, unused plasma from the icebox promptly quickened the growth rate. The plasma from a chicken four to five months old caused a growth fifteen microns more extensive than did that from a five to six year old fowl. The reactions following exhaustion, irritation, and specific diet gave acidity, toxicity, and cytoplasmic sensitization. Measurement of these states was a procedure of real scientific value to the clinician. The reaction of connective tissue to epithelial neoplasia before and after its invasion was significant and important. Epithelial cell disintegration stimulated phagocytic and proliferative connective tissue reaction and the latter in turn might probably cause increase of dynamic growth power, without a corresponding increase of nutrition. The clinical recognition of long continued cell irritation and unbalance of tissue was too frequently delayed until after the expression of organic functional disorder. The determination of stressed or irritated tissue potentiality should have much attention. The determination of sensitization acidity, and oxidation reactions were essentially quantitative tests which had relational value in this problem. It was mainly a quantitative difference in energy and time factors that existed between regenerating and cancerous cells and it was for this difference one should test. Physiological growth, regeneration, and neoplasia utilized the same means to produce a product and resistance was an essential cause for all three. Normal growth was production under control, regeneration was production to control, and neoplasia was production without control.

NEW YORK ACADEMY OF MEDICINE.

SECTION OF SURGERY.

Stated Meeting, Held April 2, 1920.

DR. SEWARD ERDMAN IN THE CHAIR.

Jejunal Colic Fistula Sequel to Resection Anastomosis of Transverse Colon for Carcinoma.—Dr. MARTIN W. WARE presented this patient, an elderly man who had previously been operated on by Dr. Haynes, who did a resection anastososis for carcinoma of the transverse colon. The man's chief complaint was a rapidly progressive loss of weight and flesh, notwithstanding a voracious appetite, and diarrheal movements shortly after the ingestion of food, and particularly at night. In addition there was a diastasis of the recti muscles throughout the entire abdomen. The radiograms obtained either with the bismuth contrast meal or enema did not disclose any filling defect or stricture characteristic of a recurrence of the carcinoma. On the other hand, the large intestine was conspicuously dilated in its entire continuity. In the screen and in the picture the injected bismuth was seen to pass from a loop of small intestine into the large intestine, and *vice versa*. This loop of small intestine showed the striations of the bismuth coated valvulæ conniventes by which it was indented. It was dilated, but not so much as the large intestine. The balance of the small intestinal tract was not so distinctly outlined. The ingested bismuth did not even reach the ileum sufficiently to outline its transition into the cecum. The *x*-ray located a communication between a loop of the small intestine high up with the large gut by a small ostium in the vicinity of the splenic flexure. Dr. Ware operated on the patient in August, 1919, doing a laparotomy by an incision extending the entire length of the abdomen. There was no evidence of fluid or scattered miliary deposits of carcinoma. The liver surface and substance were free of any nodules. There were no enlarged glands in the mesentery or transverse mesocolon. Some adhesions between the omentum enveloping a loop of the small intestine, identified as ileum, leading down to the cecum, was found collapsed. A loop of gut identified as jejunum, adjacent and adherent to dilated large intestine, proximal to the splenic flexure, was divided. The defect between the jejunum and the colon was closed by a purse string suture of chromic catgut reinforced by a Lembert suture. Exploration of the site of the lateral anastomosis failed to reveal any evidence thereof other than a larger extent of dilatation in the transverse colon than obtained in the rest of the extent of the colon. Even the transverse mesocolon appeared normal, and the haustra could be traced uninterruptedly over the colon. To overcome the wide diastasis of the recti, the abdomen was closed by overlapping side to side of the rectus sheath harboring the atrophied muscles. Within twenty-four hours after the operation the diarrhea so incessant by day and night ceased never to return. Primary union took place. On the fourth day a light diet was instituted, in turn followed by regular diet. On the fifth day the bowels moved by pituitrin given intravenously. By the tenth day the patient began to feel stronger, and by the time he left the hospital was able to walk unaided, having gained 5 pounds above a weight of barely 100 pounds before the operation. He had since gained 40 pounds and was in perfect health.

Dr. I. S. HAYNES said he had first seen this patient in June, 1905. At that time he gave a history that since the preceding January he had had colicky pains through the abdomen, with some tenderness in the abdomen, more pronounced in the right iliac region. He had lost 10 or 15 pounds in weight. He had had alternating constipation and diarrhea. The family physician said the man had appendicitis. When he saw the man he did not agree with that diagnosis. The man was thin, but not cachectic. An exploratory operation was performed and a typical annular carcinoma found involving the colon near the splenic flexure. A resection of the colon was done and a lateral anastomosis. The man had a stormy convalescence, but made a good recovery. More than two years after he began to complain of peculiar symptoms which terminated in the condition which Dr. Ware had found. During the meantime he had been well and had gained in weight. His weight then dropped to 131 pounds, and he said he had a peculiar feeling that his intestines were swishing around and he had many loose stools. An *x*-ray plate was made, which showed the colon normal, but when he was in the erect posture it was completely ptosed and pressed on the rectum. He had no pain at this time, but diarrhea, particularly at night. He was given symptomatic treatment and he reported that his bowels were moving once a day and five or six times at night. He then grew better and that was the last the speaker had seen of him until he came to tell him of the successful operation Dr. Ware had performed. The points of interest were that the patient had had an operation on the suspicion that he had a serious condition, though his symptoms were indefinite. An annular carcinoma was removed, and the man had remained well until the time when this peculiar fistula developed between the duodenum and the colon.

Dr. L. T. LE WALD asked Dr. Ware how frequently this condition had been observed. He said they had seen two cases of jejunal colic fistula following gastroenterostomy, in which there was a connection between the jejunum and the transverse colon and the gastroenterostomy—all having a common opening. The opaque meal passed directly through the jejunum into the colon, and by injecting the opaque mixture into the colon it passed into the stomach. He did not know how this had occurred, but it was noticed about a year after the operation. In the second case about a year elapsed after a gastrojejunostomy until the fistula was noted. The third case Dr. Le Wald said he had seen at the Mayo Clinic just a short time ago. In this instance one could easily have been confused as to whether the fistula was in the large or small intestine except for the fact that one could see the striations of the valvulae conniventes.

Cranioplasty (Two Cases) Lantern Slides.—Dr. JOSEPH E. J. KING presented two patients upon whom cranioplasty had been done. These were men who during the war had received skull wounds which had left large defects. Dr. King gave a lantern slide demonstration showing the method by which cranioplasty was performed. The incision was made in the line of the old scar, all excess of scar tissued dissected away, the bony edges freshened, and bone transplants sutured into place. An effort was made to avoid opening the dura unless it was absolutely necessary.

Dr. EDWIN G. RAMSDELL said Dr. King was to be

congratulated on his excellent results. Last November he had reported before the First District Branch of the State Society and also before the Westchester County Medical Society, a series of 254 cases of bone grafting from the Clinic of Dr. Delagenière of LeMans, France. Of these 60 were cranioplasties. The technique used might be of interest to the section because it was uniform so far as the graft was concerned, and varied somewhat from the technique of Dr. King. In all cases the graft was taken from the internal surface of the tibia with a chisel and mallet. It was about the thickness of a 10-cent piece, and was made up of periosteum to which were attached chips of bony cortex. The graft was flexible and easily molded to the convex surface of the skull, or, in the work on the maxillary defects, fitted into a deformity in the angle of the jaw or into a defect of the chin.

These grafts were used for four groups of cases: (1) Cranioplasties; (2) the maxillary fractures or other bony facial defects; (3) cases of non-union and mal-union with loss of substance of long bones; (4) in reconstruction of flail and ankylosed joints. The technique, as far as cranioplasties were concerned, was as follows: The old scar was excised, the bony defect outlined and dura exposed. The pericranium was elevated for some little distance from margin of defect, a piece of graft was cut to fit into the defect, periosteal surface toward dura, then other pieces of graft were placed over the defect, with ends inserted between the pericranium and surface of skull, bony surface of graft toward bone. No sutures were ever placed in the grafts. The pericranium was approximated as well as possible and the scalp closed with interrupted sutures. It was astonishing to note how quickly these grafts became consolidated. Within a very few weeks there was no evidence of former defect, except a scalp scar.

Dr. J. C. A. GERSTER said he had used the Delageinière grafts for defects in the angle of the lower jaw in four or five cases, and invariably obtained good union. It was surprising how quickly the callus formed.

Dr. SEWARD ERDMAN asked how long after the healing of the wound it was safe to perform grafting.

Dr. KING replied that it was not safe to do a grafting operation in these cases under five months. In 78 cranioplasties they had had two failures and those were due to sepsis. These two cases were operated on a little under three months after the injury was received. Those grafts had to be removed. The rest all stayed in place and healed very nicely.

Extensive Carcinoma of Both Breasts with Metastases.—Dr. JAMES BURTON LEE presented this patient, a woman 64 years of age, who had had tumor of the breast for twenty-two years. It first started as a small pea-like body above the nipple in the right breast. The tumor had grown and spread until it involved both breasts and the chest wall. It had been ulcerated for the last twelve years. The woman had a mass in the supraclavicular region, in the head, and in the abdominal wall. There was also a metastasis in the arm. It was a typical scirrhous carcinoma which had been suppurating for twelve years. It was, of course, inoperable, and the only thing that was done was to keep it as clean as possible. The woman had lost weight but was not suffering to any great extent from the condition.

Results of Surgical Treatment of Carcinoma of the Breast.—Dr. BURTON JAMES LEE and Dr. L. B. KINGERY presented this paper, which was read by Dr. Lee. (To be published later.)

Dr. EDWARD WALLACE LEE said the case that Dr. Lee had presented was interesting in one respect, and that was that in traveling in rural districts, away from civilization, one would find a good many of these cases. In one district, especially in New York State, he had talked to the local doctors about these cases, and asked what they did with them. He was told that a certain old lady had had a cancer for fifteen years. In the summer they treated themselves with plantain leaves and in the winter with mutton tallow. Dr. Lee said he had been watching these cases of breast cancer for forty years, and he would like to live to be one hundred, for possibly by that time he might learn when to operate and when not to operate for cancer. He cited the case of a woman whom he saw three months ago. She had had a cancer for five years. He removed the breast and the axillary glands and gave her *x*-ray treatment before and after the operation. She had $80,000 worth of radium applied for sixteen hours, thinking that would fortify her. After operation she had electric coagulation treatment, and yet he had never known a case to progress more rapidly than that one did. The woman was dead within three weeks. Dr. Lee mentioned a recurrence after sixteen years. Was that a recurrence or was it a new cancer?

Dr. JOHN F. ERDMANN said he had brought a set of *x*-ray plates to show in connection with Dr. Lee's paper, thinking they might be of interest to the members of the Section. These plates were taken from a patient operated upon when the woman was 41 years of age. She had an axillary adenopathy and a scirrhous carcinoma of the breast, the glands being involved up to the subclavian. Following operation she was kept under observation. Over six months ago last October it was noticed that she had a husky voice. *X*-ray plates were taken and showed a deposit in the mediastinum. Here was a case showing a recurrence after ten years. It was evidently in the mediastinum.

Dr. WILLY MEYER stated that last fall, at the time of the American Congress of Surgeons, he gave a clinic on the final results of carcinoma. He had tried to collect the final data on patients operated on over a period of years. With the shifting population of New York this was impossible to do in the case of ward patients, so one had to take mostly private patients. This effort showed the need of follow-up work. He felt that it was a moral duty to interest the people and show them the value of this work, so that they would give money for social service work. Dr. Meyer said he had brought a few slides. He referred to the two operations that had been before them for many years; the one, he said, might be called the Baltimore, and the other the New York method. The Baltimore method of operating started from the chest toward the axilla and left the clavicular portion of the pectoralis major. This operation involved quite a loss of blood. The New York method started from the axilla. The pectoralis major was divided and had to be removed and the entire mass was removed with the axillary glands without entering the seat of the carcinoma. This operation was divided into two parts, first the removal of the breast with the axillary glands and then the removal of the pectoralis major. He thought that a mistake and that it was better to do it in one operation. He thought the final result of the Baltimore operation was very good, but it must stand to reason that there were often cancerous glands between the pectoralis major and minor and hence it must be better not to enter the site of the disease.

The more experience he had, Dr. Meyer said, the more he was convinced that if any form of cancer should be submitted to radical operation it was Paget's disease, which was the most malignant of all cancers of which we had any knowledge. Radical excision had pretty generally superseded the old Halsted operation.

Dr. LEE, in closing, said that as to the recurrence sixteen years later, it was on the same side and it was thought from its site that it was a recurrence. Dr. Erdmann's case of recurrence at the end of ten years was interesting as showing the type of recurrence one frequently got. Of course, the lymphatics went from the breast into the pleural cavity, and involvement of the pleura occurred more often than of the lung itself. As to what Dr. Meyer had said, they were really using his operation, which was a modification of the Halsted operation. Two of his cases, Dr. Lee said, had axillary nodes, and he did not want to give the impression that he did not operate if the axillary nodes were involved, but when the axillary nodes were involved the chances of recurrence were greater than if they were not affected. Handley thought there was a growth along the lymphatics in an ever-widening circle, and believed he could demonstrate the growth further and further down, even low into the epigastric angle. The preservation of the arm function was well illustrated in the photographs, and showed the nice result that one could obtain by proceeding in the right sort of way. Dr. Lee said he could not agree with what had been said as to the placing of grafts. He believed that in a large number of cases there would be less recurrence

if a certain portion of the skin was sacrificed. Dr. Lee said he had had several cases of Paget's disease. One patient with a large, bulky tumor of the breast, was treated elsewhere for something else. These tumors were rapidly growing, and should be widely extirpated. Dr. Meyer's results in these cases that had survived so many years after operations for carcinoma were very excellent indeed.

Dr. MARTIN L. JAMES exhibited an apparatus, consisting of two glass barrels connected by an automatic valve arrangement, for blood transfusion. It was so constructed that it prevented backflow into either donor or recipient, and as one barrel emptied the other filled. By means of this instrument, Dr. James said, he had been able to transfuse 300 c.c. of blood in less than four minutes. The machine could also be used for venesection, for aspirating, or for giving salvarsan in dispensaries where large quantities had to be injected.

Dr. GEORGE I. MILLER exhibited a small instrument for blood transfusion which he said could be carried in one's pocket and was always ready in an emergency. This device was very simple in construction, could be attached to a 20 c.c. record syringe, and was moderate in price. Dr. Miller had previously presented this apparatus before the Brooklyn Surgical Society.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

CUNNINGHAM'S MANUAL OF PRACTICAL ANATOMY. Edited by ARTHUR ROBINSON. Third Volume. Seventh Edition. 568 pages with 233 illustrations. Published by William Wood & Company, New York.

A TEXT-BOOK OF ORGANIC CHEMISTRY. By E. V. MCCOLLUM, PH D. Second Edition. 466 pages. Published by The MacMillan Company, New York.

HYGIENE DENTAL AND GENERAL. By CLAIR ELSMERE TURNER. 393 pages with illustrations. Published by C. V. Mosby Company, St. Louis.

OCCUPATIONAL DISEASES AND THEIR COMPENSATION. By FREDERICK L. HOFFMAN, LL.D. 45 pages. Printed by the Prudential Press, Newark.

THE DEVELOPMENT OF THE HUMAN BODY. By J. PLAYFAIR MCMURRICH, M.D. 501 pages with illustrations. Published by P. Blakiston's Son & Company, Philadelphia.

FUNCTIONAL NERVE DISEASE. By H. CRICHTON MILLER, M.D. 208 pages. Published by Oxford University Press, London.

STUDIES IN NEUROLOGY. By HENRY HEAD, M.D. Volume I. 329 pages with illustrations. Volume II. 333 pages with illustrations. Published by Oxford University Press, London.

ELECTRICAL TREATMENT. By WILFRED HARRIS, M.D. 354 pages with illustrations. Published by William Wood & Company, New York.

THE TOPOGRAPHICAL ANATOMY OF THE LIMBS OF THE HORSE By O. CHARNOCK BRADLEY, M.D. 172 pages with illustrations. Published by William Wood & Company, New York.

HANDBOOK OF DISEASES OF THE NOSE, THROAT AND EAR. By W. S. SYME, M.D. 329 pages with illustrations. Published by William Wood & Company, New York.

STUDIES OF ROCKY MOUNTAIN SPOTTED FEVER. By S. BURT WOLBACH. 197 pages with illustrations.

LA EPIDEMIA DE GRIPPE. By JOSÉ W. TOBIAS. 201 pages with illustrations. Published by "Las Ciencias," Buenos Aires.

THE X-RAY ATLAS OF THE SYSTEMIC ARTERIES OF THE BODY. By H. C. ORRIN, M.D. 91 pages with illustrations. Published by William Wood & Company, New York.

GRUNDZÜGE DER BEHANDLUNG VON HAUT UND GESCHLECHTSKRANKHEITEN. By LEOPOLD PULVERMACHER, M.D. 249 gages. Published by Urban & Schwarzenberg, Berlin and Vienna.

Miscellany.

Early History of Blood Transfusion.—An article by Andruzzi in the *Annali di Medicina Navale e Coloniale* for March-April, 1920, xxvi, i, 3-4, begins with a summary of this practice from the earliest ages. We find vague allusions to it in the writings of Herophilus, Pliny, Celsus and Ovid. There is then a break until 1492, in which year the operation was performed on Pope Innocent VIII. In 1628 Cole of Padua described a method of transfusion, and in 1651 a monk of Metz is known to have devised a crude apparatus with which he made animal experiments. In 1667 a team comprising Denys, a scientist, and Emmerts, a surgeon, after successful animal experiments performed transfusion on human subjects. The place was Paris, the blood donor a lamb. The report of these cases gave a sudden impetus to transfusion, but fatalities were imputed to the method, and in 1675 the French Parliament forbade the practice. After more than a century of latency transfusion cropped out once more in England and Germany. Among the men who became interested in it were Erasmus Darwin in England and Dieffenbach and Hufeland in Germany. During another century the subject was a live one, and it became evident at last that animal blood was unsuited for human transfusion. The period during which this problem of heterologous blood was agitated began in 1812 with the experiments of Prevost and Dumas and continued until 1873 with the experiments of Landois. Modern transfusion has little in common with the original forms. The author fixes the beginning of the modern epoch at 1909, with Crile as its founder. For thirty years before this date transfusion was sidetracked in favor of saline infusion.

Anthrax in French West Africa.—Senegal appears to be well visited by the various plagues, for of late years there have been severe visitations of bubonic plague, while yellow fever occasionally crops out, and the country suffered in common with the rest of the world from the pandemic of influenza. It also appears that for more than ten years past cases of anthrax in cat[illegible] and man have been reported. Teppaz reported cases as early as 1908 and a number of foci have been isolated in which the affection is endemic. The disease begins at the close of the rainy season and augments during the dry season. It occurs by preference in valleys in which the Glossinæ or tsetse flies are active and the trypanosomes of which they are the hosts are at times found in the blood of animals. The latter, however, seem to be fairly immune to the trypanosomes, and it is believed that certain alleged cases of trypanosomiasis in cattle were in reality anthrax. The presence of the latter disease is a severe menace to the native men who eat the flesh and handle the hides of the infected animals. The natives also at times eat the flesh of animals dead of the disease, and have even been known to devour exhumed animals. In some centers there is an inspection of abattoirs and of meat offered for sale, but of an intelligent and efficacious handling of the hygienic problem in such a community there is at present no possibility;

hence every effort should be concentrated on the annual immunisation of the herds against anthrax. There should also be installed a veterinary laboratory in the metropolis of Dakar.—*Office International d'Hygiene Publique.*

Further Data Concerning the Epidemic of Plague at Avignon in 1721.—The first series of extracts from an old manuscript on this subject apeared recently in the editorial columns of the MEDICAL RECORD. The *Progrès Médical* for May 1, 1920, xlviii, 18, publishes another series. These extracts are of much interest in illustrating that sanitary efficiency was greatly in evidence two centuries ago, for many of us are still inclined to the belief that at that period there were available only flight, prayer, incantations, propitiation of offended deities, etc. The medical body was promptly organized and general instructions to the public given out. The latter were instructed not to take the breath of the victims—good advice in the case of pestous pneumonia, which was doubtless the malady in question. Excesses were warned against. Bonfires were good, for they facilitated the destruction of suspicious and condemned objects and enabled the public to see at night. All articles such as stretchers used for transport of victims were at once burned. The practitioners did not all work in harmony with the health authorities, for they concealed cases for bribes, and in fact there was good money in fraud of various kinds. A patient reported plague stricken went to quarantine. One practitioner was doing a good business treating unreported cases secretly at night, but succumbed to his greed, for he contracted the disease. Only the head of a quarantined family was allowed to leave the house to buy provisions. There was a corps of disinfectors active who were evidently allowed some discretion for only certain kinds of articles were burned outright, while others were merely scalded or washed or exposed to the air. Valuable and useful metals were scalded in hot water. An error was committed in looking upon perfumes as disinfectants, these being confounded with deodorizers. There was much use of immunes, which included both survivors from the disease and those with natural immunity. The clergy showed great sense in using everyday experience. Confessions were heard through paper placed over the wickets and priests were placed in the head of the squadrons of "scalders" in the hope of getting better discipline. The immunes were specially employed in connection with contraband, which was often concealed, especially if valuable. We can only regret that more space cannot be devoted to this manuscript, which is a veritable medical classic.

"Practics" and "Practics."—The Washington State Board of Chiropractic Examiners, according to *Northwest Medicine*, recently wanted to curb the board of drugless examiners from licensing another variety of healers who call themselves sanipractic and who, under this designation, encroach on the exclusive privileges of the chiropractic. The judge pronounced a weighty decision, the substance of which was in effect "it can't be done." The lucidity of the Einstein theory of relativity suggests itself, according to the editor, when the different drugless healers clash.

Therapeutic Hints.

Migraine.—Bernard Fantus advocates the following for migraine:

℞ Sodium salicylate..... 6.0
Potassium bromide 12.0
Sodium bicarbonate 12.0
Mix and divide into six blue powder papers.
Tartaric acid 10.8
Divide into six white papers.

Label: Mix contents of a white and a blue paper in half a glass of water. Repeat dose hourly if required.

For very nervous and presumably sensitive persons and for poorly nourished individuals, it is prudent to advise that half the dose be taken at first to see whether or not it might be sufficient. In this manner, possibly disagreeable effects, due to idiosyncrasies, would be avoided.—*Journal of the American Medical Association.*

Epilepsy.—Julius Grinker says that phenylethylbarbituric acid in small doses, from 1½ to 2 grains, once or twice daily, has been found capable of causing an arrest of convulsions in epilepsy. Larger doses than those mentioned are seldom required, but may be safely given. Large doses may be administered when beginning treatment, especially after sudden withdrawal of the bromide treatment; even in such cases the dose may be gradually reduced to what constitutes an average dose, namely, 1½ to 2 grains. No harmful effects have thus far been observed from the long-continued administration of the drug which does not appear to be a habit-forming drug. Patients receiving average doses of phenylethylbarbituric acid do not show the peculiar mental torpor of those taking bromides.—*Journal of the American Medical Association.*

Burns.—McGeary gives the following formula for a simple preparation of paraffin to be used in the treatment of burns:

1. Resorcinol 10
2. Olei eucalypti 20
3. Olei olivæ 50
4. Petrolati 250
5. Paraffin 670

Melt 4 and 5 together. Dissolve 1 in alcohol and add 4 and 5 while the latter is hot, to drive off the alcohol. When cool add 2 and 3.—*Minnesota Medicine.*

Chronic Duodenal Dilatation.—Crouse, discussing the medicinal treatment of chronic duodenal dilatation, recommends the following, or a variation thereof, to be given before food is taken:

Tinc. belladonna .....♏ iii
Tinc. nux. vom.....♏ v
Tinc. cardamon .....♏ xx
Aqua dest. q. s., ad.....℥ i

After food the following may be taken:

Calc. magnesia .....gtl. iv
Sodium bicarb. .....℥ iiss
Eleosach. menth pip. q.s., ad ℥ iv.
Teaspoonful in a half glass of water.

The first prescription is given to check the excessive secretions and to relieve spasm; the latter is given to neutralize excessive acidity.—*Texas State Journal of Medicine.*

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ARTERIOSCLEROSIS:

THE THREE-FOLD MENACE OF THE PRESENT DAY.*

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NEW YORK.

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So much confusion exists in the minds of medical students, hospital internes, and the profession generally, about the clinical differences between arteriosclerosis and atheroma, that an attempt will be made in this discussion to clarify the situation. This is particularly important at the present time, when the stress and strain of urban life has been intensified during the past three years by the demands made upon our people by the incubus of the great World War, and the subsequent social, financial and industrial unrest caused by that cataclysm. Life in this city has always been strenuous enough, but recent events, with their train of disaster and death in many families, with the increased cost of living, and with the mounting difficulties of procuring labor for the development of our food and industrial resources, have made demands upon the nervous systems of our people greater than the demands of any other period in our history.

It is a military axiom that success in war is not a question of men and money, but of bread and meat. An army marches upon its stomach, and its commissary department must functionate with 100 per cent. efficiency. The history of our Spanish-American War, of the British-Boer conflict, of the Russo-Japanese affair, thoroughly demonstrated this, and emphasized to our Government its prime necessity, when four millions of men and women were transported over three thousand miles of water, amid submerged perils. By the genius and business ability of distinguished civilian and military men, these men and women were kept surrounded not only with necessities, but with comforts. In the human body there are many times four millions of living cells, actively and constantly engaged in warfare against the natural march of decay, and against the unnatural and insidious invasion of disease germs. How shall we maintain our commissary department at the highest notch? It is purely a question of air and food supply. Technically it is called the physiological processes of nutrition. In health, a perfect commissary department is supplied by the heart and blood-vessels. They constitute its purveyors. They not only distribute the food where needed, but with an intelligence conferred by the Infinite Giver of all wisdom, they deliver to each individual ultimate cell of the many billions, the exact kind of selective material needed for its renewal, and, at the same time, remove its waste for excretion by the proper channels. This elementary sketch of the physiology of nutrition may be tiresome to this professional audience, but is well to bear in mind. Do we always try to conserve this wonderful mechanism? Do we stop in our mad rush for preferment, fame, and wealth to consider the vast amount of work done without our conscious intervention by the heart and blood-vessels under the guidance of the involuntary nervous system? The normal heart beating at 72 times per minute, ejects an amount of blood at each systole which requires a force estimated at two foot pounds, to move along the column of blood ahead of it; 144 foot pounds per minute makes an aggregate of over 100 tons of work in each 24 hours, and this is only the minimum, with the body at rest. To sustain this strain we must have a system of vessels which are not merely inert tubes for the conduction of blood, but living vital tissues, a living part of a living whole. It is not remarkable that cardiovascular degeneration occurs so often. It is only remarkable that it does not occur oftener, before man has reached the Biblical three score and ten. Cardiovascular degeneration is especially the harvester of death for medical men, from its three-fold results of nephritis, apoplexy, and heart disease. Statistics compiled some years ago showed that the death rate among medical men from these causes was exceeded only by that of saloonkeepers, butchers, quarrymen, and factory operatives. I therefore offer no apology for bringing this subject to your attention, but only the hope that it may help you to keep your own days long in the land.

I will not inflict upon you any detailed description of the anatomy of the heart or arteries. Studies by recent instruments, supposed to be more precise in their yield of information than were the educated fingers of our revered predecessors at the Bellevue bedsides, have taught us much as to the physiology and pathology of the heart in action, and have helped us to realize the truth of the old axiom, that a man is as old as his arteries. These studies may help, some day, to point the way for man to keep his arteries as young as he would like them to be, and may help our patients to rid themselves of that bugbear which is called arteriosclerosis. This terrifying term lacks the satisfying unction of "that blessed word Mesopotamia," in the Highland lady's system of theology, but is just as mysterious to the laity. What is arteriosclerosis? Is it a "disease,"

*Read before the Society of Bellevue Hospital Alumni, October 6, 1920.

or an effect of diseases, many and various? How does it differ from atheroma?

Definition.—Arteriosclerosis is a hyaline degeneration of the structural elements of the arterial wall, with connective tissue substitution, hyperplasia, and subsequent contraction with induration, whereby the characteristic functions of the vessel wall—retention, absorption, metabolism, with the power of extension and contraction, are weakened or lost.[3] It is a pathological condition, and may arise at any age, in early life, in childhood, or even in infancy. Atheroma, on the other hand, is the usual accompaniment of advancing age, and is a physiological condition. At the post-mortem table both conditions may be found in the same subject, hence the confusion that occurs in our minds. Even Osler, usually an apostle of clarity in teaching, includes arteriosclerosis and atheroma in one definition.[4]

Pathology.—In the aorta and its large branches there is much elastic tissue and relatively little muscle. As the arteries approach the organs to which they are distributed, this proportion changes, so that the supply of blood may be increased or decreased as needed. Hence it is in the arterioles or smaller arteries that the lesions of arteriosclerosis do the most damage. Pathologically we find four types of lesions: (1) nodular; (2) diffuse; (3) senile; (4) syphilitic. In advanced arteriosclerosis all types or grades may be found. The nodular form is found particularly on the aorta and large vessels, especially at or near the orifices of branching vessels.

In the diffuse form the whole arterial system is rarely, if ever, attacked uniformly. We may have pipe-stem radials with a smooth aortic lining, but with enlargement of the aorta and thinning of its coats and loss of elasticity. The senile type leads eventually to calcareous deposits in the intima, with widened, elongated, inelastic aorta.

In syphilitic aortitis, plaques form which, instead of undergoing an atheromatous change, as in the nodular form, are prone to scar formation with puckering. *Spirochetæ pallidæ* have been found in the degenerated media, and in small gummata beneath the intima. The Wassermann reaction should be tested in every case of aortic insufficiency, and the pulse pressure reading carefully recorded. In the smaller arteries and arterioles three kind of changes occur: A muscular hypertrophy; a fibrosis of all the coats; or a marked proliferation of the intimal endothelium, leading in time to endarteritis obliterans. Other poisons than syphilis can produce the same set of changes, the essential lesion in the large arteries being a degeneration of the middle coat, followed by an hypertrophy of the intima, layer upon layer being added in an attempt to restore the strength of the vessel. The results of experiments, upon rabbits and dogs, to produce arteriosclerosis by injection of adrenalin, barium chloride, digitalin, physostigmine, nicotine, and other drugs, as well as by feeding animal proteins to rabbits, have been very discordant, and have not added much to our knowledge of the subject. The toxins of the typhoid bacillus and the *Streptococcus pyogenes* have produced changes somewhat analogous to the intimal proliferations found in the human aorta, thus confirming the clinical observations of Thayer and others that individuals who have had typhoid fever have more palpable arteries than other individuals of equal age.

Etiology.—There are various causes for arteriosclerosis, such as heredity, age, sex, alcohol, venereal disease, rheumatic fever, other acute infections, high living and hard work. While the devotion of doctors is primarily given at the shrine of Minerva, and not at those of Venus and Bacchus—although the latter is now only a source of wistful archæological study, the doctor must make also the anvil of Vulcan ring, not literally with hammer and spark, but with the constant impact, upon the billions of the functional nerve-cells of his brain, of the woes and worries of his patients, of the increasing demands of his landlord, and of the tire-troubles of his vehicle. The influences of heredity we cannot forestall, since we are not allowed to be judicious in the selection of our ancestors, but we can minimize the damage by avoiding their mistakes. Age is something that nightly pitches our moving tent a day's march nearer home, but if we travel with a contented mind, and a little faith that the road, whether we believe that it leads over Mt. Sinai or over Mt. Calvary, finally stops at the Father's house, we can laugh at the old gentleman with the exuberant whiskers and the rusty scythe who marched by our side. The influence of sex disparity in producing strain will probably lessen as the world goes on, now that our beloved sisters stand side by side with us in the marts of trade, in the ranks of professions, on the battle field, and in the direct primaries. Alcohol is likewise a fading specter, since a clamorous minority have dictated to the medical profession how they shall not treat pneumonia, septicemia, and other acute infections, but leaves to the old soak his accustomed sources of underground supply, without the necessity of a prescription with a ten-day limit for each pint; still, for the well-to-do, who find the call of the wild too urgent, George Bernard Shaw points out that there is a free country only seven days away. Syphilis is the predominating factor in arterial degeneration in the young, and may attack any of the three walls of the vessels, affecting the brain by preference because syphilitic arteritis is localized in arteries supplied with lymphatic sheaths. The conditions that keep up high blood tension, such as the endogenous poisons of perverted metabolism in gout, diabetes, chronic nephritis, and obesity, all lead to arterial thickening and subsequent degeneration.

Overeating, that is to say, food in excess of work and excretion, is another potent cause, causing the hyperemia, or hyperpiesia, so well described by Sir Clifford Allbutt.[5] Allbutt was one of the first to point out that not all cases of arteriosclerosis are attended by high blood pressure. He makes three classes, viz.: (1) high pressure arteriosclerosis; (2) involutionary or decrescent (senile); (3) infectious or toxic. Allbutt believes that there are two modes of hereditary transmission, the direct and the indirect; the direct consisting of an original frailty or toxic susceptibility which may run in families; and the indirect, which apparently depends upon a proclivity to some ill-understood poisoning or perversion. He insists that arteriosclerosis is not a disease, in the sense in which we speak of tuberculosis or pneumonia as a disease, but in reality is an

effect of many and various diseases. Warfield emphasizes the same point, but considers that syphilitic arteritis may be viewed as an entity, because the cause is known and the lesions are characteristic. Mental strain, except in those care-free persons who laugh their way through life, is a frequent cause. It is not the work, but the worry, that results in high tension, arterial strain, compensatory thickening, and hypertrophied heart. Muscular over-work, especially when combined with alcohol and coarse heavy food, is frequently seen as an operating cause among the laboring class, both whites and negroes, but especially among the latter. Renal disease, especially the contracted red kidney, or the clinically shrunken and scarred kidney, the so-called arteriosclerotic kidney, may be either causative or resultant. He who predicts, however, from the results of uranalysis, what type of kidney will be shown at autopsy, is rushing in where angels might fear to tread. Functional response of the kidney, as shown by appropriate tests, is a better guide than pathological classification. Endocrinology is at present fascinating its followers as being the responsible agent in this, and in almost all diseases. The current literature abounds in speculative and imaginative theories and explanations, but this hay is often a little high for the short horses.

Symptomatology.—The story of arteriosclerosis must go back a long way, perhaps even into the third or fourth generation. So much of it depends upon the quality of arterial tissue inherited that a careful family history is desirable. Next the personal habits and history of previous diseases must be elicited. It is doubtful that sclerosis itself would produce recognizable symptoms or physical signs, did not the diseased arteries fail to carry a sufficient supply of blood to the various organs and in that way cause derangements of function. Hence the clinical picture varies, according to the organ primarily or chiefly affected. Thus we may have symptoms referable to the general system, or local manifestations pointing to nervous, cardiac, renal, abdominal, or peripheral arterial mechanisms. Manifestly a condition of so protean a nature cannot be briefly described. The symptomatology sometimes makes the diagnosis easy and certain, sometimes only presumptive, sometimes impossible. Well developed arteriosclerosis shows four pathognomonic signs: hypertrophy of the heart; accentuation of the second aortic sound; palpable thickening of the arteries; heightened blood pressure. All need not necessarily be present to establish the diagnosis. Prior to the development of these changes, minor alterations in the various functions of the body must be patiently sought for, in the light of the well known etiological factors. Periodical examinations, of subjects who believe themselves to be entirely well, are of great benefit in uncovering those minor manifestations of disease which taken at the flood lead back to health, but neglected, voyage ahead to irreparable damage. A detailed recital of all such changes would transcend the limits of your patience. The value of careful blood pressure studies, especially studies of the pulse pressure, cannot be too often insisted upon, but blood pressure readings, like Opie's colors, must be mixed with brains to be useful guides. Hypertension itself is practically always a compensatory process, and should be regarded as one regards a compensated heart lesion. It may be not only essential, but actually life saving, but, when it tends to increase, we must try to reduce it.

Diagnosis.—A good history is half the diagnosis; in some instances the whole diagnosis. Supplementing this by careful bidigital palpation of the arteries, by correct interpretation of the blood pressure readings, by accurate estimation of the heart's size and power, and by direct ophthalmoscopic inspection of the retinal vessels, a diagnosis can usually be established. The ophthalmoscope especially is useful in early diagnosis and shows changes which may not only be suggestive but even pathognomonic. In the young, hereditary influences play an important role, a history of syphilis insufficiently treated, or of the abuse of alcohol, in the family history being particularly significant, as is also a history of gout and rheumatism. Among the infectious disease, the story of a long siege of typhoid fever bears great weight. Severe prolonged laborious occupation, or mental strain, should be carefully considered. I do not believe that the use of tobacco in moderation is especially deleterious, even though it has been experimentally demonstrated that the smoking of one cigar after dinner entails a loss of 20 per cent of the energy provided by a good dinner.

Differential Diagnosis.—This requires the exclusion of pseudo-angina pectoris, true angina pectoris, peptic ulcer, appendicitis, or other inflammatory abdominal conditions. Warfield gives the following differential tables:

PSEUDO-ANGINA PECTORIS	TRUE ANGINA PECTORIS
Etiology rather uncertain; hysteria, neurasthenia, toxic agents, and reflex conditions.	Etiology not certain, but almost always associated with arteriosclerosis of the coronary arteries, and also aortic regurgitation.
No age is exempt; usually in young people, especially females.	Age is important. Rare before forty, and males usually affected.
Paroxysms of pain occur spontaneously, are periodic, and often nocturnal.	Paroxysms brought on by overexertion or excessive mental emotion. Rarely periodic.
Pain, while severe, is diffuse and sensation is of distention of the heart. No sense of real anguish.	Intense pain, radiating down the arm; heart felt as in a vise. Sense of anguish and impending dissolution.
Duration may be an hour or more. Restlessness and emotional symptoms of causative conditions are prominent. Usually no increase in arterial tension. Prognosis favorable.	Duration from few seconds to several minutes. Silent and fixed attitude, rigidity rather than restlessness. Arterial tension as a rule increased. Prognosis most unfavorable.
PEPTIC ULCER.	ANGINA ABDOMINALIS.
Occurs as a rule in young persons, most often females.	Occurs only in adults over forty who have been heavy eaters and drinkers, mostly males.
Pain of boring character, increased by food and by certain positions with reference to stomach. Felt through to left of spine. Occult blood found in stools. Considerable anemia apt to be present. Arterial tension usually low.	Pain, cramp-like, diffuse, but more localized in epigastrium. Not necessarily connected with food. No occult blood in stools. Anemia often absent. Arterial tension high (splanchnic sclerosis).

Prognosis.—In a disease so variable in its manifestations, an accurate prognosis is no easy matter. The chief factors to be considered are: (1) the site of the sclerosis; (2) the probable stage; (3) the existing complications, and (4), last and most important, the patient himself, his habits, his character, and his mode of life. In any event, the prognosis should be most guarded. In the cardiac form, angina pectoris, apoplexy from cerebral hemorrhage or embolism or thrombosis, may supervene without warning. In the arteriosclerotic kidney, uremia may develop from slight indiscretions or without assignable cause. When the disease is localized in the peripheral arteries, gangrene may result, or the minor but uncomfortable seizures of Raynaud's disease or erythromelalgia. The cerebral type with its early dizziness, dullness, inability for mental concentration, and mental irritability should put us on our guard. Intestinal hemorrhage is a grave sign, as an indication of splanchnic sclerosis, possibly leading to embolus or thrombus of the superior mesenteric artery, or in smaller branches to necrosis and ulceration of the intestine.

Prophylaxis.—Decay and degeneration of tissues are necessary accompaniments to the song of life, and none of us can escape growing old. We cannot prevent the heart from beating out its 100 tons of work a day, nor relieve the arteries of their strain. Yet with the inheritance of a healthy organism and proper care of his machinery, comparative anatomy and physiology would allow man a duration of life equal to that of the one-hoss shay. Herbert Spencer's definition of life is that it is "the continuous adjustment of internal relations to external relations." This means that we must get the maximum amount of work done with the minimum amount of wear and tear on the vessels. In these strenuous times, this is difficult, but not impossible. It is not the work, but the worry, that leads to arterial degeneration. Work, with a contented mind, moderate appetites, and modest ambition, will strengthen and develop rather than weaken the bodily forces. Excesses of any kind, be they mental, moral, or physical, tend to wear out the organism. Judicious exercise and well chosen diet are the principal things to discipline ourselves about. Successful doctors complain that they have no time for physical exercise, such as walking, but prefer the lolling luxury of a limousine while making calls. Alonzo Clark who walked and worked until his eighty-fourth year, remarked that when a doctor needed a horse to pull him around he must be weak in the legs, and if he needed two horses, he must be weak also in the head. The city doctor's horse has disappeared, to give place to the rapidly moving automobile, and to encourage obesity and lead to Sir Clifford Allbutt's hyperpiesia. Such are the sweets of prosperity. Every man and woman over forty years of age should have the equivalent of four miles walking in the open air every day. Given sound heart and lungs, this will occupy about one hour. If they have the opportunity to visit the neighboring golf links, and do this walking over an eighteen-hole course of springy turf, with the additional training of the eye and hand and of the control of temper which comes with the mastery of the elusive pill, so much the better. The nineteenth hole now lives only in mournful retrospection. Scholastic philosophy teaches that the chief end of man is happiness; not merely pleasure, for pleasure only depends upon the possession of things, and things decay; not joy, for joy depends upon the possession of friends, and friends die; but spirituality, which depends upon the possession of character, and character is immortal. Old age does not invariably lead to hardening of arteries. A patient of mine, who wrote at least one book every year until her eighty-fifth year, and the spirituality of whose writings has been a comfort and solace to millions of readers, had the soft arteries of a woman of thirty, and a blood pressure of 120.

Treatment.—It is manifest from what has been said that there is no routine plan of treatment for an essentially chronic progressive disease like arteriosclerosis. The keynote is individualization, study of the patient with the disease. This cannot be learned from reading text-books or journal articles, nor even taught at bedside clinics. Teachers can only teach what they are, not what they know. Our old friends, general principles, can be given in the way of advice, by way of prophylaxis, provided we catch the patient early enough in life. After that, it will depend upon our personal influence over the patient, and his own stability of character, whether we can correct the injurious influence of his environment. Every man is more or less the arbiter of his own fate. The one essential in the diet for a patient is reduction in the amount. Americans eat too much, as a rule, but those who have traveled in German and Scandinavian countries will admit that by comparison we are abstemious, if not penurious, eaters. Meat has been so abundant in this country that few meals are considered complete without an abundance of meat and sweets. Herbert Hoover deserves the everlasting thanks of this generation, even though he be denied their votes. A diet of vegetables, fruit, fish, bread and butter, and milk, with very little meat, will suffice in most cases. The supposed injurious effects of the lime salts in milk can be avoided by the addition of lime water, which precipitates the soluble lime salts in the stomach, and facilitates their excretion by the intestines rather than by the kidneys. Buttermilk, either from the churn or from the *Bacillus acidus lacticus*, may furnish an agreeable substitute for sweet milk. Balneotherapy demands careful individualization also. Our generation is certainly a bathing one, but it is folly to encourage the morning cold bath to those who do not react glowingly after it, and criminal to advise the Turkish or Russian bath to one with degenerated cranial arteries.

The one drug to which we turn, for the prescription which most patients expect in return for the fee, is iodide of potassium. Its action has been the result of much controversy. Some writers believes that it acts as a vasodilator and thus decreases blood pressure. Others that it lessens the viscosity of the blood. Capps[9] denies that it does either and says that its only benefit is selective absorption of the cellular exudate in syphilitic arteritis. Lemoine[10] believes that iodide of potassium is a therapeutic heresy. C. T. Hood[11] states that it is now generally conceded that iodides and iodine have no place in the treatment of hypertension or arterial

fibrosis. His own hypothesis is that salt-poor and salt-free diet should be pushed to the point of removal of the surplus sodium chloride from the body, and to keeping the tissue sodium chloride content at the physiological amount. To help to accomplish this he advocates administering one per cent solution of potassium nitrate of which fifteen drops are to be taken three times a day in half a glass of water until the individual is filtered of his excess chlorides.

Long before the endocrinists held their present sway, it was believed that the thyroid secretion and that of the adrenals were antagonistic, and small doses of thyroid extract, half a grain twice a day, were given with benefit to reduce hypertension. But it is not always wise to reduce hypertension. It is perhaps fortunate that our well meant efforts to accomplish reduction do not always succeed. Nitroglycerin will usually fail, as it is eliminated in about thirty minutes. Sodium nitrate will hold a slight effect for about two hours. There is no question about the efficacy of amyl nitrite in anginal attacks, and many elderly patients of mine are profuse in their verbal expressions of gratitude for its presence at their bedsides at night, or in convenient vest-pocket pearls by day. Benzyl benzoate has recently been lauded by Macht in angina, and in other spasmodic seizures. I would put tincture of aconite into the hands of a careful nurse, or hospital interne, for use in excessive hypertension, but would want the effects carefully watched, and the results checked by the sphygmomanometer. But the greatest good is done for our patients in Bellevue and St. Vincent's by absolute rest in bed. Karell diet for four days, hot packs, and free purgation, with venesection added in uremic convulsions or coma. Morphine is sometimes invaluable to secure rest at night, but it should never be forgotten that morphine checks all the secretions but one, and that the habitual use of morphine is the beginning of the end. Influenced by the teachings of the late George L. Peabody in the New York Hospital, I have made extensive trial of amylene hydrate in hot milk at bedtime. Some patients swear by it, many others swear at it. It can be given by rectum when the stomach is intolerant. The Trunecek serum has gone the way of all fads. The treatment of the later stages of arteriosclerosis becomes that of the damage done in brain, heart, kidneys, or intestines, and opens up too wide a field to be covered in this discussion. Prevention, by recognizing the disease in its early stages, must after all be our watchward. Of the 73,266 deaths in the city of New York in 1912, 7251 occurred from organic diseases of the heart; 7104 from nephritis, and from cerebral hemorrhage and softening 2805.[9] In the total registration area of the United States, approximately 23.2 per cent occurred from these causes. The percentage in the rural districts alone was 26.7, thus showing that the urban mortality is less than that of the rural. This is contrary to the usually accepted opinions of the back-to-the-soil prophets.

New York State has a slightly better showing, the tables of the combined cities of the Empire State giving a rate of 20.5 per cent of the total mortality, while the rural portions furnished figures of 22.3 per cent.[9] New York physicians may therefore lay this flattering unction to their souls, even though the City of New York does not measure up to its vaunted standard of excellence in hygiene and sanitation. Other tables will show that this disproportionate loss of life occurs during the ages of from thirty to sixty years, the period of greatest productivity. It is improbable that therapeutics will work wonders in decreasing this mortality for many years to come. Still we must labor to increase our efforts at "preventability." Preventability is defined by Irving Fisher, in the report of the National Conservation Commission on National Vitality, as follows: "A ratio of preventability is the fraction of all deaths which would be avoided if knowledge now existing among well informed men in the medical profession were actually applied in a reasonable way and to a reasonable extent." The practical meaning of this is that we should instruct our patients in the underlying etiological factors of this group of diseases. Such a scheme of instruction would include the elaboration of plans for the elimination or control of contagious and infectious diseases, for the elimination or control of conditions causing poisonings and intoxications, for the supervision and regulation of conditions inducing abnormal physical strains, and for minimizing the mental stress of the community.[9]

Along this road, social service and social hygiene are making steady headway, but the way is long and rough, and we who are traveling it can only lend a hand to those others who are weary and heavily laden, to make smooth the path for them. I commend to your earnest attention the comprehensive plan outlined by Ira S. Wile in the MEDICAL RECORD for June 5, 1915, which well deserves our careful study and active cooperation. If "health is purchasable" as alleged by our Health Departments, its cost, in these days of luxurious extravagance, should not be a deterrent. Dr. Wile's scheme may sound Utopian, and difficult of accomplishment at the present time, but if we all bend our backs to the task, it may come about in the present generation.

"We are all weary travelers along Life's dusty way,
If any man can play the pipes, in God's name let him play."

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379 PARK AVENUE.

THE USE OF FRESH VACCINES IN WHOOPING COUGH.

By ROWLAND G. FREEMAN, M.D.,

NEW YORK.

VACCINES for the prevention or cure of whooping-cough have been used for the past eight years, and while some enthusiasm has been shown by certain writers, the general opinion has been that they were of but little service in the treatment of whooping-cough, although possibly of some value in its prevention. My own attitude was that they did not modify the course of whooping-cough, and I had never seen a case of whooping-cough apparently prevented by their use.

I administered them occasionally, because the parents thought they might do some good, and I knew they would do no harm, but with no more effect than was apparently obtained from drug treatment.

The diagnosis of whooping-cough I have usually confirmed by a blood count, the high lymphocytosis giving one a characteristic picture of this disease.

Two years ago I saw Dr. Huenekens' paper on the application of the complement fixation test for the detection of antibodies after the injection of whooping-cough vaccines, in which he showed that the antibodies were not present unless the vaccines were freshly prepared, and that after a week of storage but little antibody production resulted from their injection even in large doses.

It seemed to me possible that this fact might explain the contradictory reports from the use of whooping-cough vaccines, as some clinicians had probably used fresh vaccines by accident in the course of their work. I felt that at least this should be tried out, and intended myself to do so in some institution. I regret that I am unable to report any institution work, but I have brought together all the cases in which I have used it in private practice, hoping to stimulate interest in the use of these fresh vaccines and thus render it easier to obtain them, for it requires from one to two weeks to produce fresh vaccines and some cases for which I ordered them have been so far along in the disease by the time they were obtained that one could expect but little effect on the course.

If we are to have opportunity to give the vaccines a fair trial we must have some laboratory producing vaccines every week.

As to the general principle of vaccines being useful in proportion to their freshness I was told by a representative of the Lederle Laboratories in New York that gonoccoccus vaccine loses in two days 30 per cent. of its efficiency, and Dr. Fleischner, in the discussion of Dr. Huenekens' first paper, showed that there was some deterioration in the immunizing properties of the tuberculin vaccine on keeping. Dr. William Hallock Park of New York has told me that there is undoubtedly a slow deterioration in all vaccines on keeping; that this deterioration is more rapid in some vaccines than in others.

Immediately after seeing Dr. Huenekens' article I was called to a family with one child who had been coughing for ten days and having paroxysms for a week with vomiting, and a second child who had only begun to cough and who before the first injection had whooped once. A vaccine two weeks old was injected in both children with no material result, but after the first injection of fresh vaccine the youngest child, who was well advanced in the disease, ceased vomiting and had little cough, while the second child did not cough at all after the injection.

A little later I was called to another family where a baby of eight months had had whooping-cough very severely for some time, and about whom the family were very much concerned. In this family also was an older child who had just begun to cough. The baby was materially better after the injection of the vaccines and the other child stopped coughing.

Another case which was far advanced in the disease showed slight but not material effect from the injections.

Recently I have used these fresh vaccines in a number of cases.

J. M., six years old, with two weeks' duration and severe paroxysms, stopped whooping entirely after three injections.

Another boy, four years old (G. W.), with very severe vomiting and paroxysms, had a cessation of the vomiting and paroxysms after injections, and one boy (W. F.), of nine years, had had paroxysms for a number of days. The vaccine appeared to cure him almost entirely.

A boy of ten years (S. F.) was very materially improved. Another boy of the same age (E. P.) did not have severe paroxysms or severe cough, and did not receive much benefit from the vaccines, the first dose of which was of vaccines three months old, the second, one month old, and the last fresh vaccine, but this child was well advanced in the disease by this time.

Another family (C.) of two children, aged seven years and two years, reported that the paroxysms were less frequent and the vomiting stopped, but the vaccines apparently did not shorten the course of the disease.

Very recently I had occasion to use these vaccines in two families, one of six children in which three of the children had recently begun to whoop; and one of three children in which the baby, two years old, was having paroxysms. Here we seemed to have a good opportunity for treatment and prophylaxis.

In the family of six children the first injection of one-half billion of vaccine which was twenty-five days old, produced no improvement. A second and third injection of fresh Lederle vaccine was also followed by no material change. For the fourth injection I had an absolutely fresh Board of Health vaccine and obtained no material reaction, therefore, no more injections were given and the children were sent to the country. In this family I could not feel that the vaccines had any effect at all. The children who had the disease still had fairly severe paroxysms after the fourth injection, while the three children who were given prophylactic injections developed whooping-cough, although not of a severe type.

In the other family of three children, after the first injection of one-month-old vaccine in the child who was having paroxysms, no more paroxysms were observed, and the other two children have never coughed since.

To summarize then, in sixteen children with whooping-cough in which the vaccines were used at various periods of the disease, in five no results were obtained. Of these five children three were early in the disease and the other two very late.

Of the eleven remaining cases, in nine a very material improvement took place and in four of these a practical cure was obtained.

Of the five cases in which prophylactic doses were used two were successful and three failed.

My confidence in these vaccines has been somewhat shaken by the results in this family of six children who failed to react, but the good results obtained in other cases and the quite remarkable results obtained in certain beginning cases convince me that these fresh vaccines should have an extended use, particularly in institutions where controls may be used to demonstrate whether we may not have in these vaccines a valuable method of reducing the large mortality from whooping-cough.

The dosage used in all the above cases was one-half billion for the first dose, one billion for the second dose, and two billion each for the third and fourth doses.

211 WEST FIFTY-SEVENTH STREET.

BOTULISM.

A REPORT OF FIFTEEN CASES, IN THREE SERIES.

BY G. M. RANDALL, M.D.,

NEW YORK.

MAJOR MEDICAL CORPS, U. S. ARMY, RETIRED.

IT is advisable to make public all that we know concerning this malady, in which there has been but little advancement of knowledge in the past half century. Early recognition and early treatment give the only possible hope of recovery in any given case. We have even every reason to believe that there is now no known antitoxin potent enough to save life when the symptoms are once established. Prophylactic use of an antitoxin suggests itself along the same lines as diphtheria and tetanus antitoxin. This would obviously be expedient where sporadic cases had occurred and the source was unknown.

These cases occurred in three series; Four in Lowell, Mass., in 1912. Seven in Tampa, Florida, in 1916, and four in Maine, in 1920. The Lowell cases were as follows:

CASE I.—G. A., male. Age 32. Born in Greece. Employed in a cotton mill. Moderate drinker of light wine and beer. Heavy drinker of coffee. Well nourished. Intelligence poor. Patient had been ill about twenty-four hours when I first saw him. Symptoms: Facial expression and appearance that of extreme dejection and apathy. Slight ptosis of right eyelid. Could protrude the tongue only with difficulty and slightly. Much difficulty in swallowing liquid or solid food. Articulation was indistinct and labored. The throat symptoms so closely resembled peri-tonsillar abscess that I made a "snap diagnosis" in my mind, but on careful examination of the throat I found it perfectly normal in appearance. There was marked increase in the salivary secretion, which was thick and stringy. This he continually wiped away with a rag. Pulse 80. Temperature by mouth 98.2. Respiration 22. No nausea or intestinal symptoms. Great muscular weakness. Pupils equal and responsive to light. Tendon reflexes normal. No pain, but rather restless in bed. Said to have eaten some "blood sausage" about thirty hours before he called the doctor. The sausages were made by Greek laborers, from some pork scraps which they were accustomed to purchase at a slaughter house in an adjoining town (Methuen, Mass.). The sausage "casings" were the large intestine of a hog. The sausages were boiled in water before eaten. They were eaten at about 7 P. M. and the first symptoms developed on arising the following morning.

The treatment was eliminative and stimulating. Calomel one-tenth grain every thirty minutes until one grain was taken then one ounce of castor oil. The cathartic acted well but the symptom in no degree diminished. Strychnine in one-fortieth grain doses was given hypodermatically. Rectal nutrition was undertaken. The patient grew progressively weaker, with the appearance of intense toxemia, resembling the toxemia of diphtheria or tetanus. No temperature developed at any time. Patient died on the fourth day of his illness. Terminal symptoms related to cardiac failure. No autopsy.

CASE II.—J. K., female. Age. 12. Born in Greece. Poorly nourished. Same family as Case I. Seen at same time. Child ate of same sausages as Case I, at same time. Symptoms: Vomiting and abdominal pain (which in my judgment was due to the fact that the child drank some milk at the same time she ate the sausage). Much flatulent distension of the colon. Pulse 102, temperature 101. Difficulty of articulation and swallowing. Drooling of a thick saliva. Extreme prostration. No ocular symptoms.

The treatment was bismuth subnitrate, with beta-naphthol and hexamethylenamine with caffein-sodio-benzoate as a cardiac stimulant. This was used hypodermatically. No results from stimulation. Patient died on the fifth day of her illness, the heart continued to beat after respiration had ceased three or four minutes. This might have been due to the caffeine. No autopsy was permitted.

CASE III.—C. H., female. Age 31. Housewife. Born in Greece. Rather undernourished and of anemic appearance. History of malarial fever in Greece. Same family as the two previous cases. Ate of same sausage at same time. Symptoms developed about noon the following day. Saw patient about ten hours after the first symptoms of illness. Marked muscular weakness so that she staggered when attempting to walk, although she had no vertigo when sitting or lying down. Bilateral blepharoptosis, pupils responded slowly to light, marked diplopia, and nystagmus of the right eye. No nausea or intestinal symptoms.

The treatment was saline cathartics with enemata to which glycerine was added. Thymol was given in three-grain doses every three hours. Cardiac and respiratory stimulants were used hypodermatically, but no response was obtained and the patient died on the third day of her illness. Terminal symptoms were pulmonary hypotasis, with marked œdema but no consolidation. No post-mortem was permitted.

CASE IV.—G. K. Male, age 52. Born in Greece. Laborer. Well developed and nourished. Ate of the same food as the three preceding cases at the same time. Began to feel sick about 4 p. m. of day following eating of the ham (which as previously stated was at 7 p. m.) Symptoms practically the same as the three preceding cases. Muscular weakness was if possible more marked and there was a slight paralysis of the facial muscles on the right side. The urine, which I have the record of, showed renal insufficiency. It was high colored, large trace of albumen, normal solids absolutely diminished. We expected the patient to develop comatose symptoms but respiration failed and the patient died on the fifth day of his illness. Paralysis of the diaphragm was very evident as a terminal condition. The heart continued to beat for a few minutes after respiration ceased.

These cases were seen in consultation with Dr. Andronopoulos of Lowell, Mass. The cases were

early diagnosed as "ptomaine poisoning," but a careful laboratory examination of the sausage demonstrated *Bacillus botulinus*. Growths were made in glucose-gelatin and agar tubes and later plated on glucose-gelatin plates. Colonies were picked and those that were surrounded by a liquid zone of gelatin proved to be the characteristic round-end, spore-bearing, Gram positive, anaerobic *Bacillus botulinus*.

Pure cultures of these organisms were fed to a cat, a dog, and a rabbit, with no pathologic results. The same colonies were further incubated and cultured and filtrates made from them and the filtrates given by mouth and intra-venously, to the same animals. Symptoms developed first in the rabbit, then the dog and last the cat. Symptoms in the animals were; muscular weakness, slowing of the rate of respiration. The dog lived twenty-six hours, from ingestion of culture. The cat staggered around a few hours longer. The conclusions that we came to were that the first cultures that we fed to the animals had not had time to develop toxines of the potency of the later grown organisms. (?) There were some facts well established by our experiments; the toxin of *Bacillus botulinus* is filterable. Its lethal properties are not impaired by a temperature of 212° F. maintained for ten minutes. The exact amount of toxin given in any one of the animal experiments was not known. The only way this could be done would be by standardizing it in the same way as that in use in standardizing other toxins and antitoxins, and our laboratory was not sufficiently well equipped for this.

The next series of cases of Botulism that I saw were in Tampa, Florida, while I was Post Surgeon at Fort Dade, Florida, in 1916. I was called in consultation with the Port Surgeon who was also Quarantine Officer Acting in absence of the Port Quarantine Officer who was thirty miles down the Bay.

Seven sponge fishermen were ill in their little "sponge boat." One man was dead, five were quite ill and one was but slightly ill, mostly from fright. This last man had been seasick the day before and had eaten nothing for two days. (There are compensations even in seasickness.) The scene presented was, to use a brief and good southern expression, "*s-o-m-e* mess." Filth of all kinds known to sailors was there. Odors of bilge-water and gasoline, dead fish and stinking sponges hanging in the shrouds to "cure" and dry, the galley was absolutely unspeakable for its filth. Immediately on arrival in port the cook had gone uptown and purchased a native "razorback" ham, some eggs and other articles of food, which were partaken of by all except the seasick man at about 6.30 p. m. They began to be ill the next morning. It did not require much Sherlock Holmes "deduction" to conclude that it was food that was causing the trouble. It had been at first thought to be some unknown disease brought up from Mexican or Cuban ports.

Our treatment was begun in a rational manner, *i. e.*: elimination and stimulation. I took specimens of all of the food back to the Post Hospital and set about examining it, as I had done in the Lowell cases. I had canned string beans, canned corn, canned milk, macaroni and ham. To make a long story short the only pathogenic organisms that I found were in the ham. One of my first tests was to macerate some of the ham in sterile normal salt solution, and give some of the liquid to a cat. The cat developed symptoms of poisoning in about six hours, staggering gait and lassitude. The cat died in about twenty-four hours. A particle of the ham was scraped from around the lower end of the ham bone and put in a capsule the size of a pea and given to a small yellow dog with a bit of other meat. He developed the usual symptoms. His muscles of deglutition were completely paralysed. He lived thirty hours after taking the capsule.

The media which I used in the culture of the organisms in these cases was lean beef infusion, with 3 per cent. of glucose, 2 per cent. of peptone, and 1 per cent. sodium chloride. This gave very excellent growths of *Bacillus botulinus*. Toxin from these cultures was especially virulent.

The symptoms of the fishermen were all characteristic; diplopia, difficulty of deglutition, and articulation, increased secretion of viscid saliva, blepharoptosis, nystagmus in two cases, great muscular weakness, all neurologic symptoms related to the cranial nerves, viz.; first, third, fourth, fifth, sixth, eighth, ninth and tenth. Paralysis of the diaphragm was conspicuous in three cases shortly before death. They all complained of lack of air and brought all accessory muscles of respiration into play with greatest effort. The mind of each was clear to the very last. There was no elevation of temperature in any case except the little girl, who had a co-existent intestinal disturbance. No case lived beyond five days from eating the ham The first case to die, lived only eighteen hours after eating the ham.

The ham as found did not have any bad appearance or bad odor. Neither did the tube or plate cultures have any peculiar odor. I ought to say in passing that I gave about four ounces of the tube and plate cultures to an Army mule that had been "surveyed" and "condemned," and was officially dead, but actually enjoying the best days of its life browsing and grazing about the fort. It was fed to him (or it) with a little sugar on a wisp of grass. No harm came to the mule. The immunity of the mule is quite worth while to study further.

My next experience with *Bacillus botulinus* was in June and July, 1920, at a Summer resort in Maine. And while any fair-minded bacteriologist would attach no blame to the management or the food supply, the exact spot would better be withheld from broad publicity, though the cases are well known to the State Health Commission, as well as to several consultants, including the County Medical Examiner and Henry Dwight Chapin, M.D. of New York. June 29-30, 1920, there developed four cases of illness all of which resulted fatally. The clinical history of these cases is as follows:

CASE XII.—A. R. Female, age 62. Born in Ireland. Employed as "scrub-woman" in hotel. Well nourished, rather senile in appearance. Had up to two years ago used alcohol rather freely. Called to see her on the second day of her illness. In bed. Symptoms: Diplopia, diminished tendon reflexes, profuse secretion of thick saliva which she wiped from her month as she was unable to swallow without much effort and nearly choked when the effort was made. Articulation was difficult and indistinct. Much nausea and vomiting on taking liquid or solid food. No nausea at any other time. Pulse 78, temperature 97.2. Respiration 22. Bowels constipated but acted after active catharsis. Insomnia and great muscular weakness. Early on the third day patient began to show marked failure of the respiratory function, and paralysis of the diaphragm soon was evident and at 2 p. m. she died of respiratory failure. No autopsy.

CASE XIII.—J. D. Male, age 47. Well nourished, temperate, intelligent, spare of habit. First called to him on the second day of his illness. In bed. Temperature 97.6°, pulse 80, respiratory 24. Symptoms so closely resembled quinsy or peri-tonsillar inflammation that I took temperature a second time by rectum (which I was surprised to find no elevation of temperature, and the only temperature worth taking). Careful examination of the throat failed to show any inflammatory condition. He had much difficulty in articulating and swallowing. There was profuse viscid saliva, which he allowed to run from his mouth on to a cloth. Ptosis of right eyelid, slight paralysis of the facial muscles

on left side. Diplopia, facial expression was blank, which was quite different from his usual habit. He was prostrate in bed from great muscular weakness. Bowels constipated but moved on use of calomel followed by castor oil. Stimulation was used, colon irrigation, rectal nutrition and all supportive measures, but on the fifth day he showed marked signs of respiratory failure and died on the fifth day of his illness. Terminal condition was pulmonary hypostasis, but no consolidation. No post-mortem was allowed.

CASE XIV.—W. D. Male, age 52. Rather corpulent. I had treated him a year before for chronic alcoholism, but in the past year he had been strictly temperate. Called to see him on the second day of his illness. In bed. Temperature (rectal), 97.4. Pulse 84. Respiration 18. Physical examination showed systolic murmur with much hypertrophy, bilateral blepharoptosis, diplopia, unilateral nystagmus of right eye. Slight paralysis of facial muscles of right side. Much difficulty in swallowing and articulating. Could not protrude the tongue or expectorate in a normal ejaculatory manner, much saliva of ropy character. Mind was perfectly clear to the last. All symptoms increased until the ninth day when he died. The last twenty-four hours he was quite cyanotic. No pain in any part of the body. The terminal symptoms were pulmonary hypostasis without consolidation.

Post-mortem examination was made by the County Medical Examiner, assisted by a local physician and myself as recorder. Gross pathology showed about 100 per cent. cardiac hypertrophy, mitral insufficiency, apparent parenchymatous nephritis. Spleen about one-half normal size, soft and friable. Liver cirrhotic, stomach and intestines normal in appearance. Specimens of all organs were sent to the State Department of Health laboratory for further examination. No biological examination was made and "nothing was found."

CASE XV.—P. A. Male, age 18. Pale and anemic in appearance, history of pneumonia following "flu," winter of 1918-1919, patient walked into my office on the second day of his illness, complaining of "dimness of vision and seeing double," vertigo on walking but not on sitting down. Unilateral ptosis of right eye, paralytic symptoms relating to the glossopharyngeal nerve. Quite a blank and dazed expression on his face, which normally was bright and cheerful. Great muscular weakness, pulse sitting 76 and standing 90 not compensating. Temperature 98.2°, respiration 24. No gastric or intestinal symptoms. On the sixth day the diplopia cleared up a little, but all other symptoms continued. There was much salivation. On the tenth day he died. The terminal symptoms related to renal insufficiency, urine was scanty and high colored, normal solids absolutely diminished. At last he was quite comatose. Respiration ceased before the heart ceased to beat.

Cases 13, 14, and 15, were treated in a well ordered hospital and everything done that gave possible hope of good results and comfort to the patients. They were seen by two other consultants; the treatment was rational, *i.e.*, elimination and stimulation, no differences of opinion were expressed as to diagnosis or treatment. They were classic cases of Botulism. Some symptoms in the cases reminded us of methylic alcohol poison but there was no possibility that this was a factor in any of the cases. Neither was there any such possibility in any of the other series of cases in Lowell or Tampa. We also discussed acute bulbar paralysis but the absence of any elevation of temperature and other pathognomonic symptoms dismissed this. Lethargic encephalitis gives some symptoms that occur in botulism but the classic picture *la toute ensemble* of poisoning from the toxin of *Bacillus botulinus* is lacking in any other condition with which I am familiar.

The source of the poison in these last cases is not certainly known, but all ate of a ham which was purchased in the open market in a nearby town. Three of the patients spoke of the ham as having a bad taste. Other people ate of the same ham but no other illness occurred. It is possible that the lower end of the ham was infected and the upper end was not. It is certain that the poisoned patients ate of the small end of the ham.

149 WEST NINETY-THIRD STREET.

THE FEEDING OF NORMAL INFANTS.

BY STAFFORD McLEAN, M.D.,

NEW YORK.

DR. MORSE[1] of Boston has recently published at length his views regarding the feeding of infants during the second year. He says: "Whether or not it has been ursed or fed artificially, a baby, when it is a year old, will be taking, in most instances, whole milk or whole milk with a cereal diluent. If it follows the present fashion, it will almost certainly be receiving orange juice in addition. It will probably be taking some of the simple cereals and perhaps broth and beef juice. If it is being fed properly it will not, in my opinion, be given anything else."

It is admitted that certain normal infants will not tolerate at the beginning of their second year of life a more liberal diet, but in the opinion of others, myself included, the average infant will thrive better upon a more liberal and varied diet. It has been noted that infants fed upon such a diet are stronger, more active, walk earlier, their fontanel closes earlier, dentition is earlier, and they have a better color and musculature.

Let us consider the different article of food constituting a more liberal diet for an artificially fed infant and the reasons for their use.

Orange Juice.—In most instances it is well to begin the administration of orange juice as early as three months, one may commence with one teaspoonful daily one-half hour before the second morning bottle. This daily amount may be increased by one teaspoonful each week. At five to six months of age the infant will be receiving the juice of one orange daily or approximately 2½ ounces. The liberal use of orange juice minimizes the necessity for laxatives so often used in the artificially fed baby to correct constipation. Almost all the milk fed to infants in New York City is pasteurized. Scurvy has frequently been noted in infants fed exclusively on pasteurized milk.[2] Orange juice is one of the richest sources of antiscorbutic vitamine; if begun in small doses and gradually increased, it seems to be well tolerated. Infants six weeks of age have been seen who were given orange juice as a laxative without ill effects.

At the age of nine to twelve months orange juice may be replaced by well strained apple sauce or prune pulp. These substances add more bulk, are more laxative, and have a greater caloric value than orange juice.

The Amount of Milk.—The average artificially fed infant, in the experience of many, thrives better after the sixth month with at least part of his caloric needs supplied by other food than milk. The amount of other food may be increased as age advances. As a rule not more than twenty-eight ounces of milk per day is given and after the tenth

month this amount may be gradually decreased. By the eighteenth month he will usually not need more than twenty to twenty-four ounces per day.

Why is it that an exclusive milk diet for an infant up to twelve months of age is undesirable? Chiefly because of the small amount of iron plus the objection to the large amount of bulk necessary to give the infant sufficient calories. It is probably because cow's milk is low in iron that infants become anemic. Every infant is born with an "iron reserve." If he is breast fed he utilizes the iron present in the mother's milk and apparently maintains a normal balance. The iron reserve plus the amount he receives from the cow's milk may carry him along a varying number of months until he finally becomes anemic. This frequently begins to be noticeable from the eighth to the tenth month and becomes more marked as age advances. At that age or earlier he needs a supply of iron from some other source. A sufficient addition cannot be furnished by increasing his supply of milk.

Cereals.—The feeding of cereals may be advantageously begun about the fifth month, generally in the form of strained oatmeal jelly. Oatmeal has more residue to furnish bulk and helps constipation. If begun in small amounts (a teaspoon daily given just before the second morning bottle) it may be increased at regular intervals so that by the tenth month the infant is receiving two or three level tablespoons twice a day. Infants vary in their ability to handle starch but the majority handle these amounts without difficulty. Some infants under three months of age with a stationary weight have begun to increase in weight upon the addition of raw starch in the form of barley flour. Infants have been encountered in the Out-Patient-Department who were doing well on a milk mixture in which the carbohydrate was furnished (through a mistake in interpreting directions) in the form of 50 grams of raw starch per day.

Eggs.—Dr. Morse does not advise the use of eggs before the eighteenth month, he then gives one-half of an egg once or twice a week and gradually increases the amounts. It has been frequently noted in feeding infants that it is the egg albumin which is difficult for the infant to digest. For this reason the administration of egg is begun by using only the yolk, which is high in iron and in fat soluble vitamine[3] and is not difficult to digest. It may be begun about the sixth month with one-eighth to one-fourth of the pulverized yolk of an egg which has been boiled 20 minutes. This is mixed with the vegetable or cereal and the amount is increased each week until the child is having the whole yolk of a hard boiled egg daily. By the eleventh month he may be given a part of a whole coddled egg and, if it is well tolerated, as it frequently is, he is given the whole egg, generally by the twelfth month. Pulverized egg yolk may often be given as early as the fifth month without causing digestive disturbance.

Is the Simple Diet Sufficiently Nutritious?—It is beginning to be appreciated that to furnish a properly balanced ration for a normal infant over six months of age is not so easy as it was formerly considered. Little is yet known of the vitamine factor, yet certain facts have been established. Uncooked food has certain antiscorbutic properties not possessed by cooked foods, orange juice has more of these properties than milk, and the drying of milk deprives it of some of its antiscorbutic properties. Pasteurization also impairs the vitamines and it has been recently shown that scalding milk is less destructive to the vitamines than boiling for five minutes.[4]

Vegetables.—Infants having a varied diet which includes vegetables begun at the seventh month are generally more active, have a better color, and walk earlier than those who have been given what Dr. Morse calls a "simple diet."

Children fed up to the end of the second year on a diet almost exclusively of milk frequently have a severe degree of secondary anemia, even though the caloric intake has been sufficient. There is quite definite evidence that the iron in milk is inadequate.

If vegetables are steamed as described by Courtney, Fales, and Bartlett,[5] the salts are retained and not lost in the water used for cooking. One may begin at the seventh month with one teaspoon of steamed spinach or carrots given daily before the midday bottle. The daily amount is increased each week so that by the twelfth month the child may be having two to three level tablespoons of vegetables per day.

It is difficult to measure the degree of bone production in infants; but the rate of closure of the anterior fontanel is perhaps our most convenient guide. Most of the textbooks on pediatrics state that closure of the anterior fontanel at eighteen months is the normal average. Infants fed chiefly on milk do have, as a rule, an open fontanel until the sixteenth or eighteenth month; but in infants who are fed a varied diet as outlined, here it has been noted by several, and myself included, that the fontanel in a majority of instances closes between the tenth and fourteenth months. Delayed closure of the anterior fontanel is one of the accepted manifestation of rickets. If the fontanel closes at an earlier age in a normal child fed a varied diet is it not a fair inference that closure at eighteen months is a delayed closure and possibly a rachitic manifestation?

Vitamines.—That there may be another factor, namely vitamines, in the use of vegetables during the first year, which is as important as the salt factor is only now beginning to be appreciated. While it is true that many of the observations regarding the influence of vitamines on growth have been on the smaller animals, enough has been learned to establish certain facts which will have a bearing on the feeding of infants and children.

Osborne and Mendel[6] have found that the "fat soluble vitamine" is richer in spinach leaves than in most of the foods used in the daily ration of man. They also found that as a source of "water soluble" vitamine the quantity of whole wheat, soy beans, dried eggs, or milk solids required to promote normal growth, is approximately twice as large as the quantity of dried spinach needed.

It is interesting to note that the Danish people during the last year of the war were largely deprived of animal fats. The absence of malnutrition among them has been attributed to the liberal use of green vegetables containing fat soluble vitamine.

Osborne[7] has stated that the increase of water soluble vitamine increases the appetite and that in his experiments with rats the vitamines must be increased before increasing the bulk of the diet. It may be possible that the early administration of spinach with its vitamines increases the appetite and is an entering wedge for the increase of solids such as cereals, potato, fruit, and egg.

Does the Fat Child Represent a Healthy Type?—It is admitted that the infant fed according to the method outlined here may not have the deposits of subcutaneous fat which may appear so important. A certain amount of reserve weight is perhaps desirable but many pediatrists are prone to judge the results of feeding entirely by the weight curve and are apt to allow their better judgment to be warped because of this.

The inactivity of the fat infant may tend to increase his body weight and decrease his caloric needs per kilo. Schlossmann and Murchauser[8] emphasize the influence of muscular activity on metabolism, and Howland[4] found a difference of 17.6 and 39 per cent in the heat production between periods of quiet sleep and active struggling and crying. Benedict and Talbot[8] found that an increase of 60 per cent was common from sleep to active exercise. The activity of the wiry type of infant might necessitate a higher caloric intake to compensate for his increased metabolism.

mates the diets of children who have been fed according to the method presented here. This diet has a caloric value of approximately 900 calories which would allow a child weighing 22 pounds over 40 calories per pound. It seems undesirable to adhere too closely to caloric method in calculating the amount of food. The caloric value of food is useful as a check in infant feeding. Many normal infants of one year on a "liberal diet" may progress favorable on 850 calories per day, while other may do better on 900 to 1000.

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17 EAST SEVENTY-FIRST STREET.

TABLE II. CHANGES AND ADDITIONS TO DIET AT 13, 14 AND 15 MONTHS OF AGE.*

Article	Amount	Grams of			Calories as				Grams of		
		Fat	C-H	Pr	Fat	C-H	Pr	Total	Ash	CaO	
At 1 year		37	83	48	346	339	195	880			
At 13 mo. add bacon	1 pc.				20	0	5	25	Per cent of calories as		
Total		39	83	49	366	339	200	905	Fat 40	C-H 38	Pr 22
At 14 mo. use alternate egg or meat—1 oz.					14		4	10			
Total		38	83	50	352	339	204	896	39	38	23
At 15 mo. add bread	1 pc.				1.5	25	5	31			
Butter	0.5 tsp.				18.5	0	0	19			
Total		40	89	51	373	364	209	947	39	39	22

*For the preparation of these tables thanks are due to Miss Helen L. Fales.

TABLE I. DIET FOR CHILD OF ONE YEAR.

Age 1 yr. Weight 22 pounds—10 kilos.

Article	Amount	Grams of			Calories as			
		Fat	C-H	Pr	Fat	C-H	Pr	Total
Milk	24 oz.				235	142	103	480
Cereal	3 oz.				5	42	8	55
Egg	1				57	0	18	75
Potato	1 oz.				0	28	4	32
Soup	4 oz.				9	12	52	73
Rice	1 oz.				0	30	4	34
Butter	1 tsp.				37	0	0	37
Stewed Fruit	2 oz.				2	74	3	79
Vegetables	1 oz.				1	11	3	15
Total		37	83	48	346	339	195	880
Per kilo		3.7	8.3	4.8	34	34	20	88
Per pound		1.7	3.8	2.2	16	16	9	41
Per cent of calories as					39	39	22	

The diet for a normal child of one year weighing 21 to 22 pounds which is here included approxi-

SURGICAL JAUNDICE.

REPORT OF A CASE OF PRIMARY CARCINOMA OF THE PANCREAS.

BY ROYALE H. FOWLER, M.D., F.A.C.S.,

BROOKLYN, N. Y.

THAT form of non-hepatogenous jaundice due to blocking of the biliary flow between the liver and the duodenum may be properly termed obstructive. Biliary stasis from extra hepatic lesions occurs mechanically from obturation of the lumen of the hepatic or common ducts, from occlusion, the result

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of trauma, inflammation or new growth of the walls of these ducts, or from choking off the flow of bile as the result of pressure outside the ducts. Pressure from without may be inflammatory or neoplastic. The differential diagnosis of obstructive jaundice due to primary new growths force a decision between carcinoma of the gall bladder, the common duct or ampulla of Vater, the duodenum or the papilla of Vater and the pancreas or its duct. Carcinoma of the gall bladder is the most common, and carcinoma of the common or pancreatic duct the most rare growth which causes this condition. Carcinoma of the duodenum (the papilla of Vater), the ampulla of Vater and the pancreas occupy intermediate positions with regard to frequency. We are especially interested in primary carcinoma of the pancreas, its pathology and operative treatment by palliative methods. The occurrence of a case of obstructive cholemia due to primary carcinoma of the head of the pancreas stimulated interest in the general subject and in this rare lesion particularly.

A consideration of all the phases and literature of primary carcinoma of the pancreas is out of place in this short paper. It is the most common new growth found in this organ. The combined experience of Park and Segré in about 65,000 post mortems indicates the occurrence of primary carcinoma of the pancreas in about one-half of one per cent.

It is more common in males than in females. Oser analyzed 388 cases with regard to sex. He found about 63 per cent. in men and 37 per cent. in women. Cases of carcinoma of the pancreas have occurred in infancy, childhood, and young adult life. Bohn reports a case at seven months, Kuhn two years, Simon thirteen years, Dutil fourteen years, and Burke twenty-two years.

This growth is most commonly found in the head of the pancreas. Segré has studied 68 cases with reference to position. He found 35 in the head, two in the body, two in the tail and nineteen in which the entire gland was involved. Of Maraillié's 133 cases, 62 were located in the head. Oser's sites of predilection closely approximate those of Segré. Robson and Cammidge found 62 per cent. in the head, 5.5 per cent. in the tail, and 3.5 per cent. in the body. In 29 per cent. the growth was diffuse.

This growth is usually small and circumscribed. In the absence of metastasis it cannot be distinguished by palpation from chronic pancreatitis. When metastasis occurs in the liver, the original focus may be easily overlooked. The character of the cells may determine the origin of the growth. Columnar cells are said to indicate that the tumor springs from duct epithelium. Letulle, however, contends that carcinoma originating in the duct of Wirsung is composed of solid alveoli of spheroidal cells. Ollivier reports a case of spheroidal cells forming solid alveoli, which he believes arose from the duct. Hulst believes that the type described by Ollivier springs from glandular epithelium. The majority are the scirrhus variety. Very cellular types are occasionally found.

No definite connection has been established between the Islands of Langerhans and carcinoma. Tumors presenting very irregular arrangement of their cells, are said to spring from these structures. Ollivier is of the opinion that certain growths reported as primary in the pancreas arise from Brunner's glands in the duodenum. No relationship has been established between chronic pancreatitis and carcinoma. In twenty cases of primary carcinoma of the pancreas, Phillips has observed five instances of calculi in the gall bladder. He believes that gall stones predispose to cancer of the pancreas. Secondary growths in the liver are common.

The clinical picture varies according to the part of the gland involved. The head being the site of predilection, jaundice is common. Obstruction of the pancreatic flow may occur without biliary stasis, if the growth is situated in the body of the gland. Ascites and edema are the result of disturbances of portal circulation. Other neighboring organs, the stomach, duodenum and transverse colon may suffer from invasion and compression. Glycosuria is uncommon. When it occurs it indicates involvement of the Islands of Langerhans.

Methods of establishing anastomosis between the biliary system and the gastro-intestinal tract deserve attention. This has been performed between the gall bladder or the common duct and the stomach or intestine. The operation is indicated in properly chosen, otherwise irremediable cases of obstructive jaundice. Its field is limited. No less authorities than Brewer and Moynihan believe it unjustifiable for cancer of the common duct and pancreas. The latter has placed the mortality at 75 per cent., but this however has given way in recent years to a lessened death rate. Thus Jacobson writing in 1914 estimates the immediate mortality at 23 per cent. The late results in thirteen cases which recovered from operation, showed that life was prolonged in some instances for fourteen months.

Anastomosis between the gall bladder and stomach was first performed by Wikhoff and Angelberger in 1892. There is ample evidence to show that the presence of bile in the stomach causes no discomfort and is not injurious to gastric digestion. Kehr states he has preformed cholecystgastrostomy 62 times. Details are lacking.

As regards the operation of cholecystjejunostomy, Mocquot concluded after experimentation upon dogs that danger of infection of the gall-bladder was slight in those cases in which the anastomotic opening was small and exactly made. He found, however, bacteria in the liver, the gall bladder and ducts. Masse and Radviewski found no evidence of biliary infection in their experimental work on cholecystgastrostomy. Hubicki and Szerszinski found marked infection of the biliary system following cholecystenterostomy. These results were confirmed by Bozzi. In 1914 Wideman concluded that anastomosis between the gall bladder and the stomach was not followed by any immediate interference with gastric motility, though later this occurred to some extent. Wideman believed that digestive disturbances were greater when the gall bladder was anastomised to the intestine.

Mayo Robson's preference for anastomosis between the gall bladder and colon is untenable, for here bile is diverted into the terminal portion of the intestine, where it is least effective. Furthermore, there is greater danger of infection.

The palliative operation of choice is either

cholecystgastrostomy or cholecystduodenostomy. Danger of infection in cholecystduodenostomy, if performed close to the pylorus is no greater than when anastomosis with the stomach is performed. Perin gives perference to cholecystduodenostomy. Inability to approximate the parts without tension or other conditions may make one of the less desirable procedures necessary. In a case reported by Ferguson there was no gall bladder present, so he had to content himself with draining the hepatic duct. The following case forms the basis of my remarks:

Miss M. F., age 37, was seen in consultation with Dr. William J. Cruikshank, July 9, 1917, at which time she gave the following history: On January 2, 1917, the patient complained of heartburn, belching of gas and sour taste in mouth. This was followed a week later by severe epigastric pain, accompanied by vomiting for two days. Pain and vomiting then subsided and jaundice was first noticed. This deepened and has persisted without remission. The stools became clay colored, the urine dark and the skin extremely itching. The latter was the chief source of complaint when first seen. In December, preceding the above by one month, the patient was drowsy and tired easily.

At the age of eleven she had "scarlet fever."

Two years ago she had what was diagnosed as an attack of "grippe." The feet and abdomen became swollen and she was told that she had congested kidneys. This attack lasted five weeks.

Upon examination we found a deeply jaundiced, somewhat emaciated, woman, of medium frame. Skin and scleræ were a deep orange bronze. The abdomen was distended with free fluid. The liver was smooth and enlarged downwards three fingers' breadth below the right costal margin. The gall bladder was not palpable.

At the consultation we agreed that the patient was entitled to exploration in spite of her deep cholemic state and the apparent gloomy prognosis. The family accepted this and operation was undertaken only in the hope of affording palliative relief.

The patient was operated upon July 11. The abdomen was opened through an upper right rectus incision. Free bile stained fluid escaped. The liver was smooth and much enlarged, the gall bladder, the cystic, hepatic and common ducts tremendously dilated. There was a large dilated diverticulum springing from the left side of the fundus of the gall bladder resembling a bifid gall bladder. There was no visible or palpable evidence of malignancy in this viscus, the stomach, duodenum, the liver or the pelvic organs. The gall bladder contained no stones. It was not inflamed. There were no adhesions anywhere. The head of the pancreas was very much enlarged and of stony hardness. The gall bladder was drained.

No tissue was available for removal and microscopic study, hence even our operative diagnosis remained somewhat doubtful. Chronic pancreatitis could not be excluded. This disease, attended with painless, progressive jaundice, enlarged liver and distended gall bladder may mimic cancer very closely. We felt that if cholecystostomy after prolonged drainage of the biliary system resulted in the relief of jaundice, and bile was subsequently observed in the stool, we could be reasonably sure that chronic inflammation of the head of the pancreas had existed.

The patient reacted well, intense itching was relieved in a few days. Convalescence was without complication. The wound healed by primary union except for a small sinus. After six weeks of continued drainage the stools still remained acoholic. (We fed this patient her own bile, though it failed to color her stools). Jaundice subsided somewhat. We then proposed to drain the gall bladder into the intestine to conserve the secretion of the liver, and to eliminate the care of an external biliary fistula. The patient was especially anxious to have this closed. Accordingly on August 25, the scar of the previous operation was excised, the sinus was dissected out and firm adhesions broken up. The stomach, duodenum and other organs were again explored. The gall bladder, ducts and liver were found to be relieved of back pressure and were less dilated and enlarged. The head of the pancreas had not diminished in size. The opening previously made in the gall bladder was sutured and an anastomosis performed between the duodenum and gall bladder, approximation was easy and suture accomplished by means of two rows of chromic catgut.

The patient withstood this operation well. The absence of the slightest post-operative hemorrhage in spite of her intense icterus is worthy of note. There was a slight superficial wound infection. There was no bile leakage. Jaundice continued to diminish. The stools contained bile immediately after operation. The urine showed evidence of nephritis. There was no glucosuria at any time. The feet and ankles became swollen and a mitral murmur was detected at the apex of the heart. The wound granulated rather slowly. The edema of the feet and ankles soon disappeared, and the patient returned to her home. Emaciation and asthenia progressed and the patient died on November 9, 1917. The patient lived less than a year after the disease was manifest, about four months after drainage of the gall bladder and about two months after enterobiliary anastomosis. There is no doubt the last operation contributed greatly to the patient's comfort.

At autopsy we found very dense adhesions about the operative field, especially between the dome of the gall bladder and the anterior abdominal wall where the cholecystostomy had been closed. The liver showed a small secondary metastatic deposit on the surface of the left lobe. Sections at various points showed the same type of growth lying deep in the liver substance. The anastomotic opening between the duodenum and gall bladder was patent, the common, the hepatic and systic ducts were still dilated and about the size of a pencil. The gall bladder had contracted considerably. The head of the pancreas was much enlarged and of stony hardness; the body and tail to a less degree. The pancreatic ducts in the substance of the gland were very much dilated. The common duct was completely choked. The duodenum was somewhat dilated. The papilla of Vater appeared normal. It would not admit a fine probe. The stomach appeared normal except for enlarged glands in the greater and lesser curvatures. Sections were made from the liver, the head and tail of the pancreas and lymphatic glands of the greater curvature.

Dr. E. B. Smith, pathologist to the Methodist Hospital, has furnished the following pathological report: Sections from the head of the pancreas show a malignant neoplasm which may be termed adenocarcinoma in that there is a slight attempt at reproduction of the glandular stype of tissue. For the most part the growth consists of strands of poorly differentiated epithelial cells, minus a basement membrane and supported by loose connective tissue. In places there is an attempt at acinus formation, without basement membrane and usually without formation of a lumen. The individual cells are rather cubical, with large ovoid nuclei, poor in chromatin. Mitotic figures are not numerous. Sections from the tail of the pancreas fail to show carcinoma. Sections from the lpmph nodes and metastasis in liver show a diffused carcinoma.

Conclusion.—1. However certain the diagnosis of malignancy, cases of obstructive jaundice should be explored, especially in view of the mimicry of chronic pancreatitis.

2. Chronic pancreatitis may masquerade even on the operating table.

3. In otherwise irremediable lesions palliative methods of choice consist of some form of biliary anastomosis. Thus prompt relief from itching may be obtained, biliary secretion conserved and the patient's life prolonged.

4. Anastomosis between the gall bladder and stomach or gall bladder and duodenum, are the operations of choice. These may be easily and rapidly performed. They are anatomically and functionally rational and scientific.

280 Jefferson Avenue.

MESENTERIC LYMPHADENITIS.*

By ABRAHAM O. WILENSKY, M.D.

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THE differential diagnosis of conditions in the right iliac fossa is still based on precarious data inasmuch as the discrimination depends very largely upon accumulated personal experience, often biased by a knowledge of the relative frequency of occurrence of the individual lesions; up to the present time no method of precision has been developed which affords any aid in this direction. In acute cases the difficulties are much more marked.

Cases are constantly being met in which the lesion is centered in the lymph nodes of the mesentery in the general region of the ileocolic junction. The clinical picture of the illness is identical with that of other acute conditions in the lower right abdominal quadrant; these others are much more frequent than the adenopathies and with the purpose of attempting to differentiate and describe the latter this communication is made.

In some of the cases the pathological picture includes a uniform discrete enlargement of the mesenteric glands which, on microscopical examination, show a simple hyperplasia. Clinically the affection has an acute onset with chill, or chilliness, and fever ranging to 102° or 103° F.; with generalized abdominal symptoms rapidly localizing themselves in the right iliac fossa; and with moderate symptoms of intestinal disturbance. The clinical picture is very like that of an acute appendicitis, and in practically all of the cases which I have seen this error has been made in the diagnosis. The character of the physical findings is such as frequently accompany an advanced form of appendical inflammation, and the objective symptoms include distention, rigidity, and well marked tenderness at McBurney's point. All of the cases which I have seen have been operated on under this diagnosis. The notes of the following case illustrate this group:

CASE I.—A ten year old boy had been having abdominal symptoms for two days prior to his admission to the hospital. The illness began suddenly with generalized abdominal cramps, which had the tendency to radiate towards the right iliac fossa; in that locality the pain localized itself after several hours. A dose of castor oil resulted in numerous bowel evacuations but there was no blood, mucus, or other abnormal content in the stools. There was no vomiting at any time. After a while the pain seemed slightly relieved, but, shortly, it returned again with increased severity. There was some chilliness at the onset and at the time of admission to the hospital the temperature had risen to 102° F.

The boy's abdomen was moderately distended. There was some spasm to the right rectus muscle over its lower half but no real rigidity; and at McBurney's point there was moderately well marked tenderness to pressure. No mass was palpable. The physical examination of the rest of the boy's body showed no abnormal findings with the exception of an hypertrophied condition of both tonsils.

Under the diagnosis of an acute appendicitis the abdomen was immediately opened. The appendix showed no macroscopic change. The terminal ileum and caput and ascending colon were also normal. The lymph nodes in the mesentery draining this part of the alimentary canal were, however, enlarged and varied in size from one-fourth to three-fourths of an inch in their largest diameters. The glands were discrete, there was no periadenitis; and none of the glands showed any liquefaction. One of the glands was excised for microscopic examination and the appendix was removed in the usual manner; the abdominal wound was thereafter closed without any intra-abdominal drainage.

On the day after operation the temperature dropped to normal and the symptoms all disappeared. The subsequent convalescence was uneventful.

The interesting points about this case are centered in the clinical history and in the histological picture. The symptoms and signs are those which one finds with the ordinary forms of acute appendicitis. The lymphadenitis which is found is anatomically a simple hyperplasia. The interpretation of the picture is dubious unless one assumes that some infection had entered from the intestinal tract and had been arrested in the appropriate lymphnodes. Such an assumption is not unreasonable and to my mind seems most likely when all things are considered. Additional strength is added to this explanation from the very prompt improvement which followed the appendicectomy in the reported case. Whether or not, in the event the appendix had been allowed to remain undisturbed, any subsequent attack of appendicitis would have occurred is, of course, a matter for conjecture.

In others of the cases the process has evidently advanced further and more extensive pathological changes are found in the nodes; at the time of operation the glands are matted together into a large mass in the midst of which a focus of suppuration frequently is found. The tumefaction is very commonly palpable through the abdominal wall. Pathologically and bacteriologically this is the ordinary pyogenic process and no tubercle bacilli, or tubercle formation, or evidence of any other extraordinary etiological cause is demonstrable. The clinical picture is very similar to that of the cases in the first group, the difference, if any exist, being one of degree and intensity of the manifestations, rather than any other. Complications occur with this form of suppurative mesenteric lymphadenitis, and of these intestinal obstruction occurs most commonly. I have seen the more advanced form of mesenteric lymphadenitis somewhat more frequently than the simple form first described; the reason is, very probably, the relative benignity of the clinical course of many of the cases in the group previously described and the extreme probability of many of the latter subsiding fairly promptly and without medical assistance. All of the patients in both of these groups have been children and infants. Case II is a very good example of this type of case.

CASE II.—A young undernourished boy became ill and the clinical picture resembled very closely that of the first patient. The symptoms were more marked, however; the fever was higher, the patient looked sicker, and in addition to the local abdominal phenomena of spasm, tenderness, and distention, a mass was palpable in the lower abdomen partly in the right iliac fossa and partly extending across the median line to the left. The duration of the illness, which was several days longer than in the previous patient, prompted the assumption that the inflamed appendix was either wrapped in omentum, or was surrounded by an abscess. With this diagnosis the patient was operated upon.

On opening the abdomen the mass was seen to be buried in and under the mesentery and the loops of intestine surrounding it were everywhere non-adherent and distinct from one another. A rapid survey showed that these as well as the appendix were normal in every way. As a preliminary measure the appendix was removed. A further examination of the mass showed that it consisted of a number of lymph nodes

*From the Mount Sinai Hospital, New York.

which had become matted together and had broken down and the presence of pus was demonstrated when during the manipulations the abscess was ruptured into. It was not possible, nor did it seem advisable, to do anything more radical than institute proper drainage. Accordingly this was done and the abdominal wound was sutured with the exception of one angle through which the drainage emerged.

The postoperative course was rather stormy. The temperature persisted for several weeks before it came down to the normal level. The subsequent course of affairs was marked by an attack of acute intestinal obstruction which made its appearance before the abdominal wound had completely healed and for which operation was necessary. The obstruction was due to a broad adhesion in the neighborhood of the old wound and sinus which had produced the sharp angulation of the small intestine. Owing to the precarious condition of the child nothing radical could be done and one had to content one self with establishing a fecal fistula as close to the point of obstruction as possible.

The fecal fistula acted most efficiently in relieving the obstruction and fecal matter continued to discharge from the wound for a number of months. Finally the fistula had to be closed by operation during which the loop was freed from its attachments and the opening was closed and inverted in the usual way. This was followed by prompt healing and soon thereafter the patient was discharged from the hospital cured.

There was no evidence at the primary operation of any tuberculous infection and the observation was later confirmed at both of the secondary operations. The latter corroboration is of great importance inasmuch as if any tuberculous infection were present, it is more than probable that evidences of the latter would have been visible at one or both of the subsequent operations. There were no indications at any time of any tuberculous focus in any other part of the patient's body, especially in the lungs or in the cervical glands.

There can be no doubt that the relationships between the cases illustrated by both of the types described are very intimate; in fact they are surely but different stages of one and the same pyogenic process; but whereas in the first type the process is so benign that resolution occurs and spontaneous cure follows, in the second type the more virulent infection leads to a more advanced pathological process in which suppuration occurs and operation becomes necessary. The portal of entry for the infection is undoubtedly some part of the intestinal tract and it is not demonstrable nor susceptible to any form of preventive or other treatment.

I can remember a number of patients on whom I have operated for large intraperitoneal abscesses of unknown origin and etiology which were located in the lower right quadrant of the abdominal cavity; the primary lesion was not demonstrated at operation for the reason that the abscesses were enormously large and one felt that any undue exploration would endanger the patient's life by an exposure to the risks of a general peritonitis. Up to very recently I have always considered that these were probably appendicular in origin, but since my attention was attracted by my own experiences to these forms of mesenteric lymphadenitis, I have begun to wonder whether some of these abscesses did not have their origins in suppurating glands of the mesenteric space. It is quite probable that if the appendix was the cause for the suppurations, the length of time the abscesses had been present would have been more than enough to allow the appendix to slough completely away in at least a large percentage of the cases; this is the supposition which is generally held. And yet it seems very remarkable to me now why at least some of these did not develop some form of fecal fistula during the course of healing; for spontaneous closure of an appendix stump, or of an opening in the caput, is a very stubborn affair and one whose consummation would take many months during which, at some time or other, some indication of intestinal discharge ought to be visible. The great majority of these have, however, healed very quickly and the healing has been permanent.

The third variety of mesenteric inflammatory lymphadenopathy, which I have encountered, is, of course, the tuberculous infection of the nodes. Cases are included in which the lesion is microscopic and is limited to tubercle formation within the interior of the gland, as well as those with marked periadenitis and abscess formation. The clinical picture shows no demarcating phenomena from the pyogenic variety and in the acute cases the nature of the symptomatology deludes one into the belief that some entirely different lesion is present. It is well known that in children the mesenteric glands can form the primary focus for the infection and it is quite common to find these in the absence of other foci, especially those in the lungs or cervical glands. Tuberculous lesions in other parts of the abdominal cavity, in the intestines or in the peritoneum, are, more commonly than not, not present except when they occur secondarily and probably as a result of contamination during the course of operation. I have seen such a sequence of events when, after an appendicectomy had been done at the primary operation, the infection later apparently involved the appendix stump resulting in its opening and in the formation of a fecal fistula; thereafter the infection passed upwards to the caput and from thence onwards to the ascending colon or backwards to the ileum; usually the form of the resulting pathology is that of the hypertrophic variety of ileocecal tuberculosis and the lesion may be mostly in the mucous coat or limited to the peritoneum. Usually at the secondary operations, which almost always prove necessary, the lesion has not extended beyond the bounds of operability. The notes of the following case serve to illustrate this group:

CASE III.—This was a young girl of 16 years who, similarly to the previous patients, was admitted to the hospital with the diagnosis of acute appendicitis. The history was quite the orthodox one for such an illness and included an acute onset with generalized abdominal pain associated with vomiting and constipation, followed by a fairly rapid subsidence of the general symptoms concomitantly with the localization and intensification of the symptoms—pain, rigidity, and tenderness in the right iliac fossa. There was nothing in the family or previous history to cause one to suspect any unusual etiology; the patient had never been ill before. The general physical examination disclosed no abnormal findings and locally a small mass was palpable which was interpreted as being a much thickened appendix with or without a small accumulation of pus.

Operation was done immediately. On opening the abdomen, however, it was found that the small mass was a group of inflamed glands, buried in the mesentery near the ileocecal junction; these were matted together and contained a soft area; the appendix, although it lay very near, was not involved in the process. Nowhere else in the belly could any other lesion be demonstrated and in the immediate neighborhood there was no indication of a spread of the pathological process either from or to the intestinal tract. The appendix was removed. An attempt was also made to enucleate the glands; this was only partly successful and during

the manipulations the abscess was ruptured and a small quantity of yellowish pus discharged. A drain was inserted and the abdominal wound was partially closed.

A fecal fistula appeared in the second week; it was rather profuse and continued for more than four months in an unchanged condition. The sutured part of the abdominal wound having become infected during the operation, parted later and thereafter the healing proceeded slowly for a number of months until nothing was left but an extremely narrow fistula showing no tendency to close completely; exhausted patience prompted the secondary operation. The cause of the failure to heal as well as of the fecal fistula was known to us from the examination of the lymph node which had been excised at the primary operation.

At the secondary exploration the lesion was found to be of the hypertrophic variety and was located mostly in the caput and ascending colon and to a slight extent in the ileum. The sinus led down to a small opening in the bowel. The intestinal wall was thickened without, however, having any tubercles visible on its surface; but the general appearance of the gross pathology indicated the tuberculous nature of the infection, even if we had had no previous evidence in the microscopical examination of the lymph node. No other lesions being demonstrable in the adjoining coils of gut, the involved ileocecal junction was excised and the continuity of the gut was reestablished by a side-to-side suture anastomosis. The abdominal wound was closed entirely without any drainage having been instituted.

The convalescence was most uneventful and at the end of the second week the patient left the hospital cured.

In the excised specimen the bulk of the lesion lay on the mucosa side. Here there were a number of large and small ulcerations with overhanging edges and showing tendencies to assume vertical directions. There was no stenosis of the lumen even at the ileocecal valve.

These three cases illustrate lesions of lymph nodes which are not at all unusual and which are matters of daily occurrence when the glands are situated in other more accessible regions of the body. The affections are especially common in the lymph nodes of the neck and a lymphadenitis in that locality and of any of the varieties described—simple, suppurative, or tuberculous—calls for no special attention or remark. It has, however, seemed to be of importance to call attention to the fact that similar pathological lesions occur in the abdomen under conditions which bear exactly similar relationships to the alimentary canal that lypmhatic enlargements do in the neck; emphasis is laid upon the occurrence of the simple non-tuberculous forms of lymphadenitis.

Any part of the alimentary canal, the caput or parts of the colon or small intestine, may furnish the portal of entry; or possibly the infection may be transmitted through some pathological formation, such as a diverticulum; at the moment of operation these are usually not demonstrable. The point of entry is, perhaps, most commonly in the appendix. In any case it is probable that the lymphadenoid apparatus of the intestinal wall plays a rôle similar to that which the tonsils do in the cervical variety of lymphadenitis. In the non-tuberculous neck cases that do not go on to suppuration the process, clinically, shows a gradual deferescence; this is to be expected, inasmuch as the primary portal of entry of the infection is not disturbed and the infection is combated by the natural forces. In those of the abdominal variety which I have been privileged to treat all were subjected to operation and an appendicectomy was done; the prompt disappearance of the signs and symptoms which followed the operation may perhaps serve to indicate that the source of the infection was contained within the appendix; and the complete removal of the primary focus explains the difference in the clinical course as regards the more rapid defervescence.

1200 Madison Avenue.

IODOFORM POISONING.

INTOXICATION DUE TO ABSORPTION OF IODOFORM FROM GAUZE PACKING FOLLOWING MASTOID OPERATION; MENINGEAL TYPE OF MODERATE SEVERITY; RECOVERY AFTER PROTRACTED CONVALESENCE.

By MORRIS GROSSMAN, M.D., F.A.C.P.,

NEW YORK.

ADJUNCT VISITING NEUROLOGIST TO THE MOUNT SINAI HOSPITAL, AND TO THE MONTEFIORE HOME AND HOSPITAL.

The incidence of iodoform poisoning has greatly diminished in the past 15 years. On account of its free use previous to that time, many cases in the human subject were available for the study of its toxic action. E. G. Cutler,[1] collected 76 cases and added 2 which he had personally observed. The greater number of these cases (42) occurred in patients on whom the powder alone or crystals of iodoform were used. In 21 cases the powder and iodoform gauze were used in combination. Suppositories and bougies accounted for 7 of the cases. Four cases were due to the use of salve, vaseline, or emulsion, and 2 resulted from the use of pills internally. Thirty-five cases were connected with pathological processes involving bones. The mortality in this group was about 34 per cent. R. E. Gurlach[3] reported 4 cases in 3 of which a severe urticaria-like eruption occurred on the face and extremities. J. C. Josephson[3] reported a case in a 2-weeks-old baby, following the use of an iodoform salve on a circumcision wound. The toxic symptoms appeared in this case within 24 hours. L. D. Borse[4] reports a case of retrobulbar neuritis, resulting in permanent central scotoma, in a man whose burn was being treated with iodoform gauze. He quotes cases by Smith, De Schweinitz, Valude, and Terson, in which amblyopia had occurred after the use of iodoform.

In the mildest form of intoxication the symptoms are chiefly the taste and smell of iodoform; the patient has no desire for food, sleeps poorly, may be a little confused, and is easily excited. In a more severe type, there is complete loss of appetite and no food will be taken. The mental state is altered. The patient may be melancholic and despondent, emotional, excitable, restless, and sleepless. In the most severe type, the patient shows complete apathy, or may be delirious, and may have active hallucinations and delusions. There may be loss of consciousness deepening into coma. The pulse is rapid and the respirations are shallow and sighing.

The symptoms may be preceded by general malaise and then suddenly burst forth. In my case the reaction usually came on about 24 hours after the wound had been dressed. In the most characteristic type of cases the clinical picture closely resembles that of meningitis. The symptoms in the average severe case may summarize as follows: (1) Rise in temperature and pulse rate; (2) Men-

ingeal irritation with mental phenomena, such as irritability, hallucinations, delusions, delirium, stupor, and coma; (3) Marked pallor and emaciation; (4) Weakness and loss of tone in the muscles; (5) Hebetude and sleeplessness; (6) Anorexia, nausea, vomiting, brownish coating of the tongue, with iodoform odor to the breath; (7) A papular or erythematous eruption on the skin; (8) All the symptoms most striking at night.

The following is a report in detail of the case that I have observed:

C. P., æt. 13, Peruvian school girl.

Family History.—Father, mother, and 5 brothers are living and well. One brother died of tuberculosis of the spine. Otherwise negative. *Past History.*—Has lived in the United States 1 year. Since the age of 4 years, has suffered from repeated attacks of purulent otitis media. Measles at the age of 8 years. Many attacks of tonsillitis. Tonsils removed last winter and since then has not had any sore throat.

Present Illness.—About 7 weeks ago patient awoke one morning and found that there was a discharge from her left ear. She had not had any pain or other symptoms referring to her throat or ear previous to that morning. I referred her to Dr. M. J. Ballin who found that the left ear drum had ruptured spontaneously, and that there was a profuse mucopurulent discharge from the left ear. He treated her with irrigations of boric acid solution. The discharge continued, draining freely, but never became thick or markedly purulent. About 5 days later the patient developed pain along the anterior border of the sternomastoid muscle and also had pain when the external ear was touched. There was slight tenderness over the left mastoid bone. Her temperature varied between 99° and 101° (rectal). On the 20th day of her illness the temperature rose to 102.8° and considerable tenderness was elicited over the mastoid. The discharge remained unchanged in character and quantity. Consultation with Dr. F. Whiting resulted in continued conservative treatment. The temperature came down to its previous level and remained so for 10 days. Then, the temperature again rising to 103.6°, and the tenderness over the mastoid becoming more marked, immediate operation was advised by both Drs. Whiting and Ballin. That night the patient was removed to a hospital and operated upon for mastoid disease by Dr. Ballin. At operation the mastoid was found to be spongy, softened, and much congested. No abscess was found. The dura was not exposed. The wound was packed with a strip of iodoform gauze, and the patient was returned to bed in good condition. The next day the temperature rose to 104° and remained at that level for 2 days and then dropped by lysis to 100° where it remained for 3 days. Before the operation the medical and neurological examination was negative. The fundi, cranial nerves, superficial and deep reflexes were all present and normally active. There was no Kernig or Babinski present. The day following the operation a slight bilateral Kernig was noted. On the fifth day the wound was dressed. It was found to be clean, and only very slight discharge was present. Iodoform gauze was again used as packing. About 24 hours later the temperature gradually rose to 103°. There was no chill. The patient became restless and irritable. No focal symptoms were present. The bilateral Kernig became very much more marked. There was no rigidity of the neck. Frontal headache was present. The fundi were normal. The muscles were flabby and the tone was diminished. The deep reflexes at the knee and ankle became markedly diminished. The abdominal reflexes were undisturbed. The patient showed marked pallor and emaciation. The urine, which 3 days previous had been normal, showed a trace of albumen and a few hyaline casts. The blood count showed 4,000,000 red cells, 65 per cent. hemoglobin. No plasmodia were found. The Widal was negative. There were 17,500 white blood cells, 84 per cent. polymorphous and 16 per cent. lymphocytes. Her blood pressure was 80 systolic and 50 diastolic. The temperature remained 103° for about 24 hours and then gradually dropped to 100°. It never reached normal. The pallor became more marked and the patient became emaciated very rapidly. She refused to take any food, but took ice and water constantly. Three days later the wound was dressed again. The next morning the temperature rose to 105°. There was no chill. No focal signs of any kind were present, but the patient complained of pain in the neck on the left side. A blood culture was taken and it proved negative. The parents would not permit a lumbar puncture to be done. The urine showed a large amount of albumin, many hyaline, epithelial, and granular casts, a large number of white blood cells, and a few red blood cells. Neurological examination showed that the fundi and the cranial nerves were normal. No rigidity of the neck, but marked hyperesthesia along the spine. Marked hypotonia and weakness of the muscles of the upper and lower extremities. The abdominal reflexes were diminished, especially on the right side. There was almost complete absence of the knee jerks on both sides, and marked diminution of the ankle jerks on both sides. There was a marked bilateral Kernig present. No Babinski was elicited. The temperature came down by lysis in the next 24 hours, and remained at 100°. The next day the wound was again dressed with iodoform gauze, and once again the temperature rose to 103.6°, and remained so for about 24 hours. The urine and physical signs remained about the same, but the patient's general condition became progressively worse. Lumbar puncture was again refused. The blood count showed 16,000 white blood cells, with 84 per cent. polymorphous cells. The nephritis became more marked. The patient became very irritable, was unable to sleep, and would take only ice and water. She felt nauseated and vomited once. Similar reactions occurred after the next 2 dressings. The patient developed a very unstable mental state. She was sleepless, intensely irritable, and melancholic. She complained to the nurse that she was sure that her abdomen was to be opened in order to remove something, and that she would surely die if she were operated upon again. At times she would mutter to herself. She resented the slightest disturbance, and was on the verge of a maniacal outburst. Her urine output was much diminished, and showed evidence of an intense nephritis. Lumbar puncture was insisted upon and permission was granted. The spinal fluid was under normal pressure. It was clear, and there were no cells. Globulin content was normal. The Wassermann reaction was negative. I had suggested previously the possibility of iodoform intoxication, on account of the reactions after each dressing, but without lumbar puncture true meningitis and meningitis sympathica could not be ruled out with any degree of certainty. The iodoform was immediately replaced with plain gauze. Within 12 hours the temperature dropped from 103.8° to 100° and within 24 hours it was 98.6° by rectum. It has remained normal ever since. The patient became much brighter, less irritable, and more quiet. The Kernig had become less marked, and the knee jerks were obtained on reinforcement the next day. The reaction for iodine was positive in the sputum and remained so for 10 days after the last dressing. Slight reactions were obtained in the urine, but none could be detected in the spinal fluid. The nephritis gradually diminished and after the fifth day only a faint trace of albumin was present in the urine. The desire for food did not return for about 8 days. The nausea continued and the patient vomited for several days after the last dressing. The Kernig was still slightly present on the tenth day. The knee jerks were obtained without reinforcement on the fifth day, but are still subnormal on the tenth day. The abdominal reflexes were normally active on the fifth day. The muscle tone, pallor, and nutrition have greatly improved.

Summary of the Case.—In this patient, rigidity of the neck and cranial nerve palsies were the only features lacking. The Kernig sign appeared 24 hours after the first iodoform packing was introduced. There was still some evidence of it 14 days after the packing had been removed. There were associated with it frontal headache and a hyperesthesia so marked that the patient suffered

agonizing pains with the slightest movement of the body. Active delirium did not develop, but the patient at times was confused and bordering on the point of active hallucinations and delusions. These periods were followed by dullness, apathy, and marked irritability. High fever was present and the pulse rate was correspondingly increased. The tongue was dry and had a brownish coating. Striking pallor and emaciation were present early, and there was marked weakness with hypotonia of the muscles. The deep reflexes were diminished almost to the point of disappearance—the knee jerks more than the ankle jerks. The patient was nauseated and refused all food. Vomiting did not occur until 4 days after the removal of the gauze. A discrete papular eruption appeared.

Comment.—This case is unusually interesting and instructive. Iodoform poisoning from the small amount contained in a strip of 3 or 4 inches of gauze indicated an unusual susceptibility to the drug. Two possible channels of absorption may be considered: (1) From the wound directly; (2) by drainage through the Eustachian tube into the pharynx, and the poison then being swallowed into the stomach. The difficulties in diagnosis are obvious. The possibility of sinus thrombosis, meningitis, and brain abscess complicating operation upon the mastoid had to be carefully considered. Sinus thrombosis was ruled out by the irregular temperature, the absence of chills, the absence of local signs (dilatation of the superficial veins, edema of the eyelids, cyanosis, exophthalmus, and signs of extension into the jugular vein), and the negative blood culture. Brain abscess in the temporal lobe was excluded by the absence of any signs pointing to involvement of the left temporal lobe, as word deafness or sensory aphasia. The absence of any signs pointing to involvement of the pyramidal tracts or the cranial nerves. The normal fundi, the absence of intracranial pressure, and the absence of ataxia, nystagmus, rigidity of the neck, adiadochokinesis, and asynergy made a cerebellar abscess rather unlikely. Septic meningitis could not be ruled out until the spinal fluid was obtained. The normal spinal fluid immediately cleared up that suspicion. The prompt subsidence of the symptoms on the removal of the iodoform gauze, the characteristic protracted convalescence, and the presence of a positive reaction for iodoform in the sputum 12 days after the gauze had been removed point very strongly to the iodoform intoxication as the agent responsible for the symptoms in this case.

With the exception of hyperesthesia, no other sensory disturbances were present at any time. It is difficult to explain the complete absence of the knee jerks. The extreme hypotonia may in part be responsible. Souques,[5] has noted general absence of tendon reflexes in cases with wounds of the cranium involving the meninges. This, he believes, is due to mild infectious meningitis which passed unnoticed, and of which increase in pressure and albumen content in the spinal fluid were the only evidence. The marked Kernig in the presence of extreme hypotonia, is also an unusual phenomenon.

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Medicolegal Notes.

Manslaughter in Second Degree Through Culpably Negligent Treatment by Person Unlicensed to Practise.—On appeal from a conviction of manslaughter in the second degree it appeared that the defendant, who was not licensed to practise medicine, administered to the deceased, who was suffering from an attack of grippe bordering on incipient pneumonia, by laying on of hands and offering a prayer or incantations that the power be transferred from the deceased's body to that of the defendant, and also by giving him a brew or concoction made by parching and boiling hog hoofs, and by giving him shortly before death a headache or fever powder containing 3½ grains of acetanilide. The main contention urged by the defendant was that, in view of the fact that from 10 to 40 per cent. of patients suffering from the disease the deceased had when the defendant commenced treating him probably die, despite the very best of medical attention and nursing, it could only be surmised that the treatment administered possibly might have contributed to the deceased's death, and that the evidence of guilt only amounted to a suspicion, and the crime was not proved with that degree of certainty which authorizes a conviction in a criminal cause. The question in the case was held to be not whether the deceased would have lived had he received treatment according to the care and skill usual among good practitioners of any recognized and authorized school, but did the treatment given and applied by the defendant contribute to and result in the deceased's death, and was the defendant grossly ignorant of the manner in which such disease should be treated and culpably negligent of the patient in giving the treatment? There was evidence from which the jury was held authorized reasonably to conclude that the death resulted in the manner charged in the information. Under these circumstances the court refused to set the judgment aside because of insufficient evidence. A person assuming to treat disease is bound to know the nature of the remedies he prescribes and the treatment he adopts, and he is responsible criminally for death resulting to the patient from gross ignorance and culpable negligence in the selection of remedies and the application of the treatment.—Barrow v. State, Oklahoma Court of Appeals, 188 Pac. 351.

Industrial Board Has No Jurisdiction to Determine Physician's Fees Under Contract.—The Indiana Appellate Court holds that the State Workmen's Compensation Act of 1915, Section 65, providing that fees of physicians shall be subject to the approval of the Industrial Board, is not intended to enlarge the authority of the board with reference to the approval of physicians' fees beyond that provided in Section 25 in case of an emergency caused by the employer's failure to provide medical care, and the board has no jurisdiction to pass upon fees of a physician employed by the employer. An employer, generally speaking, may become liable for physician's fees in one of two ways, viz.: (1) By contract, either express or implied, made with the physician; (2) by a physician treating an injured employee when called on to do so under an emergency caused by the employer's failure to provide medical care, or for other good reason. In the first way the employer has an opportunity to protect himself against excessive charges by contract, and even to obtain such services at less than the prevailing charges by special arrangements, but in the latter way liability is imposed upon him by statute, under circumstances in which usually he could not protect himself against excessive charges. In view of this fact, and the well-recognized custom, among at least a portion of the medical profession, to base their charges for services in part on the ability of the one liable therefor to pay, the Legislature evidently intended to make the fees of physicians, where services were rendered in the way last named, subject to the approval of the Industrial Board as provided in said Section 25.—National Car Coupler Co. v. Sullivan, Indiana Appellate Court, 126 N. E. 494.

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THE RECRUDESCENCE OF SYMPTOMATOLOGY.

SOME time ago attention was directed to the renewing of interest in clinical research and the study of the patient according to the methods of the "old school" (MEDICAL RECORD, Feb. 28, 1920, pp. 362 and 368). Sir James Mackenzie, to whom, more than to anyone else, perhaps, may be attributed this reawakening of interest in symptomatology, *per se*, again emphasizes the importance of symptoms in medical practice and research (*Edinburgh Medical Journal*, September, 1920, p. 156), and calls attention to the mistaken attitude of the medical profession toward this subject. "Ever since medicine was seriously studied," he declares, "symptoms have received attention, and the notion is firmly held by medical men, specialists, physicians, surgeons, and experts of all kinds, that the symptoms revealed by the doctor's unaided senses are so well understood that the information gathered from them has been exhausted, and that their further study is not necessary to the progress of Medicine; hence has arisen the belief that for the progress of Clinical Medicine new methods are necessary for further elucidation of symptoms."

A frank analysis of the situation thus developed—coincidentally with the evolution of laboratory diagnostic methods—inevitably leads to agreement with this statement, with the conclusion that this mistaken attitude toward symptoms is not only misleading, but hampers both practice and research, and with the charge that the importance of symptoms is so imperfectly realized that an accurate description of the meaning, mechanism, and significance of symptoms is nowhere to be found, which constitutes a great defect in medical knowledge. If one has given little or no special thought to this defect it will come somewhat in the nature of a shock to be told that, putting aside trivial ailments, of the illnesses which lower the health of the great majority of people only a small percentage (5 to 10) are capable of being diagnosed with any degree of accuracy. A further shock will be experienced when this lack of accuracy in diagnosis is translated into terms of health of the community. Sir James has made this translation for us: "In a town of 100,000 inhabitants 25,000 will likely consult doctors in one year. Five thousand may suffer from trivial complaints and accidents. Of the 20,000, only a small proportion will suffer from diseases that are diagnosable, say 2,000. We have, then, in a population of 100,000, 18,000 people ailing, of the nature of whose complaints we are still profoundly ignorant." Comprehension of the significance of these figures, relative though they may be, convinces one that despite all the modern methods of diagnosis much yet remains to be accomplished in this direction.

If, as Sir James Mackenzie avers, most of the five to ten per cent. of cases of diagnosable illness are so advanced that the organs are damaged beyond repair, as in apoplexy, chronic Bright's disease, advanced heart disease, perhaps also consumption and gastric ulcer, while the origin of the ill-health was not detectable, then certainly a recrudescence of symptomatology—a close and intimate study of the patient from the point of view of the mechanism by which the symptoms are produced—is a consummation devoutly to be wished. With this painstaking and analytical study and interpretation of symptoms, with the additional light which may be thrown upon the problem by the various laboratory aids to diagnosis, the percentage of cases and of diseases in which accurate diagnosis at an earlier stage is possible should be raised far above the present scale.

CHANGES OF THE TESTICLE IN TRAUMATIC ORCHITIS.

SPEAKING in a general way, contusion of the testicle presents three degrees, namely, interstitial blood suffusions, hematoma of the testicle, and rupture of the albuginea with hernia of the seminiferous tubules. To effect the latter lesion a pressure of fifty kilograms is required. A certain degree of contusion of the scrotal integuments always exists but suppuration is rare.

Whether or not traumatic orchitis really exists is still a moot subject. Monod and Terrillon have shown that aseptic pricks or cuts of the testicle are followed by only an insignificant reaction, but contusions prove to be much more characteristic inflammatory phenomena, with interstitial edema, proliferation of minute connective tissue trabeculæ enclosing the lobules of glandular tissue, infiltration with leucocytes, dilatation of the vessels, progressive, followed by retrogressive atrophy with ultimate sclerosis of the seminiferous tubules. Some time ago Churchman reported a case of left traumatic orchitis in a young man upon whom he had performed castration, a year after the injury, for a very large varicocele and atrophy of the testicle, but the interest of the case resides in the pathological findings. The testicle was reduced to the size of a filbert but contained a few intact tubules, the majority of which had completely degenerated. The reciprocal independence of the lobules was consequently demonstrated.

Atrophy of the seminiferous tubules occurs quickly in all types of orchitis and a kind of equilibrium becomes established between the caliber of the blood-vessels and that of the seminiferous

tubules, which in the physiological state and at the time of coitus help in the propulsion of the seminal fluid toward the epididymis where the ducts provided with muscle fibres and vibratile cilia assure the further progress toward the urethra. The increase of the intratesticular pressure when exaggerated is made evident by a rather sharp sensitiveness of the gland upon the occasion of the slightest shock.

In the pathological conditions under consideration, the testicular congestion, instead of being temporary, becomes permanent during the entire duration of the inflammation and the resulting hypertension not only acts on the vessels but also on the nerves. It can readily be conceived that if the inflammation be intense and persistent the atrophy of the tubules must increase to such an extent as to become both total and permanent. At the time of the contusion of the testicle the blood escapes into the parenchyma following rupture of the blood-vessels, but cannot escape by a rupture of the albuginea and therefore acts like a mildly septic foreign body, setting up a congestive reaction which results in an increased tension. In these circumstances the spermatic canaliculi become more or less atrophied, according to the degree of the congestion, while the consistency of the testicle increases. The gland being rich in nerve supply, the latter must necessarily be submitted to the same amount of compression as the canaliculi, so that a contusion causes not only the peculiar immediate pain, but a very sharp pain which persists so long as the atrophy of the tubles or narrowing of the blood-vessels has not reduced the tension, or a slow distension of the albuginea has not produced the same result. The solidity of the albuginea, which often protects the testicle against external traumatic agents, with the help of the sliding action of the vaginalis, has in the case of inflammation the ill consequence of causing compression of the gland, and plays an important part in the pathogenesis of atrophy and neuralgia consecutive to orchitis.

Therefore, either atrophy or mere destruction of the seminal cells following trauma can be explained, whether the latter can alone be invoked or a former infection is in play.

EROTIC HALLUCINATIONS.

EROTIC hallucinations occupy an important place in mental disease. They may be extragenital, that is to say, arise through the intermediary of some foreign sense, such as the sight, hearing, smell, or taste; or they are genital in the true sense of the term and directly affect the organs of generation. Erotic hallucinations are frequently closely related to puberty, menstruation, or the menopause, as well as with seminal losses, sexual impotency, malformations, and affections of the genitalia. These are the predisposing causes. Among the most important adjuvant causes are the hypnagogic states of the first sleep and awakening, intensive brooding, etc. This form of hallucination offers an infinite variety of forms and causes divers sensations in the patient, varying from the slightest sensation of contact to voluptuousness or pain which may accompany normal or abnormal sexual acts, pregnancy, or parturition. Patients react variously in relation to these sensations, but all describe what they feel with a characteristic extravagance of detail. For this they employ picturesque expressions and strange neologisms. Some even go so far as to lose the consciousness of their personality and sex.

Erotic hallucinations do not occur with the same characters in the various mental disorders. In the neuroses, hysteria in particular, the hallucinations are quite as frequently extragenital as genital. The sense of sight is the most commonly affected, but it is rare when there is no participation of the other senses. The hallucination takes place in a state or oneirism or subconsciously either during the day or night. Frequently painful, they may be accompanied by voluptuousness and be related by the patient with a luxury of detail capable of imposing reality; they have often served as a starting-point for auto-accusation or slanderous denunciation. Finally, they have a peculiar tendency to extend by contagion. Although uncommon, erotic hallucinations may arise in obsessions. Sometimes, as in a jealous obsession, they occur as nocturnal visual hallucinations in the form of lascivious pictures, having for effect to create or reinforce a fixed idea; at others, the hallucination is diurnal constituted by a kind of material representation or objectivation of the fixed idea itself at the time of the paroxysms. This latter form is especially observed in obsessions of scrupulousness, or as if by a kind of contrast, the most obscene visions appear to the patient at the time of religious devotion. In the systematized insanities, erotic hallucinations are prone to affect all the senses. Those of the sight are less frequent of all and imply an hysteric or alcoholic basis. Those of smell, taste, and especially hearing, are more varied and frequent, and this is likewise true of genital hallucinations properly speaking, in which all possible sensations may be met with. The erotic hallucinations of the delirium of persecution—the type of systematized insanity — are essentially distressing and provoke on the patient's part the characteristic means of defense in the genital form.

Ordinary degenerates rarely have hallucinations, but the hypochondriacal degenerate is rather frequently subject to illusions relating to the genital organs. Among the toxic deliria, the alcoholic form offers erotic hallucinations, especially visual, colored, mobile, multiple, and relates more especially to ideas of jealousy. In the delirium of chloroform or that of hasheesh or from inanition—also a toxic delirium — visual, genital, or extragenital erotic hallucinations may occur and are usually oneiric.

SOURCES OF ERROR IN BLOOD SUGAR ESTIMATION.

THE Lewis-Benedict method for the estimation of glucose in the blood was the first of those methods devised by American investigators, which have made the chemical analysis of the blood a com-

paratively simple procedure and which have so enlarged our information of the body changes in the so-called diseases of metabolism. The method for blood sugar was applied at first chiefly to diabetics but it was soon found that high results were obtained in a number of apparently unrelated conditions. The method has been improved and many studies have been carried out in the attempt to discover the reason for some of these anomalous results. It has been shown that in cases of nephritis in which the blood creatinin is very high, the reading for glucose is increased above that to be expected and it is known that picric acid reacts with creatinin to form a color which may readily be confused with that of solium picramate, the color developed with glucose.

Recently Cowie and Parsons have gone much further in an attempt to find interfering substances (*Archives Int. Med.*, 1920, xxvi., 333). They find that exceedingly small amounts of epinephrin, acetone, or diacetic acid produce decided color changes with the picrate solution used in the sugar method, and suggest that one or more of these substances may be the cause of some of the questionable results obtained. Indeed their results would seem to indicate that the amount of acetone in normal blood may be sufficient to influence the readings as arrived at by this method. It is a fact that the results obtained by Benedict's revised method are somewhat higher than those by the methods of Bang or Folin and it is possible that these authors have discovered the explanation. The reaction with epinephrin also offers an attractive basis for speculation for in many patients who give a high blood sugar there is also present a high blood pressure and the temptation to associate this condition with an increase of epinephrin in the blood is almost irresistible. Unfortunately such patients give high blood sugars with all of the methods at our command and it is necessary to assume that epinephrin reacts similarly with the different reagents used.

It is to be hoped that the work of these authors will be carefully tested and extended, for if well founded it involves a radical rearrangement of our ideas as to the sugar content of the blood not only in diabetes, which is most important, but also in other conditions in which, if not so important for the treatment of the patient, it should contribute largely to a clearer understanding of his chemistry.

THE UNITY OF SCIENCE AND THE UNITY OF MATTER.

"LE TOUT EST UN." One of the most burning questions of today is that of the unity of science. Unfortunately, its study has so far accomplished little beyond the accumulation of data furnished by the experimental method. Most particularly, the atomic constitution of matter — the basis of chemical theory—is an hypothesis the exactitude of which nothing guarantees; it offers no certitude on the subject of phenomena produced, merely indicating those that are possible. Nevertheless, in itself the study of chemical reactions shows the immense utility of the atomic hypothesis. The same study—this hypothesis being admitted—permits profound penetration into the very interior of the chemical molecule. It furnishes extremely precious data on its constitution and on its possible isomers and their number, data which no other procedure has so far been able to obtain. This is an historical truth that is on the way to be forgotten or, at least, to be left aside. Had these data not been obtained the wonderful syntheses—the marvel of organic chemistry—would never have been realized.

To fathom the study of matter, however, the chemist has need of the natural philosopher, while the latter needs the help of the mathematician; and the converse is true. Not one of the sciences is completely independent of the others; all render mutual service, and the exclusion of one would render the other sterile. This shows the importance, both present and future, for the study of the unity of matter and the unity of science, of the great discovery made in 1896, by Henri Becquerel, of the radioactivity in "rare soils," itself a daughter of the memorable verification by Roentgen, in 1895, of a type of physical radiation capable of causing light to penetrate opaque bodies. From the light shed by the work of the Curies, Crookes, Lord Kelvin, Rutherford, Ramsay, and many others on radioactivity found successively in uranium, polonium, radium, thorium, etc., and the mensuration of the penetration and duration of this radioactivity, the scientific horizon has been greatly widened. Atomic disintegration has been revealed, and the successive transformations of metals resulting from the departure of their emanations tend not only to demonstrate the unity of matter, but also to reveal the common origin of energy—in other words, to explain the evolution of the world.

MODERN CARDIOLOGY.

IF Sir James Mackenzie in the conduct of the Institute for Clinical Research which he has established at St. Andrew's in Scotland for the purpose of teaching general practitioners how to detect early symptoms of disease, does no more than to point the way to the correct diagnosis of heart disorders and diseases, he will have deserved well of the medical profession. Perhaps there is no organ of the body concerning which so many gross mistakes are made in diagnosis by the ordinary practitioner as the heart, and while it may be allowed that it requires a considerable amount of training to be an even fairly good cardiologist it is obvious that a colossal amount of ignorance still exists in this direction. Mackenzie and Lewis, among others, have dissipated some of the mists of tradition which obscured the subject, but the light has not reached all the dark corners by any means. The work in this respect in the army disproved this fact, for as Dr. Mather Thomson in the *Dublin Journal of Medical Science* for September, 1920, points out, the casual and careless way men were marked V. D. H. in the British Army was nothing short of criminal. He states that at the time he was in charge of the heart wards of a hospital in Salonica, there was an order that any soldier with a cardiac lesion must be at once transferred to the heart hospital. And

the result was that a medical officer in his ordinary routine examination of a patient would find a murmur or some irregularity, would mark the man V. D. H. or it might be D. A. H., and transfer him. In a great many cases the man himself was not aware of his heart, but now his attention became focused on it, and he believed he had heart disease, and, given a chance, he soon developed breathlessness on exertion and cardiac pain. The majority of these men had sound hearts. In civil life the experience is similar and harm is done in many ways by the inability of the general practitioner, as a rule, to differentiate between organic disease and functional affection of the heart. Although it is perfectly true that instructive skill, the result of experience and judgment, will often solve heart problems, it must be borne in mind that many practitioners do not obtain the experience and that instinctive skill and judgment are innate qualities not possessed by all. But the investigations of workers in this region of medicine, notably, perhaps, Mackenzie and Lewis, and the invention of the electrocardiograph have solved many problems, and rendered the diagnosis of heart affections not only easier, but more certain and precise. The average man can now learn to differentiate between some forms of organic disease and functional disorders of the heart. But he must be taught how to do it.

Metastases of a Basal-Cell Epithelioma.

This highly unusual form of neoplasm is reported in the *Bulletin de la Société de Dermatologie et de Syphiligraphie* for May, 1920. Queyrat gives the autopsy finds and Darier and Civatte the microscopical. One primary growth was seated at the right nostril and subcutaneous nodules developed in a short time; while two months after the growth had been first noted, vague symptoms suggested involvement in the esophagus and mediastinum, and death from cachexia ended the patient's existence in less than three months from the onset of the primary nodule. A carcinosis involved the entire integument, made up of mobile subcutaneous nodules, most numerous on the trunk. The face was spared, aside from a nodule near the external canthus of the left eye. One nodule on the trunk ulcerated. The nose had nearly been destroyed by an exuberant ulcer. There was a carcinosis of the pleura with enlarged lymphnodes in the mediastinum, and the esophagus was as if involved in a primary carcinoma of great extent. So many other structures were the seat of nodules that it is hardly worth while to mention any further lesions. Darier and Civatte did the microscopic work and found that the secondary nodules in the skin showed a structure identical with that of an ordinary tubular basal-cell epithelioma which is primary in the skin—despite the often asserted claim that these cancers never metastasize anywhere. The spinocellular type with pearls may be excluded, as may also mixed forms. But so-called mitochondries were seen, and these are regularly absent from the basal-cell epithelioma. The esophageal growth was regarded as primary and the real source of the metastases, and was likewise of the basal-cell type. The case is unique in literature and no theory can be advanced to account for it.

Nervous Anorexia.

We have here a disease-picture which will waste the victim to the bone and perhaps destroy life; which may readily be confounded with half a dozen deadly organic diseases; yet which, under a correct etiological diagnosis, is readily curable. In the gastroenterological number of *La Médecine* (July, 1920, i, 10), Surmont of Lille sums up the condition as follows: It is common and is progressive in character and naturally makes of the subject a semi-invalid with ultimate confinement in bed. The emaciation may reach an extreme degree and may be attended by a senile appearance, as a result of the shrivelled skin. The breath is fetid and suggests acetonemia, the abdomen is flabby, and constipation exists. The syndrome is naturally that of inanition and need not be further discussed. At least six chronic organic maladies must be excluded before the diagnosis can be made. These are cancer of the stomach, cancer of the esophagus, progressive pernicious anemia, the so-called consumptive diabetes, adrenal insufficiency, and last but not least pulmonary consumption. These maladies having been definitely excluded and the diagnosis made of nervous anorexia it must be ascertained whether the motivation is hysterical, neurasthenic, emotional, or actual mental aberration. The hysterical subject, although she may develop the severest type of the disease, is often a simulator who feeds normally when unobserved. The emotional type due to sustained worry, as in the case of an unfortunate love or business adventure, and the psychotic type seen in melancholia and other psychoses may be passed over here. This leaves the neurasthenic type, which comprises gastric hyperesthesia, sitiophobia, and other conditions, and contrary to the general opinion the author would pay attention to the gastric chemism of these patients in the hope that it might lead to some indication for somatic treatment.

Codliver Oil in Tuberculosis.

Old-time medical men believed and preached that codliver oil was a cure for consumption, and this view was held for many years, in fact, until what may be termed the modern school of bacteriologists arose. Those of this school, who made a special study of the bacteriology of tuberculosis, treated with scorn the time-honored idea of codliver oil exerting a curative effect on tuberculosis. It was stated didactically and dogmatically that codliver oil was a food and nothing more and that all it did was to build up the body and to increase its resisting powers against disease. Anyone who argued to the contrary did not know what he was talking about. However, certain recent experiments appear to show that, after all, the doctors of years gone by were no so very far wrong. Dr. J. C. McWalter in a letter to the *Medical Press and Circular* of Sept. 8, points out that Sir Leonard Rogers and others experimenting on certain oils as regards their influence on cancer, have demonstrated that codliver oil has a specific effect on tubercle and on other acid-fast bacilli, like those of leprosy. But, granting that codliver oil can kill tubercle bacilli, McWalter asks whether it really does get at them in

their snug alveolar retreat. Other recent experiments, however, seem to prove this very point, at least, that oils, when taken by the stomach, find their way into the lung tissue and stimulate defensive cell formation there. In a letter to the same journal for Sept. 15, 1920, Dr. John Knott says that the administration of fat to tuberculosis subjects suggested itself to primitive reasoning, but the victim of that fell disease loathed fats, congenitally, and utterly failed to assimilate them physiologically. Saponification was shown to be an essential step in the digestion of adipose material and codliver oil was found to be the most easily saponifiable. Therefore, the therapeutic effects of codliver oil in the treatment of tuberculosis at the present time seem to be that it probably really has a specific action on the tubercle bacilli, that of course it has a food value, a flesh-forming and thus a fortifying effect, and lastly, that methods have now so diminished its nauseating features that it is amenable to the influence of the gastrointestinal fluids, *i. e.* that it can be digested by the tuberculous with fair facility.

Leanness and Emaciation.

Leanness is congenital, emaciation is acquired and due to some disease. According to Tartière's index the ideal weight of an adult expressed in kilograms should be equal to the decimals of height above the meter. Given the actual height and weight it is therefore easy to compute the degree of spareness or emaciation. Roux considers the two conditions jointly in an article which appears in the gastroenterological number of *La Médecine* (July, 1920, i, 10). In regard to leanness, "once lean always lean," although exceptions occur in which the lean man becomes stout in middle life. The author does not appear to be aware of Goldthwaite's teaching that leanness means an abnormally short intestine and the resulting inability to assimilate food reserves, but he quotes Gigou, who states that the congenitally thin man requires 4,000 daily food calories instead of the normal 3,000, and since he does not for one or another reason receive this number the status agrees practically with the doctrine of the short intestine, which by the way is based on actual measurements. The emaciated man in distinction from the merely lean one may rapidly take on weight when the causes of his malnutrition are removed. There need not be a definite disease to explain emaciation. Thus the plump child may at puberty become thin as a result of rapid growth and for several years or until equilibrium is reached he may present evidences of dilated stomach or visceroptosis. A form of endocrinic motivation is seen in hyperthyroidism. Emaciation from undernourishment may appear under a variety of clinical forms, and without special regard to cause these subjects may often recover their weight under rest in bed and forced feeding with butter, cereals, etc. Unless loss of weight is extreme, protein foods in excess are not indicated. Lack of exercise is antagonized by massage and a certain amount of voluntary exercise is compatible with the rest cure. When these cases of emaciation do not respond to treatment a toxic or psychic factor must be suspected.

News of the Week.

Russian Relief.—According to the annual report of the American Red Cross, fourteen million dollars have been expended by this organization in relief work in Russia. The work was carried on by commissions sent to Siberia, western Russia, southern Russia, and the Baltic States. The commissions operated sanitary trains with a total of 75 cars, equipped with 830 beds, with a capacity of 1,550 patients. Antityphus trains operated by the commissions traveled 10,000 miles, furnishing preventive baths to 105,000 persons, disinfection for 1,000,000, and issuing 500,000 clean garments. It is estimated that millions of men, women, and children were helped. In western Russia much of the work was directed toward aiding more than 250,000 allied soldiers held in prison camps, but food and clothing were supplied to thousands of civilians.

Hoover Food Drafts for Dresden.—An American Relief Administration warehouse is to be opened in Dresden, where Hoover food drafts will be honored.

Vienna Death Rate Increases.—The death rate of children under one year of age in Vienna has increased 40 per cent., according to American Red Cross statistics. The vital statistics for the first half of the year show a large excess of deaths over births.

Nobel Prize Awards.—Dr. Jules Bordet of Brussels has been awarded the Nobel Prize for medicine for 1919, and Prof. August Krough of Copenhagen the same prize for 1920. Dr. Bordet recently established the fact that the union of a toxin with an antitoxin was physical rather than chemical, the toxin's molecule, which is the smaller, being enveloped by the molecule of the antitoxin, which is the larger. He is also part discoverer of the Bordet-Gengon bacillus, a minute ovoid organism supposed to be pathogenic in whooping-cough, and of the Bordet-Gengon phenomenon, a test to determine whether or not serum contains amboceptors or intermediary bodies. Professor Krough is a well-known oceanographer, who proved that alkalinity in sea water is greatly increased by the admixture of land water—a proof confirmed by the experiments of Prof. E. Ruppin in his analysis of the water of the Baltic Sea.

Hospital Dedicated.—Beth Moses Hospital, Brooklyn, equipped with 165 beds, was recently completed, at an expenditure of $400,000, and formally dedicated.

Nurses Strike.—The entire staff of the student nurses at the Oswego (N. Y.) City Hospital went on strike October 29 because one of the nurses had been suspended for infringement of rules. An emergency staff was recruited, so that the patients did not suffer.

Location of Police Hospital.—The proposed five million dollar police hospital is to be located in Brooklyn, opposite the Fine Arts Museum, fronting 750 feet on Eastern Parkway, and extending along Underhill Avenue to Lincoln Place, with 750 feet on Lincoln Place.

Sale of Army Hospital Supplies.—The remaining surplus of bandages and absorbent cotton, purchased for the use of the Army during the war, has been sold to a Boston concern for more than $1,000,-

000. The bandages alone, it is said, represent a quantity sufficient to supply the hospitals and surgeons of the United States with all their needs for at least eighteen months. The Boston firm was the highest of a number of bidders for these items. Included in the sale were 1,000,000 dozen roller and between 2,000,000 and 2,500,000 compressed bandages, and approximately 2,250,000 one-ounce packages of absorbent cotton.

Anatomist Needed.—The United States Civil Service Commission announces an examination for anatomist, to fill, among others, a vacancy in the office of the Surgeon General, Army Medical Museum, Washington, D. C., at $1,600 a year, plus increase granted by Congress of $20.00 a month. Applicants should apply for Form 1312 to the Civil Service Commission, Washington, D. C., or to the Secretary of the local United States Civil Service Board. Receipt of applications closes December 7.

Diseases Under Investigation by the Rockefeller Institute.—The Rockefeller Institute for Medical Research announces that the following conditions will be the subject of special study in this hospital during the coming winter; patients suffering from these diseases will be admitted to the extent of the hospital facilities: Acute lobar pneumonia and other acute pulmonary infections; measles; acute rheumatic fever; cardiac disease; nephritis. Physicians may communicate with the hospital by telephone (Rhinelander 900) or by personal application to the resident physician. An ambulance will be sent promptly when required.

Railroad Accidents.—The Interstate Commerce Commission has issued a statement to the effect that fewer persons were killed on railroads in 1919 than in any year since 1898, and fewer were injured than in any year since 1910. In 1919 a total of 6,978 persons were killed and 149,053 injured, compared with 6,859 killed in 1898, and 119,507 injured in 1910. During 1919, of those killed, 273 were passengers and 2,138 were employees; of those injured 7,456 were passengers and 131,018 were employees.

Alvarenga Prize.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about $250, will be made on July 14, 1921, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published. They must be typewritten, and if written in a language other than English should be accompanied by an English translation, and must be received by the secretary of the college on or before May 1, 1921. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the college; other essays will be returned upon application within three months after the award. Address John H. Girvin, M.D., Secretary, 19 South Twenty-second Street, Philadelphia, Pa.

The Philadelphia Medical Club tendered a reception on October 15 to Sir Auckland Geddes, British Ambassador and Minister Plenipotentiary.

Dr. Albert P. Francine of Philadelphia has been appointed Chief of Tuberculosis Dispensaries in the Pennsylvania State Board of Health.

Charitable Bequests.—By the will of the late R. Dale Benson of Philadelphia the sum of $5,000 is bequeathed to the Pennsylvania Hospital and a like amount to the Presbyterian Hospital. By the will of the late Ellen A. Yewdall of Philadelphia the sum of $5,000 is bequeathed to the Methodist Hospital.

Medical Society Elections.—The AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY, at its twenty-fifth annual meeting held at Kansas City, Oct. 15, 1920, elected the following officers for the ensuing year: *President*, Dr. Emil Mayer, New York; *First Vice-President*, Dr. John R. Newcomb, Indianapolis, Ind.; *Second Vice-President*, Dr. Robert Ridpath, Philadelphia; *Third Vice-President*, Dr. W. C. Finnoff, Denver, Colo.; *Treasurer*, Dr. Secord H. Lodge, Cleveland, Ohio; *Secretary*, Dr. Luther C. Peter, Philadelphia; *Editor of Transactions*, Dr. Clarence Loeb, Chicago. The next meeting will be held in Philadelphia.

THE FIRST DISTRICT BRANCH OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK, at its annual meeting held in Poughkeepsie, N. Y., elected the following officers for the ensuing two years: *President*, Dr. George A. Leitner, Piermont; *First Vice-President*, Dr. Edward C. Rushmore, Tuxedo; *Second Vice-President*, Dr. John A. Card, Poughkeepsie; *Treasurer*, Dr. J. T. Howell, Newburgh; *Secretary*, Charles Ellery Denison, New York.

Obituary Notes.—Dr. PERCY H. EALER died at Philadelphia on October 17 at the age of forty-two years. He was graduated from Hahnemann Medical College of Philadelphia in the class of 1890.

Dr. EDWIN CORLIES BULLOCK died at Upland, Pa., on October 18 at the age of thirty-seven years. He was graduated from Jefferson Medical College in the class of 1906.

Dr. CHARLES H. GARDNER died of pneumonia at Philadelphia on October 19 at the age of eighty-two years. He was graduated from Bellevue Hospital Medical College in the class of 1868. He served during the Civil War as assistant surgeon to the First Pennsylvania Cavalry.

Dr. CHARLES H. HORNING died of heart disease at Norristown, Pa., on October 21 at the age of fifty-eight years. He was graduated from Hahnemann Medical College of Philadelphia in the class of 1881.

Dr. CHARLES S. KINNEY of Easton, Pa., died October 26 at the age of sixty-six. He was graduated from New York Homeopathic Medical College and Flower Hospital in 1879, specializing in psychiatry. He was a fellow of the American Medico-Psychological Association.

Dr. MAURICE L. RADIN of New York City, his wife and seven-year-old son were found dead in their home on October 28, the result of asphyxiation by the fumes from a broken gas heater. Dr. Radin was forty-nine years of age. He was graduated from the University of Kharkof, Russia, in 1897, specializing in neurology. He was a fellow of the American Medical Association, and of state and local bodies.

Correspondence.

OUR LONDON LETTER

(From Our Own Correspondent)

LONDON, October 8, 1920.

Fever in London.—There has been a sharp increase in the number of fever cases in London. The most recent returns of infectious disease by the Metropolitan Asylums Board and the London Fever Hospital show increases in the number of cases of enteric fever, and diphtheria. There were 16 cases of enteric fever, 2,953 of scarlet fever, and 1,591 of diphtheria in hospital on September 18 last. Officials of the Metropolitan Asylums Board point out that the fever curve always rises about this time of the year, and that while the number of cases at present is higher than in the corresponding period of last year, and considerably higher than during the war years, it is not excessive when compared with the pre-war years. According to the latest available figures there are in the Board's hospitals, 4,935 fever cases, including 3,060 of scarlet fever, and 1,640 of diphtheria. The highest figure of last year was 5,018 on a date in December. It was stated at the Ministry of Health that the upward movement usually reaches its limit late in November, and that this year the rise had occurred more rapidly than last year, but there was no evidence that the epidemic was abnormal. Difficulty is being experienced in the hospitals owing to the great dearth of trained nurses.

America and Postgraduate Medical Study in London.—On several occasions in these letters I have referred to the facilities for postgraduate medical training in London and have pointed out that the Fellowship of Medicine and the allied Post Graduate Association have been making great efforts to establish in London a great medical center, in fact, to make of London the great European medical center. So far as Americans are concerned London is peculiarly well adapted for such a position. She possesses almost unrivalled clinical material, a large number of big general and special hospitals, plenty of physicians and surgeons admirably qualified to teach and a common language. To come to details it may be said that a Fellowship ticket costing four guineas a month entitles the holder to attend the clinical practice, including practical demonstrations and laboratory work at twelve great London hospitals and at twenty-five special hospitals in and near London. *The Fellowship Weekly Bulletin* shows where these demonstrations and classes take place and by whom given. But although London has now the opportunity to step in and take the place fomerly held by Berlin and Vienna as a great medical center, she will not be allowed to do so without a struggle. Already, it is reported here, a committee in Chicago have circularized the physicians of the Middle West, stating that they had organized an excursion for physicians to go to Vienna for study as before the war American physicians were accustomed to go. The committee gave assurances that they had prepared the way for the reception of these physicians in Vienna and that the old-time facilities would be offered. Indeed, every inducement possible was given to persuade American physicians to proceed to Vienna for postgraduate work. The belief seemed to be prevalent that the British Medical faculty do not welcome American students with too great cordiality and that the opportunities for study do not compare favorably with those enjoyed formerly in Vienna and Berlin. It must be borne in mind that the British are not an effusive people and the medical men of London may be and doubtless are more reserved than those of Europe in General and of Vienna in particular. At the same time, their reception of American medical students is warm and genuine and the efforts of the Fellowship of Medicine and Post-Graduate Association for the comfort and instruction of such visitors have been persistent and strenuous. As for the complaint that, while the clinical advantages of London are obvious, the arrangements for gathering knowledge are inferior to those which prevailed in Berlin and Vienna, the answer may be made that the system employed is not inferior but different. The courses in Vienna for postgraduate study are arranged with the convenience of graduate students as the sole end and aim. Human material is not regarded in the same way as in Great Britain. In Vienna the patient is looked upon more as a means by which the student can learn something concerning his or her particular condition and most other points are neglected. In London the student is instructed in the every-day routine of the hospital and he sees and studies patients as he would see and study them in the usual course of events. Postgraduate teaching in Great Britain and in London is developing rapidly and along lines appropriate to the present trend of medicine. For instance, Sir James Mackenzie is giving postgraduate courses at St. Andrew's with the object of teaching general practitioners how to detect the early symptoms of disease and, when diagnosed, how to treat them so that they are prevented from proceeding further. More organization and perhaps greater energy is required in London and in Great Britain to bring postgraduate schemes to full fruition, but this is not to say that these schemes will not be successful, and that the American medical practitioner will not be able to learn much in pleasant and congenial surroundings in London and in other large cities of Great Britain.

Consumptive Ex-Service Men.—The Minister of Pensions has considered the recommendations of the Inter-Departmental Committee on Tuberculosis Sanatoriums for Soldiers and Sailors. As a result, he has decided that men suffering from pulmonary tuberculosis, which is admitted to be attributable to or aggravated by service, and who on conclusion of treatment in a sanatorium, undergo a prescribed course of extended treatment, combined with training in a training colony, shall be granted pension at the 100 per cent rate for six months from the date of leaving the colony, and thereafter at the rate corresponding to the degree of disablement but not less than 50 per cent. throughout the subsequent period of two years. The award will be subject to the condition

that the pensioner presents himself when required in order that the Ministry may be advised as to his condition from time to time and as to the need for further treatment. The arrangement will apply also to the pensioner who is not recommended for a further course in a training colony, the 100 per cent. pension in his case commencing as from the date of his discharge from the sanatorium.

Chair of Industrial Medicine at St. Mary's Hospital, London.—Mention has been made already of the proposal to establish a chair of industrial medicine at St. Mary's Hospital, London. Considerable progress has been made towards the consummation of this idea. Many important representatives of business and medicine have formed themselves into a committee for this purpose. *The Times* has interested itself greatly in the matter and has supported the movement ever since the studies carried out on the health of munition workers revealed the great urgency of a scientific examination and organization of labor power. Industrial medicine is not only the most important branch of preventive medicine but may also be termed the new political economy. Properly carried out it should protect industry from fatigue, either proceeding from long hours of labor or monotonous work, accidents, and disease, by which the worker is deprived of his health, the employer of his output, and the State of its strength. It is almost superfluous to point out that the loss due to these causes is both absolute and progressive: as it is obvious that the man or woman who is mentally and physically wearied cannot produce to his or her full capacity, but is also peculiarly prone to disease or liable to cause an accident. In America there has been a much more prompt appreciation of the value of placing industrial medicine on a scientific and practical basis from the health and economic standpoints, for after all they mean the same thing. It is of the utmost concern to labor and capital alike, that the worker should be healthy and contented, and it is quite plain that if he is not healthy in body and mind he will not be contented. Moreover, the discontented workman is the main cause of the social unrest which is disturbing the world from one end to the other. In America there are six professorships of industrial medicine, and needless to state, these have an educational value with which the training of the medical man cannot compare. It is hoped that the appeal of St. Mary's Hospital will meet with a ready and generous response, and that the establishment of such a chair will act as an incentive to British business and medical men to found departments of this kind in hospitals in all parts of the country. It may be added that the authorities of the above medical school have issued recently a booklet in which the pressing needs of the school and the reasons for making the appeal are set out in logical sequence. The importance of medical education to the country, and the increased cost of modern requirements as regards teachers, accommodation, nursing, laboratories, and equipment are explained in language easily understandable by the outside public, for whom the little book is primarily intended. It is pointed out that while the need for rebuilding the school is urgent, it can be accomplished at a not extravagant cost. It is estimated that with great economy and the use of the existing walls, the expenditure on reconstruction should not exceed £30,000. However, this estimate does not include a block for the pathological institute where the director, Sir Almroth Wright, and his staff still work in laboratories adapted from wards originally intended for midwifery beds. It is proposed to supply more adequate accommodation for the institute and to release these wards, in order that they may be used for their original purpose. It is not out of place to say here, that England has starved her scientific medical research and is only now beginning to recognize her shortsightedness in this respect. Where millions have been given freely for this object in America, thousands have been doled out in this country, and it certainly is a reflection on its rich men that a man of world-wide fame in his particular field as is Sir Almroth Wright should be hampered in the prosecution of his investigations by the lack of money. This is indeed being "penny wise and pound foolish." The erection of a suitable pathological institute at St. Mary's Hospital is estimated to cost £40,000 ($200,000). The rest consists in the endowment of chairs, 1, Industrial Medicine; 2, Hygiene, Public Health and Preventive Medicine, and 3, Pharmacology; and of four scholarships of £250 each a year for promising graduates. The appeal is addressed especially to the heads of great industries and to those interested in medical education in general and in the co-education of men and women, as the continuance of this system at St. Mary's is dependent on the provision of increased accommodation. Mrs. Lloyd George, the wife of the Premier, is taking an active part in furthering the object of the appeal and is receiving donations for the same at the official residence in Downing street.

Medical Men and Miners.—The Central Council for Economic Information states that medical men in the Nottingham and Derbyshire mining areas have given notice terminating their contract with the miners' sick clubs, following on the refusal of their proposals for an annual payment of twenty-six shillings per member a year. Dr. Alfred Cox, Secretary of the British Medical Association, in discussing the question recently, said that "the miner insists on the justice of every worker getting the full value for his work and demands that his own wages should rise almost continuously with the cost of living. It is certainly remarkable that he should show such reluctance to applying the same principle when he has to do the paying." It is certainly extraordinary that although the wages of the working men have risen threefold and even fourfold, they object to giving a fair rate of payment for medical attendance. If they subscribed to the hospitals in proportion to the benefits which they have received and do receive from them, these would be able to continue on a voluntary basis and expend the necessary money in rebuilding and reconstruction. But the workman appears to think that he should receive all and give nothing or as little as possible. The middle class, of which the medi-

cal profession is an essential part, has practically to support the State.

Obituary.—Sir John Byers, M.D., professor of midwifery, gynecology, and diseases of children, Queen's University of Belfast, died suddenly in his sixty-seventh year in Belfast on September 20, last. John William Byers was born in Shanghai in 1853, the son of a China missionary and of Margaret Byers, née Morrow, one of a group of famous women educationists who founded the Victoria College at Belfast. He graduated at Queen's College, Belfast, with the highest honors in 1878 and not long after he commenced to practise in Belfast was appointed physician to the Hospital for Sick Children, holding that position until 1893, when he was appointed professor of midwifery in Queen's College, a post which he held for 16 years. He had also become examiner in obstetric medicine at the Royal University of Ireland. In 1909 he was appointed to the chair of midwifery, gynecology, and diseases of children at Queen's University, which he occupied at the time of his death. Sir John Byers was one of the first to recognize and inculcate the importance of antenatal supervision of motherhood in order to avoid the causes leading to stillbirth or death in the early months of independent existence. He also firmly believed that maternal care was an essential factor in the welfare of the child and was always averse to institutional care as a substitute for home life.

LETTER FROM BELGIUM.

(From Our Own Correspondent.)

LIEGE, October 1, 1920.

The Epidemic of Cattle Plague which broke out in Belgium about the beginning of August seems finally to be on the wane, a result due to the energetic prophylactic measures instituted by the government. The special antipest serum is still being produced. Its preparation requires a considerable time, and moreover in order to produce it we must obtain blood serum from a cured animal which is to be injected into other animals, and animals cured of the cattle plague are in the minority, for at least 98 per cent of the animals attacked succumb. The following are the measures taken by the government in fighting the epidemic: Absolute prohibition of the transport of any animal whatever by railway or otherwise, the herds being strictly immobilized wherever they happened to be at the time; every barn which sheltered or had sheltered a sick or suspect animal was evacuated and disinfected, the animals being destroyed and buried deeply. Severe penalties were imposed on farmers who tried to evade these regulations or were simply negligent in carrying them out. Up to the present time Draconian measures have succeeded in localizing the plague which has not passed beyond the Belgian frontier. France and Belgium took action in common in their scientific warfare against this terrible evil. Dr. Roux, director of the Pasteur Institute of Paris, recently came to Brussels to get in touch with the Belgian scientists and veterinarians in dealing with the epidemic. The antipest serum, which will be furnished by fifty animals now in course of immunization, will be supplied to Belgium and the adjoining departments of France.

International Institute of Anthropology.—During the month of September, 1921, there will be held at Liège the first meeting of the new International Institute of Anthropology. This institute was officially established at Paris on September 14 of this year, at a congress called together by the School of Anthropology of that city. The scientists of the allied nations had been notified on Nov. 5, 1918, to prepare for this new international organization now established. Mr. Fraipont, who conducts the course of anthropology at the University of Liège, was the official representative of the Belgian government at this congress.

Nature and Treatment of Seasickness.—M. P. Nolf, professor of pathology at the University of Liège, delivered a very interesting lecture on this subject before the Royal Academy of Medicine on July 31. According to him seasickness is a vestibular vertigo, but in distinction from many of the forms of vertigo, it is characterized less by a subjective impression of disequilibrium than by various visceral reactions, such as salivation, sweating, nausea, and vomiting. These reactions are the expression of hypertonic condition of the bulbar autonomic nervous system, caused by the vestibular disturbance. By way of treatment, Professor Nolf seeks to diminish the efforts of this hypertonia by the administration of atropine sulphate, and reports very satisfactory results.

Progress of Medical Science.

Boston Medical and Surgical Journal.

October 21, 1920, clxxxiii, 17.

1. Some Observations on the Trend of Modern Pediatric Teaching. Lewis Webb Hill.
2. Acute Respiratory Infections at the Boston City Hospital. Edwin A. Locke, Henry M. Thomas, Jr., and Dwight O'Hara.
3. Intracistern Injections of Salvarsanized Serum in Neuro-Syphilis. Henry McCusker.
4. Orchitis in Mumps. (*To be continued.*) Conrad Wesselhoeft.

3. Intracistern Incision of Salvarsanized Serum in Neuro-Syphilis.—Henry McCusker, after trying various other methods, resorted to cistern puncture with replacement of the fluid by diarsenolized serum. He presents the history of a case, by way of preliminary report, in which the patient suffered no ill after effects. Cadaveric and living experimentations have shown that a needle inserted to a depth of 4 to 5 cm. would enter the cistern and allow over 1 cm. clearage of the medulla. The cistern puncture, he concludes, offers another route of application in the method of therapy in syphilis of the central nervous system. It gets the serum nearer to the seat of the disease, it is easier to accomplish than a spinal tap, and it offers no more danger than rachicentesis.

New York Medical Journal.

October 23, 1920, cxii, 17.

1. National Health Problems. Hugh S. Cumming.
2. Hemorrhoidectomy. E. Jay Clemons.
3. The Futility of Examining the Filtrate for the Presence of Occult Blood in the Gastric Contents. Anthony A. Rutz.
4. The Diagnosis of Chronic Conditions by the Spinal Reflex System. Albert C. Geyser.
5. Heredity. L. Donald McEvoy.
6. Eugen Steinach's Work on Rejuvenation. A. Granet.
7. Gunshot Injuries of the Chest in Civil Practice. George P. Müller.
8. Filing Conveniences Suitable for Physicians. J. Madison Taylor.
9. Intestinal Symptoms in Malaria. Charles Greene Cumston.

4. The Diagnosis of Chronic Conditions by the Spinal Reflex System.—Albert C. Geyser, after reviewing some

of the anatomical and physiological facts involved, and discussing the necessary apparatus (high tension faradic coil with not less than five thousand feet in the secondary winding), described the technique of making the diagnosis. The patient is placed in the horizontal posture upon the examination chair or couch; the spine is uppermost and bared. A large felt electrode, not less than 6 by 8 inches square, properly moistened, is placed just above the umbilicus so as to cover the abdominal brain or solar plexus. This pad is attached to the positive end of the coil, while the negative end is attached to an ordinary sponge hand electrode, not over 2 inches square. This examining electrode should be fitted with an interrupting device. The current is turned on from the full length of the winding to about one-half of its possible strength, and the sponge is brought in contact with the cervical region of the patient. The interrupting device is released and the current flows. The patient is now consulted as to the feeling of the current, which must be in no wise disagreeable. The electrode is gently moved up and down the entire length of the spine six or eight times, with moderate pressure. The patient should now tell the examiner if the current is felt more in one spot than in another. If it is not felt anywhere in particular or everywhere alike, the current is increased and the procedure repeated. If the patient shows by wincing that there are some tender spots, these are marked with indelible pencil. The current is stopped, and bright red areas, from the size of a twenty-five cent piece to the size of the palm of the hand appear just where the patient complained of feeling the current. These spots stand out in bold relief upon an otherwise white background. Immediately underneath this red area are located spinal centers which, perhaps, have been for a long time laboring under great stress from the impulses sent there from some abnormal organ. When this hypersensitive area is irritated with the proper kind of current, it responds by an increase in the local blood supply long before the rest of the skin along the spine is even aware of the presence of the irritant. By looking at one's chart, one finds which particular part of the body or which organ is associated with the responsive center, and so one may locate the abnormal or diseased organ which is responsible for the hypersensitiveness of the sympathetic area just tested. Once having located the organ or region, it is not very difficult, by a process of exclusion, to arrive at the correct diagnosis.

7. Gunshot Injuries of the Chest in Civil Practice.—George P. Müller holds that the great majority of chest wounds encountered in civil practice are stab wounds, or gunshot injuries with or without retained missiles, and sometimes with complicating injuries of the heart, mediastinum, diaphragm, or the abdominal organs, particularly the stomach, colon, spleen, or liver. The problem presented is whether to operate in all cases of stab or gunshot wounds of the chest, or whether to wait for the complications of hemorrhage, pneumothorax, or infection to ensue. If it were not for the occurrence of infection one might say that early operation is indicated when there is a rapidly increasing pneumothorax (from a valvelike opening); when the rib has been splintered by the bullet, and the fragments press on the pleura, or have been driven inward; or when the hemothorax is large and seems to be increasing. Late operation is indicated at any time when the pleural cavity appears to be infected, or after six or seven days, when the patient's condition is excellent and he has been well studied, to remove clot or missile. The crux of the situation, however, hinges on the matter of infection. If one waits until the patient is in excellent condition to stand the operation one may lose the opportunity to so cleanse the pleural cavity that aseptic conditions can be established. If one operates immediately in all cases one will lose many patients from shock, and the mortality of the total will rise. Shock must be met first. After discussing various points in the management of these cases the writer warns that while surgery of the chest is well on its way to further development and improvement the tyro must keep his hands off until he has studied the work of the masters of the past and has digested the lessons of the war. While Duval's famous dictum, "the surgery of gunshot wounds of the lungs must be governed by the principles of surgery as applied to any other gunshot wounds," requires a number of exceptions, it is true in the main, and should lead to the point where the chest can be opened as safely as one now opens the abdominal cavity.

Journal of the American Medical Association.

October 23, 1920, lxxv, 17.

1. Hints for Diagnosis of Gall-bladder and Biliary Passages. Lewellys F. Barker.
2. Trachoma: A Public Health Problem of the States. John McMullen.
3. The Differential Diagnosis of Conjunctival Folliculosis and Trachoma. J. W. Jervey.
4. Synthetic Drugs—III: The Digestion of the Tannin Compounds Used as Intestinal Astringents by Artificial Digestive Mixtures. Paul Nicholas Leech.
5. Methods of Cultivating the Gonococcus and of Testing Germicidal Agents Against It: Preliminary Note. Ernest O. Swartz and David M. Davis.
6. Symptomatology of Spinal Cord Tumors. Isadore Abrahamson and Hyman Climenko.
7. Ipecac Sensitization and Bronchial Asthma: Report of Case. M. Murray Peshkin.
8. Lessons Taught by Measures for Control of Venereal Diseases: Suggestions for the Future. C. C. Pierce and H. F. White.

5. Methods of Cultivating the Gonococcus and of Testing Germicidal Agents Against It: Preliminary Note.—Swartz and Davis describe the technique as finally evolved. Using this standard method, they tested a large series of drugs in the treatment of gonorrhea, as well as a number of new substances of the mercurochrome series developed in the laboratory of the James Buchanan Brady Urological Institute, Johns Hopkins Hospital, and others not hitherto used in urologic practice. Their results show that some of these new mercurochrome drugs are more effective than any others yet tested, and superior to mercurochrome—220. They also made comparative tests, using *B. coli* and *S. aureus*, which show a somewhat lower germicidal value than by the commonly used techniques. The comparative tests afford a basis on which the relative susceptibility of the gonococcus and other organisms can be calculated.

6. Symptomatology of Spinal Cord Tumors.—Abrahamson and Climenko catalog the signs of extramedullary tumors whose density is greater than that of the cord, discuss the differential diagnosis between extramedullary soft tumors and intramedullary tumors, report nine cases, and outline the signs pointing to the site of the tumor. They hold that progressive spinal cord disease giving level signs and symptoms should be carefully observed and studied. When no distinct level can be established the effect of lumbar puncture should be carefully watched. Xanthochromia of the spinal fluid in level spinal cord progressive affections usually means spinal cord tumors. One should operate only when a level has been established. Probing above and below the suspected site, while useful in many cases, often fails. Operations, frequently by their decompressive effects, help even in intramedullary tumors. The possibility of a soft tumor in atypical level cord lesions must be borne in mind, as these are frequently overlooked.

7. Ipecac Sensitization and Bronchial Asthma.—M. Murray Peshkin reports the case of a pharmacist who showed true anaphylactic bronchial asthma due to the inhalation of powdered ipecac, engrafted on a recurrent seasonal bronchitic. The case demonstrates the importance of making an inquiry into the occupation of asthmatics.

The Lancet.

October 2, 1920, cxxix, 14.

1. An Address on Disinfection and Disinfestation in the Field. W. W. O. Beveridge.
2. The Results of Pneumothorax Treatment of Pulmonary Tuberculosis. Professor Chr. Saugman.
3. On the Clinical Value of Routine Cerebro-Spinal Fluid Examination in the Diagnosis of Nervous Disease. A. Douglas Bigland.
4. Diplococcus Crassus and Meningitis, Associated with a Case of Fractured Base. J. Graham Forbes.
5. The Origin of Cancer. Alexander Paine.
6. A Note on Exophthalmos and Limitation of the Eye Movements of Graves's Disease. R. Foster Moore.
7. The French Medical Service in the Field. R. J. Blackham, with assistance from G. Lemoine and O. Garret.

8. Some Common Industries and Incidental Diseases in Their Vicinity. James Gairdner.

3. On the Clinical Value of Routine Cerebro-Spinal Fluid Examination in the Diagnosis of Nervous Disease.—A. Douglas Bigland presents results obtained during over a year's work on material gathered from the various Liverpool institutions. From his studies he is led to emphasize the following points: (1) That no patient having nervous symptoms, even though there is a clear history of syphilis, should be regarded as a case of neurosyphilis until proved so by cerebrospinal fluid examination. (2) That no case showing signs of organic nerve disease, and in which no suspicion of syphilis is entertained, should be regarded as non-neurosyphilitic until proved so. (3) That no case with signs of organic nerve disease and a positive Wassermann reaction in the blood should be diagnosed as neurosyphilis until the cerebrospinal fluid also has been examined. (4) That no case with signs of organic nerve disease should be regarded as not neurosyphilis merely because his serum Wassermann is negative. (5) In the diagnosis of neurosyphilis by the above methods the combined evidence of all the tests should alone be relied upon. On no account should the diagnosis be made upon the result of one test alone.

5. The Origin of Cancer.—Alexander Paine, director of the Cancer Hospital Research Institute, London, discusses this obscure subject from the clinical standpoint, first briefly reviewing the distribution and clinical features of the disorder, and also the circumstances under which it arises. His opinion is that cancer is not a specific disease due to the activities of a special parasite, but a disordered growth of epithelium caused by various physical or chemical irritants, the most important being the toxins of microorganisms. He considers that the origin of cancer lies in the degeneration of the nobler parts of the cell consequent on damage of its structure. The result of this damage is to disturb the balance of metabolism by impairing the special functions of the cell, and thereby causing persistent overgrowth.

British Medical Journal.

October 2, 1920, ii, 3118.

1. Discussion on the Diagnosis of the Nervous Disorders of the Stomach and Intestine. (Section on Medicine, British Medical Journal.) Opening paper by Arthur F. Hurst.
2. The Fractional Test Meal. T. Izod Bennett.
3. The Importance of Complete Physical Examination. Thomas R. Brown.
4. Nervous Mechanism of Functional Disturbances. W. Langdon Brown.
5. The Anatomical and Psychological Elements. H. Tyrrell Gray.
6. Subacute Perinephric Abscess of Non-renal Origin. Zachary Cope.
7. Menstruation During School Life. Alice E. Sanderson Clow.
8. The Place of Muscle Re-education in the Treatment of Anterior Poliomyelitis (Infantile Paralysis). Charles Mackay.

6. Subacute Perinephric Abscess of Non-renal Origin.—Zachary Cope calls attention to the fairly common occurrence of perinephric abscess, which is often incorrectly diagnosed in the early stages. As might be expected from anatomical considerations, the majority of abscesses develop posterior to the kidney. Of fourteen perinephric abscesses under his care eight were retro-renal, two were above, three were below, and one was intraperitoneal in front of the kidney. The term subacute is meant to exclude tuberculous infection, which sometimes develops apart from any renal or vertebral focus. The common organism found in the abscess is *Staphylococcus aureus*. Of twelve abscesses in which the nature of the organism was reported upon eight contained the staphylococcus, three a streptococcus and one a bacillus of undetermined nature. The source of the infection is often doubtful, but in general the cases may be referred to two groups: (1) Metastatic cases following a suppurative process elsewhere in the body, especially whitlows, carbuncles, or boils; (2) those associated with or consequent to dysentery or diarrhea. The onset is usually very insidious; occasionally it is more acute. After a variable period during which the patient's general condition depreciates considerably, while the fever continues or increases, definite signs appear either in the abdomen or in the thorax, or in both. It is not usual for the diagnosis to be made until these signs appear. In uncomplicated extraperitoneal perinephric abscess of non-renal origin an excellent prognosis is permissible if skilled surgical assistance is available. Every case treated by the writer recovered, although two or three had reached an extremely debilitated condition before the abscess was detected. In cases of intraperitoneal abscess the prognosis is more doubtful. In the treatment of perinephric abscess incision and drainage are the procedures of choice.

8. The Place of Muscle Re-education in the Treatment of Anterior Poliomyelitis (Infantile Paralysis).—Charles Mackay endeavors to show that each child that survives the first onslaught of infantile paralysis can be assisted to regain muscle power; a few may remain permanent cripples, in spite of every care, but if treatment is begun at once and properly carried out the majority should recover more or less completely. The paralysis is not the disease; it is the obvious sequela. The aim in treatment, therefore, is not the cure of the disease but the restoration of function. This must be begun at once, before postural defects have occurred, or fibrous changes in the essential structures have taken place. Rest must be given immediately; muscle re-education should be attempted as soon as one can be reasonably sure that the inflammatory process has ceased, which may be at the end of the first week. Whatever may be the explanation of the changes in the spinal cord, it is most important for the physician to realize that the muscles, if only they are handled correctly, will show a large percentage of recovery. It is essential that the attempt at muscle work be made under the easiest possible physical conditions; there must be no fatigue, and after attempting to work the muscles must be at once adequately rested in the correct anatomical position. The three cardinal points of treatment to which Mackay directs particular attention are: (1) Anatomical rest; (2) muscle re-education; (3) general care of the patient, particularly as regards warmth of the limbs, light massage for a short period preliminary to the exercises, careful superintendence of the whole life of the child, and the avoidance of fatigue and strain.

Schweizerische medizinische Wochenschrift.

September 9, 1920, l, 37.

Röntgen Therapy of Malignant Growths of the Uterus.—Steiger of the Berne Clinic for Diseases of Women states that their experience in this field is too recent to speak of five-year cures. Cures by surgical means have been shown to be nothing to vaunt, although the operative mortality has been reduced to 10 per cent. The best result is in the case of an elderly woman treated with radiation since 1915, who is now living at the age of 78. Her growth was inoperable from the start, yet thanks to the rays she is able to enjoy good health. In other cases the author can speak of three and two-year cures in which death finally claimed the patients, although their lives were rendered tolerable up to that point. Other cases again are still under treatment. It must be understood that in Switzerland the *x*-ray treatment has not for various reasons made much headway save as a last resort, and largely from inability to get proper installation. Results at Basle have not been encouraging, probably from imperfect technic. The author also discusses the accessory use of the rays in surgical cases, and it appears that the combined use in the recurrent cases gives a greater survival than in cases which were not rayed—thirty months as contrasted with sixteen months.

Technique of Radium Therapy in Cancer of the Uterus.—Bétrix of Geneva gives some results obtained in Beuttner's clinic. In general, they are both encouraging and deceptive. Inoperable cases have been rendered operable in from three to eleven weeks of radium treatment. Many have survived from one and a half to two years—the treatment has not been in vogue longer. The author would never use radium if much cachexia is present. Some adencarcinomas which have resisted radium may be removed with the knife. In cancer of the corpus the operative prognosis is so good that he would not use radium.

Book Reviews.

DIE INDIKATIONEN ZUR KÜNSTLICHEN UNTERBRECHUNG DER SCHWANGERSCHAFT. Von Prof. Dr. G. WINTER, Direktor der Königl. Universitäts-Frauenklinik in Königsberg. Berlin and Vienna: Urban & Schwarzenberg, 1918.

THIS volume comprises 317 pages. The author gives on the title page the names of five of his pupils and associates who assisted him in the preparation of the work, along with that of Prof. E. Meyer who furnished neurological matter. The indications comprise toxicoses of pregnancy, tuberculosis, cardiac and renal affections, diseases of metabolism and the endocrine organs (Graves' disease, diabetes, etc.), functional affections of the nervous system, hepatic diseases, affections of the ovum, affections of the generative apparatus, psychoses, organic nervous affections, blood diseases and even ear disease (otosclerosis). He then enumerates the conditions in which interruption is unwarranted. The work is the most complete of its kind yet undertaken and by reason of its multiple authorship is really a "system" or encyclopedia of its subject.

RADIOGRAPHY IN THE EXAMINATION OF THE LIVER, GALL BLADDER, AND BILE DUCTS. By ROBERT KNOX, M.D. Hon. Radiographer, Kings College Hospital, London, England. St. Louis: C. V. Mosby Company, 1920.

THIS atlas comprises 64 printed pages and the same number of illustrations of which 15 are on separate plates and the balance text figures. There appears to be no artistic reason for this division as the same kind of radiograms figure in both classes. The detached plates simply represent figures which could not be accommodated for lack of space on the text pages. The plan of the work is to cover in succession anatomical consideration, gallstones including investigations on absorption coefficients, radiograph interpretations of stones, examination technique, situation of stones, differential diagnosis, the pathological gall bladder record of cases, résumé of literature and general conclusions.

DIE WURMFORTSATZENTZÜNDUNG. Eiene pathogenetische und histologische Studie mit besonderer Berücksichtigung der Bedeutung der Helmmithen, spesiell der Oxyguren und wichtiger allgemenier Klinische Gesichtspunkte. Von Dr. A. RHEINDORF. Berlin: S. Karger, 1920.

AS the title of this volume implies, the author is a member of that school which attributes to the oxyuris or other worm the production of slight traumatisms in the cavity of the appendix which make infection possible. It has been abundantly shown that the worms themselves or their ova are of common occurrence in the rectal appendix, and it is believed that with proper technique the presence of ova could be shown in a still larger number of cases. The author describes and illustrates the epithelial defects caused by the parasites and the symptoms of the disease in oxyuris carriers. A long section on pathogenesis is followed by a recital of autopsy finds in dead soldiers of the late war. The volume closes with a section on prophylaxis. We do not find an estimate of the percentage of cases of appendicitis due to worms, but this is so large that expulsion of these parasites is the first step in general prophylaxis. We do not know whether ordinary vermicides can reach parasites already within the appendix, therefore prophylaxis directed to the individual must give way to a prophylaxis of the public at large. A positive criterion of the presence of the worm in the cecum and appendix does not exist in the absence of repeated examination of stools for ova. Mass infection is very rare, for appendicitis is essentially sporadic. In case of the latter due apparently to worms santonin was given but when operation became indicated the appendix contained no trace of parasite.

THE USE OF COLLOIDS IN HEALTH AND DISEASE. By ALFRED B. SEARLE. With Foreword by Sir MALCOLM MORRIS, K.C.V.O. New York: E. P. Dutton & Company, 1920.

THIS is an excellent introduction to the study of colloidal chemistry and the use of colloidal metals in therapeutics—a subject regarded with much favor in France and some other countries but one that has been neglected to a great extent here. The colloids are indeed employed here in medicine, but only to a slight extent, colloidal silver in its various preparations and colloidal arsenic being the only ones that have found wide application. It is not generally appreciated that many other colloidal metals and non-metallic elements —iron, mercury, antimony, manganese, gold, iodine, sulphur—can be employed with profit in a number of diseases; colloidal iron, for example, being destructive to typhoid and colon bacilli, many pyogenic cocci, and especially to the catarrh-causing organisms in the nose and throat, and being also the most available form for the intravenous, intramuscular, or gastric administration of iron in anemia and chlorosis. Colloidal manganese has been found almost specific in the treatment of boils and carbuncles, succeeeding often in cutting short a series of carbuncles or boils after vaccines have failed, and has also given remarkable results in other coccogenic skin diseases such as acne and impetigo.

Much knowledge of colloids in general as well as of those employed therapeutically may be gained from a study of this book, and the knowledge so gained will well repay the labor.

THE DEVELOPMENT OF THE HUMAN BODY. A Manual of Human Embryology. By J. PLAYFAIR MCMURRICH, A.M., Ph.D., LL.D., Professor of Anatomy in the University of Toronto; Formerly Professor of Anatomy in the University of Michigan. Sixth Edition, Revised and Enlarged. Philadelphia: P. Blakiston's Son & Co., 1920.

THIS new edition of McMurrich's Embryology will give pleasure to many students as well as general practitioners and others whose knowledge of intrauterine development has grown musty and who need a small manual to which they can turn for refreshment of their memory regarding any special point. The book, in its previous editions, has been found useful by a large number of readers, and the reception of this new edition will doubtless be as cordial as before. The book is indeed an excellent epitome of this interesting subject and deserves a welcome from old and new friends.

DIAGNOSTISCHER LEITFADEN FÜR SEKRET- UND BLUTUNTERSUCHUNGEN (Theoretisches und Praktisches). Von Dr. C. S. ENGEL, Sanitätsrat, Arzt und Laboratoriumsleiter in Berlin. Zweite Auflage. Leipzig: Georg Thieme, 1920.

THE author has endeavored to cover, in the brief space of about three hundred pages, the subject of what we know as clinical pathology in so far as it may be carried out by the physician who has not access to a large laboratory. In addition there is a certain amount of bacteriologic discussion with some staining methods. The matter is greatly condensed and all of the more complicated procedures, such as those of blood chemistry have been omitted. This condensation has been carried so far that the subject of the study of the functional power of the kidney is dismissed in a short paragraph with the comment that the methods are too time-consuming and unsafe for the use of the physician. The result is that the book is largely a manual which might be of value for refreshing the memory for some especial occasion. Its value is probably less than that of any of our well-known text-books upon diagnostic methods.

CUNNINGHAM'S MANUAL OF PRACTICAL ANATOMY. Revised and Edited by ARTHUR ROBINSON, Professor of Anatomy in the University of Edinburgh. Seventh Edition. Volume Third. Head and Neck. With 233 illustrations, many of which are colored. New York: William Wood and Company; Elinburgh, Glasgow, and London: Henry Frowde and Hodder and Stoughton, 1920.

THE previous volumes of this new revision of a standard work were noticed in the MEDICAL RECORD of July 31 and August 14. The present volume contains an account of the anatomy and dissection of the head and neck. The text seems to have undergone considerable revision, and much of the description of the dissections has been rewritten. There are many new illustrations, and the book is likely to remain, what it has long been, the standard work on the subject. Medical students and practitioners will make no mistake in including these volumes among their working books.

THE FACULTY OF THE COLLEGE OF PHYSICIANS & SURGEONS, COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK. Twenty-four Portraits by DORIS U. JAEGER. With a Foreword by SAMUEL W. LAMBERT, M.D., A.B., A.M., PH.B. New York: Paul B. Hoeber, 1919.

THIS collection consists of a series of portrait photographs of the more prominent members of the faculty of the College of Physicians and Surgeons during the past ten years. The frontispiece, appropriately enough, is a photograph of the entrance to the College. The group of men here depicted shows well the transitional nature of the present conditions at the college including, as it does, the emeritus professors Jacobi, Weir, Prudden, and Starr, and the more recent appointees such as Hibbs, Squier, and Jobling. The work is really beautifully done and the book will have a definite historical value. The Foreword points out that similar publications have been issued by the College on two occasions, in 1846 and in 1875. The present volume will have as much interest for the future student as the old lithographs have for the physician of to-day. For the graduate of the College there is the additional attraction that the book contains the photographs of the principal teachers under whom he has worked.

EDUCATION IN WAR AND PEACE. By STEWART PATON, M.D., Lecturer in Neurobiology, Princeton University; Lecturer in Psychiatry, Columbia University; President Eugenics Research Association, New York; Paul B. Hoeber, 1920.

IF "peace hath its victories" it necessarily has its conflicts, particularly at a time of such a tremendously general readjustment as must by ordinary follow such a cataclysm as the Great War. The author indicates the signs of the times in such manifestations of public interest in matters that may be termed psychic rather than physical as Spiritualism, Occultism, Christian Science, etc., and hints more than broadly that the physician would do well to recognize this tendency and utilize it for a better understanding of his maladjusted patients. These indications of the public's awakening interest in the problems of human behavior, says Paton, should be evaluated by the physician and both he and his patients led through them to a better understanding of the sources of psychic trouble. In short, he pleads for an approach to the study of feeling and thinking that shall be on a plane in intelligence and interest with the work done in approaching maladjustments of say the circulatory or respiratory apparatus.

Nor does the general practitioner alone come in for Paton's constructive criticism:—it is pointed out that the psychologist is too often so exiguously equipped in the physical sphere that he overlooks important connections between physical and mental hygiene. Some day, however, we shall come, says the author, to such an intelligent and systematic study of personality that we shall test the fitness of a President to rule over us with the same care we now apply to an aviator before permitting him to fly.

Paton, as intimated above, offers constructive suggestions for the problem in hand. These are well worthy the careful attention of the physician, the social worker, the legislator, and others dealing with human reactions and adjustments. To all such this little volume is recommended.

DIAGNOSIS AND TREATMENT OF BRAIN INJURIES, WITH AND WITHOUT A FRACTURE OF THE SKULL. By WILLIAM SHARPE, M.D., Professor of Neurologic Surgery, New York Policlinic Medical School and Hospital; Consulting Neurologic Surgeon, Manhattan Eye and Ear Hospital. Hospital for Ruptured and Crippled, Beth Israel Hospital, New York City, and Nassau Hospital, Mineola, L. I. Philadelphia and London: J. B. Lippincott Company, 1920.

NEUROLOGICAL surgery is a division of neurology or of surgery of comparatively recent development, and, though, of course, general surgery has always had fractured skulls to patch up, it has dealt very gingerly, or ignored entirely, brain injuries unconnected with fracture. In this work the author has divided his subject according to the age of the patients into brain injuries in adults and those in newborn infants and children, the subject being further subdivided under each head into acute and chronic injuries.

A very important section, and the one of greatest interest for the reader who is not steeped in the literature of the subject is that detailing recent advances in the diagnosis and treatment of brain injuries. It is not given to every one to acquire skill in the operative surgery of the brain, but every general practitioner, every country physician, and especially every one in medical charge of an industrial establishment should be able to diagnose the presence of a brain injury whether a fracture of the cranium is present or not.

Of considerable interest also to the general practitioner and to the obstetrician is the section on brain injuries in newborn babies and children.

A large portion of the book is taken up with case reports illustrating the various injuries discussed. The pictures, many of them *x*-rays, are well executed and well reproduced and serve to clarify the text. All in all Dr. Sharpe has made a valuable contribution to the literature of intracranial surgery and his book is one that will appeal to medical readers who are neither surgeons nor neurologists.

PLASTIC SURGERY OF THE FACE BASED ON SELECTED CASES OF WAR INJURIES OF THE FACE INCLUDING BURNS. With Original Illustrations. By H. D. GILLIES, C.B.E., F.R.C.S., Major, R.A.M.C. Surgical Specialist to the Queen's Hospital, Sidcup; Surgeon in Charge of the Department for Plastic Surgery, and Late Surgeon in charge of the Ear, Nose and Throat Department, Prince of Wales's Hospital, Tottenham; Late Chief Clinical Assistant, Throat Department, St. Bartholomew's Hospital; Hon. Fellow, National Dental Society of America. With a chapter of the PROSTHETIC PROBLEMS of PLASTIC SURGERY. By CAPT. W. KELSEY FRY, M.C., R.A.M.C., Senior Dental Surgeon, Queen's Hospital, Sidcup; Demonstrator and Dental Officer in charge of the Prosthetic and Metallurgical Department, Guy's Hospital, and REMARKS ON ANÆSTHESIA. By CAPT. R. WADE, R.A.M.C., Late Senior Anæsthetist, Queen's Hospital; Assistant Anæsthetist, St. Bartholomew's Hospital; Anæsthetist, Great Northern Central Hospital. New York: Oxford Medical Press, American Branch, 1920.

ONE must agree with W. Arbuthnot Lane, who contributes the introduction to this Oxford Medical Publications volume, in congratulating the publishers on the excellent manner in which the task is executed. The descriptive matter, the 844 illustrations of the various procedures and the results obtained by their employment, and the large number of case histories, serve as an excellent basis for the application of war surgery to civil practice. The first of the eight chapters deals with the principles involved, discussed in the order of their application in a given case—history; examination; early treatment; planning the repair (lining membrane, contour and supports, covering tissues); anesthesia (a highly specialized procedure); operation (general technique, stages, suture, dressings, after treatment). The successive chapters, respectively, deal with repair of the cheek; injuries of the upper lip; injuries of the lower lip and chin; prosthetic appliances in relation to plastic surgery; injuries of the nose; injuries in the region of the eyes, including burns of the face, injuries of the pinna; plastic surgery in civil cases. In the last chapter the author expresses the belief that the application of the methods described will have considerable effect upon the possibilities of plastic surgery in the civil community. Apart from the much wider field of deformities which will be brought into the class in which restoration can be applied, the treatment of the disease itself, in addition to the deformity caused by the disease or injury, may be modified. He states, in substantiation of this, that when it is demonstrated that successful and cosmetic rhinoplasty is an operation that can be counted on with reasonable certainty, the early treatment of lupus may be modified in the direction of complete excision of the affected area regardless of the deformity so caused. Should this suggested line of treatment be practical in removing the disease, years of local therapy will be dispensed with. Among the many possible applications suggested, prenatal disease offers a vast field. Thus ectopia vesicæ, hypospadias, meningocele, imperforate anus, and various forms of fistulæ offer scope for the application of these principles in combination.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held October 7, 1920.

THE FIRST VICE-PRESIDENT, D. JOHN A. HARTWELL, IN THE CHAIR.

THE program of the evening was arranged in co-operation with the Urological Section.

Present Methods for Limiting Venereal Infection.—Colonel C. C. PIERCE, Acting Surgeon General, United States Public Health Service, and Chief of the Venereal Bureau, Washington, D. C., made this presentation, which was illustrated by motion pictures. He pointed out that the venereal disease problem was complex and intimately associated with other difficult problems. The effort of the Public Health Service during the past two years had not been the immediate eradication of venereal disease, which was obviously impossible, but had been to cooperate with the state boards of health in the limiting of venereal infections. The problem had been attacked with combined State and Federal forces from as many angles as possible, in the belief that in this way venereal disease might best be brought under control. It was evident, for instance, that gonorrhea and syphilis could not be fought in the same way as smallpox. It seemed, consequently, that the common sense way of dealing with the problem from the public health standpoint was to render those already diseased noninfectious as far as possible by seeing that proper treatment was readily obtainable; and by dint of legal and educational measures to lessen the number of contacts, at the same time awakening the general public to the dangers of venereal diseases and the necessity for avoiding exposure and securing prompt treatment, when infection had taken place. Before the creation of the Division of Venereal Diseases of the United States Public Health Service, through the passage by Congress, July, 1918, of the Chamberlain-Kahn bill, there had been no national effort to combat venereal diseases in the United States. Up to that time knowledge of the extent of venereal infection was limited to physicians and utterly unappreciated by the general public. A large proportion of the population relied upon quacks and patent medicines for treatment, thus remaining uncured and spreading the disease broadcast. Venereal diseases, except in a few localities, as New York City, for instance, were not reportable, and there was no means of estimating the incidence of venereal disease among the general population of the United States, although there were data on a number of different classes of the population, such as hospital patients, criminals, inmates of insane asylums, etc. The war brought the prevalence of gonorrhea and syphilis among the young men of the country into startling prominence. It was now a matter of history that 3 per cent. of the first million draftees whose examination blanks first reached the Adjutant General's office in Washington had venereal disease when they reported at camp. Of the second million 5.4 per cent. had a venereal disease at the time of their examination upon arrival at camp. This percentage included only obvious cases of syphilis, gonorrhea, and chancroid. Since Wassermann examinations were not given and no effort was made to secure urethral smears, the actual number of cases of venereal infection was undoubtedly much higher than reported. Since the creation of the Division of Venereal Diseases a determined effort had been made to secure the reporting of venereal disease to the State health officers and thence to the United States Public Health Service. It was felt that the first step toward the cure of these diseases was knowledge of the extent and distribution of infections. Therefore, one of the conditions under which each state received its portion of the Chamberlain-Kahn funds was the existence of a reporting law. For two years now monthly reports from all states participating in the fund had been received, and these figures were available. It was not claimed that these figures showed the extent of veneral disease in the United States, because all persons infected with such a disease did not go to physician for treatment, and because all physicians had not yet been brought to a realization of the importance of reporting. What the figures did show definitely, however, was that progress had been made in this direction during the past two years, and that these figures might be expected in time to give a true picture of conditions. In 1919 there were reported to the state boards of health 131,193 cases of gonorrhea, 100,466 cases of syphilis, 7843 cases of chancroid, and others, or a total of 239,502 cases of venereal disease. In 1920 there were reported to the state boards of health 172,387 cases of gonorrhea, 142,869 cases of syphilis, 10,861 cases of chancroid, and others, or a total of 326,117 cases of venereal disease. In other words, the total increase during the past year had been 88,615 cases, or 36 per cent. The relative increase of the cases of gonorrhea reported was 31 per cent. and of syphilis 42 per cent. As gonorrhea was estimated as from two to four times as prevalent as syphilis, a rough check could thus be kept on the finality of reporting figures. Not until the number of cases of gonorrhea reported at least doubled those of syphilis could the reports be relied upon as showing even approximately the true incidence of venereal disease in the United States. After securing the reporting of cases of venereal disease the next step in limiting venereal infection was necessarily making available proper treatment to all those who were infected. The establishment of clinics where reliable treatment could be obtained at small cost or free of charge for those unable to pay was believed to be the way in which to cope with this difficulty. The establishment of such clinics throughout the United States had therefore been promoted. In 1919 there were 237 clinics operating under the joint auspices of state boards of health and the United States Public Health Service, and 167 regularly reported their activities. In 1920 there were 427 clinics operating under state boards of health and the United States Public Health Service and 383 clinics regularly reported their activities. It could be stated that there was practically a 100 per cent. increase in clinic facilities throughout the United States during the past year. There was also an increase of 100 per cent. in the clinics reporting. Clinic reports showed that twice as many patients received treatment in 1920 as in 1919, there being 126,131 patients admitted in 1920 as against 59,192 admitted in 1919. The figures also showed that the treatment was becoming progressively more efficient, for while 6922 patients were discharged as noninfectious in 1919, 34,215 were discharged as noninfectious in 1920. While the number of patients was doubled the number of treatments had been tripled. Nearly three times as many Wassermann tests were made in 1920 as in 1919, and nearly twice as many microscopical examinations for the gonococcus, showing that laboratory facilities were being used more and more by physicians as well as in the clinics themselves. State boards of health reported 328,382 doses of arsphenamine distributed to physicians, hospitals and clinics during 1920, this being an increase of 186 per cent. over 1919. Other medical activities had been campaigns to secure the cooperation of physicians and dentists, and a special course for graduate nurses given at Columbia University in order to fit them for venereal control work. The cornerstone of the medical work was the clinics. These were rated under the following heads: location, equipment, sterilization, histories, records of treatment, use of distilled water, personnel, salaries, treatment, clinic days and hours, daily average attendance, laboratory facilities, fees charged, method of building up clinic, average monthly cost of operation and per capita cost of treatment. A survey showed that in 325 clinics, or 90 per cent., the treatment for gonorrhea was efficient, and that in 337 clinics, or 93 per cent., the treatment for syphilis was efficient. The per capita cost of treatment was under $2 in 80 per cent. of the clinics. After quoting other statistics in connection with the clinics the essayist said it was hoped that the clinics might be brought to conform to a high standard of efficiency, so that any man or woman in the United States who was infected with venereal disease might go to a free clinic and be absolutely sure of obtaining the treatment that was considered most effective by the best medical authorities of the country. In considering the legal side of the question Colonel Pierce said that the first care of the legal section was of

course to see that as many states as possible secured their portion of the Chamberlain-Kahn fund. Further work of the legal division consisted in fostering the passage of state laws and city ordinances having for their aim the control of venereal disease, and in urging the enforcement of laws that had been passed. The character of the legislation adopted by the states varied. Model laws and ordinances that had been found serviceable had been drawn up and had been available to states and cities, and many had taken advantage of these forms and modeled legislation by them. The legal section had as its aim largely to aid the various states in the suppression of commercialized prostitution, as this was undoubtedly the most important focus for spreading venereal disease. The aim of the educational section was to disseminate sex instruction among the public and to bring before the people the knowledge of the dangers of venereal disease and the importance of prompt and efficient treatment. The educational activities had included the publication of pamphlets on various phases of sex education and hygiene, and advice to those infected with venereal disease. In 1919 more than 14,000,000 pamphlets were distributed in response to requests; in 1920 more than eight million. The decrease was due to the fact that these activities were being shared more and more by state boards of health. Other educational activities included posters, placards, lectures, etc. In concluding Colonel Pierce expressed the opinion that through this educational work the ignorance of the public on the subject of venereal disease was being gradually dispelled. At the same time the various cities were ridding themselves of commercialized prostitution, through realization of the danger caused by it to the health of the community. Lantern slides illustrated the various pamphlets, placards, and other educational work, and several motion picture films demonstrated the methods of diagnosis and the technique of treating these diseases.

Dr. EDWARD L. KEYES, JR., said he had come to listen and not to discuss Colonel Pierce's remarks. The paper was one of such cold, hard facts that it did not lend itself to discussion. The facts were given, and there they were. Personally, he had taken an interest in the social hygiene movement ever since its inception by Dr. Prince A. Morrow, and was greatly impressed by the steady progress of the movement toward nationalization ever since its beginning fifteen years ago. The movement was spreading in the national consciousness as a result of the facts brought out during the war. At the bottom of the work now being done was that of the Interdepartmental Social Hygiene Board. As a result of that work one now saw the really systematic effort of the Public Health Service spreading all over the United States. He agreed with Colonel Pierce in the belief that the movement would be a success. It was feared at first that the private practitioner would be harmed by these more or less free clinics, but, on the contrary, the men who were acting as agents for the Government had been upbraided by physicians for having flooded them with cases of venereal disease that previously would not have been treated. Now the Public Health Service had the approval of the medical profession in this movement. Furthermore, in order to get effective action it was necessary to have the enthusiastic cooperation of the medical profession in order to carry forward this movement started by Dr. Morrow, continued by Dr. Snow, and now carried forward by Colonel Pierce.

Mr. HOMER FOLKS, secretary of the State Charities Aid Association, said that just as it was true that epidemics awakened the health authorities and created among the people a state of mind that opened the public purse, so in the same sense war had had one good result. As a member of the council of the New York State Board of Health, Mr. Folks said he could recall when they had looked forward to a time, far in the future, toward the millennium, when very gently, unobtrusively, and without attracting much attention, they might endeavor to do something in the prevention of venereal disease. Now, after an absence of two years, he found a division of venereal diseases in the State Board of Health, and one of the largest, most efficient and best organized divisions in the Department of Health. In matters of public health they had had a great deal of difficulty in getting the right kind of adjustment between local and state health authorities and between State and Federal health authorities, and a great deal of work had been done at cross purposes. It had seemed difficult to see how it could be worked out to get efficient cooperation. This cooperation, however, had been accomplished, and the local, State and Federal authorities were working most harmoniously, most efficiently and effectively. Speaking from the point of view of the layman, when he was asked to take part in the discussion and considered what he should say, the first thought that came to him was that there were various kinds of laymen. Laymen might be divided into four categories in connection with the subject under consideration: (1) Those who had one of the diseases in question. (2) The average citizens. (3) The leading citizens. (4) A small group of laymen or social workers, those working with the public health agencies along this or kindred lines. In the first class results had shown very clearly that it was not difficult to secure patients for treatment, and dealing with them was not a difficult thing. It required only two things: First, they should be made to understand that everything was really confidential and that they would not be exposed to their fellowmen—a point, perhaps, that had not been sufficiently stressed. Second, they must be made to understand that the cost would be moderate. Then the treatment of this class gave a golden opportunity to impress upon them the seriousness of their condition and that their position laid a great responsibility upon them for the protection of others. They must be followed up to see that something was really done about it. The physician could not accomplish what should be done without having these patients followed up by a nurse or social worker. The average citizen did not need to know a terrible lot about venereal disease. The thing he should have was a certain amount of general conviction drafted into his habitual attitude, emphasizing the seriousness of venereal infection, and that if he continued to live a life of promiscuous relations he would contract such a disease almost to a certainty. Beyond this is was not necessary that he should know all the horrible details, but he must have the fact of the seriousness of these diseases lodged permanently in his consciousness. Then, too, he must know that something could be done about it, that these diseases could be cured. The third group, the leading citizens, needed to know a great deal more about it. In every locality there was a small group of people who were identified with and behind various progressive movements, the group that were interested in child welfare work, in the tuberculosis problem, in hospitals, clinics, etc. This class of people should be given a pretty full amount of fact. Those who were working in the State Department of Health and in the Federal service should be well informed so that in case the Federal subsidy for carrying on the campaign against venereal disease was discontinued there would be a body of people who would give a strong and intelligent backing to this work. It would be an advantage to have identified with the public health agencies a small group of intelligent laymen who could speak from that point of view. When it came to localities, the speaker said he suspected that the time was at hand when the different kinds of health workers must come together, so that there would not be one group for child welfare work, one for tuberculosis, etc., but that these different lines of welfare work should all be brought together and coordinated into one comprehensive health activity, something like the health centers. There should be one such comprehensive public health agency in each locality. There was one trouble among uninformed people, some of whom had said they would like to see the doctors fight it out among themselves as to who should pay for this work. The question of who was to pay should not stand in the way of getting people to the clinics. All the lay workers would like to see the physicians attached to health activities well paid, for they appreciated the work that was being done. All would like to see the private practitioner paid, but there was as yet no plan whereby the doctors in the clinics should receive due remuneration. This stood in the way of getting at this great mass of disease. The question of finances should not be allowed to stand in the way of bringing people where they

could receive curative treatment. In matters of legislation affecting public health the physician should be progressive and need not fear that the community would not support him. Experience had shown that the community was usually more ready to support public health legislation, and to spend money for the promotion of public health than we had been apt to think. So in the matter of the campaign against venereal disease the people would be found ready to follow those who led the way.

After the conclusion of the motion pictures a rising vote of thanks was tendered to Colonel Pierce and his associates for their very interesting and instructive presentation.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, Held January 27, 1920.

DR. LILLIAN K. P. FARRAR IN THE CHAIR.

THE program of the evening was arranged by the Obstetrical and Gynecological Staff of the Long Island College Hospital.

An Infected Hematocele Containing Bony Elements.—Dr. HARVEY B. MATTHEWS reported this case. He stated that the woman's chief complaint was pain in the lumbar-sacral region and backache. Her menstrual history had been normal until about a year before her present illness, when menstruation began to be irregular, every eighteen to twenty-one days, without pain. The patient had been curetted, after which she experienced some relief. She was admitted to the Jewish Hospital for post-abortion sepsis and pelvic cellulitis. During the first six days of her stay in the hospital her temperature ranged from 99° to 102.2° F. After the first six days her temperature ranged around 99° F. The uterus was the size of a four and one-half months pregnancy. She began to flow two weeks after leaving the hospital. Then for three weeks she did not spot. She then bled for two days, which she thought was a normal menstrual period. Her blood count at this time showed 13,000 white blood cells and 73 per cent. polynuclears. Her blood pressure was 123 systolic and 73 diastolic. Examination showed a median tumor extending across the abdomen toward the right side. There was a laceration of the pelvic floor and the cervix was pushed forward and upward. The uterus was only moderately tender. Pelvic abscess was diagnosed and drainage of the cul-de-sac decided upon. In draining the cul-de-sac bony elements appeared which were taken out piecemeal until it seemed that almost every bone in the body was removed. Following this procedure convalescence was excellent, and the patient was discharged 21 days after operation. Examination at this time showed a relaxed pelvic floor, the uterus anteflexed and a considerable amount of granulations along the line of the incision. The most interesting point in the case was the question when the fetus escaped into the abdominal cavity. Was it at the time the uterus was curetted, or was this an ectopic which had ruptured? Dr. Matthews cited several similar cases in the literature which had been traced to a puncture of the uterus which permitted the fetus to escape into the cul-de-sac. In two of these cases the abscess had made its own incision, rupturing into the uterus. In the final analysis it seemed to him that this was an ectopic that had gone to four months, become infected, and ruptured into the cul-de-sac.

Dr. HERMANN GRAD stated that he had had a case in which operation had revealed an infected ectopic with bone contents. In this case also the diagnosis was pelvic abscess. A history of ruptured ectopic gestation could be made out, about five months before patient came into the hospital for the abscess. After the rupture of the tube into the abdomen further development of the fetus must have gone on. The woman had continued to be in good health until finally infection occurred.

A Review of the Incidence of Forceps in 2000 Cases.—Dr. H. M. SHUTTER presented this study of 2,028 cases in the ward service of the Long Island College Hospital. He stated that among these 2,028 cases there were 60 forceps deliveries, or 2.88 per cent., one in every 34 cases. This, they believed, was a very low incidence; the first reason for this belief was that the cases were studied very carefully in the prenatal clinic; a second reason was because all the labors were conducted in bed; third, a tight abdominal binder was used, and, fourth, pituitrin was used in cases in which the fetal head was engaged, the cervix fully dilated, the fetal heart in good condition, and in which there was no obstruction in the outlet. Of the 60 cases 37, or 61 per cent., were low forceps; 18, or 30 per cent., were mid-forceps cases, and five, or 9 per cent., were high forceps operations. No one thing seemed to be accountable for the use of forceps. Of the forceps cases 81 per cent. were primiparæ, and 50 per cent. of these showed contracted pelves. The posterior position occurred in 48 per cent. of the cases as against 10 per cent. in the spontaneous cases. The number of women 25 years of age or over was 32, or 53 per cent. Dry labor occurred in 19, or 31 per cent. The indications for the use of forceps were delayed second stage in 65 per cent., maternal emergency in 10 per cent., and fetal asphyxia in 25 per cent. The maternal emergencies were lobar pneumonia, acute bronchitis, and cardiac decompensation. Every case was classified in the morbidity list if there was a temperature of 100.4° or over which lasted for forty-eight hours or longer. Of the high forceps cases 40 per cent. showed morbidity; of the mid-forceps cases, 22 per cent., and of the low forceps, 24 per cent. The total morbidity among the forceps cases was 25 per cent. The fetal results showed a brachial paralysis in one case, facial paralysis in two cases, and a stillbirth rate of 3.33 per cent. in the entire series. Of the forceps cases 18.33 per cent. lost their babies. Of the high forceps cases, 80 per cent. lost their babies; of the mid-forceps cases, 16.3 per cent., and of the low forceps, 10.8 per cent. Their experience warranted the conclusion that a high forceps operation was a dangerous procedure, seldom if ever indicated, and was not to be resorted to with impunity; in other words, that it had a definite danger both for the mother and for the fetus.

Surgical Intervention in Ascending Peritonitis of the Puerperal Type.—Dr. LEO S. SCHWARTZ made this presentation. He first showed a slide illustrating the result of conservative treatment of puerperal sepsis. These showed that the omentum had come down and the sigmoid had dropped down into the pelvis to wall off the infection and prevent it from spreading further. There was a class of cases in which early operative interference would help save life, that was, in those cases that developed an asthenic type of infection characterized by an ascending tenderness, pain, and an increase in the total white cell count, and polynuclears. Except for a sensitive cervix, the vaginal findings in these cases were negative. The severity of the symptoms was dependent upon the virulence of the organisms. In the presence of the colon bacillus or the gonococcus, the process was usually limited, but with the streptococcus or staphylococcus it was more serious, and might extend and involve the whole peritoneal cavity. It was during the early stage that surgery gave the best results by evacuating and drainage of the infected area.

Dr. SCHWARTZ then reported a case in which a curettage had been performed for the interruption of a two months' pregnancy. On the fourth day the patient's temperature rose to 104° F., and her pulse to 130. The abdomen became distended, and as palliative measures were ineffective a posterior vaginal incision was decided upon. A small quantity of purulent fluid was evacuated, and within four hours the temperature and pulse dropped and the patient was much relieved. Encouraged by the results in this instance, they decided to employ this procedure in other cases. Up to the present time they had employed it in eight cases, four post-abortion and four post-partum. They had found posterior vaginal section a simple procedure which could be performed easily and with the patient in bed. Dr. Schwartz gave a lantern slide of the technique of the procedure, which consisted in making a transverse incision of the vaginal mucous membrane and entering the peritoneal cavity; then with the fingers making gentle palpation, but not breaking up adhesions or looking for trouble. The incision was enlarged with two fingers to give exit to any accumulation of pus that might be found, and three strips of

rolled iodoform gauze folded to a width of about 1 inch were carried up into the cavity, one to each side and one to the center. These wicks of gauze were allowed to remain six or seven days and then removed. While the number of cases that they had treated in this way were too few to justify the drawing of conclusions, the results were so satisfactory that he felt justified in recommending use of posterior vaginal section as a simple, harmless, and effective procedure which reduced an already too high puerperal mortality.

Dr. HIRAM N. VINEBERG said that this subject had always interested him, and he was glad that the Brooklyn school was going to deviate a little from their ultra-conservative methods, but it was well to remember that one had to use judgment. However, the results which Dr. Schwartz had presented were very encouraging. The late Dr. Pryor had used this method, but did not limit it to pelvic peritonitis. One could not, of course, cure all cases by this method, and he would not advise everybody to make this incision with the patient in bed. It looked very pretty on the screen, but he had seen quite a number of cases, and one did not always find the dimple which had been indicated as the point at which the incision was to be made, and one did not always at once get into the peritoneal cavity. It required a great deal of gentleness in order to pass the gauze, and one could not do it well with the patient in bed. If he had any criticism to make it was that he would not describe the procedure as such a simple one, and he would not advise that it be done in bed. In fact, he had seen alarming hemorrhages occur as the result of injury to a branch of this uterine artery, with the scissors, dilating instrument, or fingers.

Dr. HENRY DAWSON FURNISS called attention to an article by Dr. Horsley in *Surgery, Gynecology, and Obstetrics*, in which he claimed that the benefits of drainage were not altogether due to mechanical effects because drainage was often placed where to be effective it would have to drain uphill, which was an impossibility, but that a biological factor was to be credited, namely, the insertion of a foreign body that caused irritation and produced a reversal of the lymphatic circulation. He thought that in the procedure just described the good results might be attributed to such a factor.

Dr. HERMANN GRAD said that another factor that might account in a measure for the good results Dr. Schwartz had obtained was the antiseptic action of the iodine. A gentleman from Brooklyn had asked him to try a certain preparation of iodine in septic cases, and he used this preparation in four puerperal cases. Whether or not the remarkable recovery that took place in the cases was due to the iodine injection he could not say, but in one case the improvement was so remarkable that it was really startling. The patient was septic, following a forceps delivery, and had a temperature of 106° F., and it did not seem that she could recover. In another case, in which a large abscess formed, a wonderful recovery followed the injection of the iodine. In olden times it was the practice to inject proteins in the body in order to cause a hyperleucocytosis in septic cases. While the drainage instituted might be responsible for the improvement there might also be other factors, and the benefit should not be attributed entirely to opening the cul-de-sac. The operation, as pointed out by Dr. Vineberg, was not very easy. It was quite possible to have a loop of intestine slip down into the incision, and he thought the operation should be done under the proper conditions.

Dr. FARRAR asked whether she understood correctly that the iodine was administered intravenously, and if so what was the strength of the solution used.

Dr. GRAD replied that he used a 3½ per cent. aqueous solution, giving it very slowly. It was advocated to be given intravenously, but in this case he had used 5 c.c. subcutaneously.

Dr. FARRAR said that Dr. Hunner spoke of opening not directly into the posterior vaginal fornix, but simply of making an incision posterior to the cervix, and following along with the finger until one got a suggestion as to where the abscess pointed, and in that way there was less danger of getting into the peritoneal cavity, one avoided meeting more immediately with the intestine, and was not invading new tissue.

Dr. VINEBERG asked Dr. Schwartz when he made this opening in the vagina, since just at the beginning of a peritonitis there was nothing walled off.

Dr. SCHWARTZ said that the question when to open the cul-de-sac was difficult to answer, unless one saw the patient. One could only judge by the tenderness and sensitiveness of the abdomen in the pelvic zone and the high leucocyte count. At this stage there was no mass in the pelvis. As to the danger of posterior vaginal section, he had done it in over 100 cases, and except for one case, a case of ectopic pregnancy in which there was hemorrhage, he had had no bad results and no hemorrhage.

The Value of Abdominal Exercise Pre- and Post-Partum.—Dr. HARRY KOSTER presented this paper, in which he said that considering the enormous amount of attention paid to the development of prophylactic measures in gynecology and obstetrics it was rather surprising that so little work had been done in the direction of improving the tone of the abdominal muscles, particularly so when it was universally conceded that the element of muscular activity, as a factor in the mechanism of labor and the maintenance of good health at all other times was a matter of utmost importance. Everyone was familiar with the flabby, flaccid pendulous abdominal wall which during parturition could not be counted on as an asset, and which during the nonparturient period was distinctly a liability, being a causative factor in the production of ptoses of the abdominal viscera. Where the muscle wall did not support the abdominal viscera palliative efforts had been exerted through the use of various anterior reinforcements, pads, and bandages, with considerable success. But such relief was not permanent. When the mechanical support was removed the symptoms recurred, because nothing had been done to strengthen the muscles which had lost their original elasticity after having been subjected to a period of increasingly forcible extension, exceeding the limit of physiological extensibility with perfect elastic recoil. In the normal state muscles extending from bone to bone were slightly stretched. This state of elastic tension insured a more prompt and effective contraction, as it had been shown experimentally that the amount of rise of a lever to which a muscle was attached, when excited by an electric stimulus of definite strength was greater when the muscle was placed under tension by adding a slight weight than if no weight were added. Muscle was extensile and perfectly elastic within limits. The extensibility of muscle for successive equal increments of weight gradually decreased, approaching zero as a limit. Before this limit was reached removal of the weights resulted in perfect elastic recoil. If the weight was increased beyond the zero limit, which was also the elasticity limit, the amount of extension then increased with increasing increments of weight up to the rupture point, and elastic recoil from beyond the elasticity limit was not perfect. Frequently an abdomen was seen, the wall of which was under tension only while the woman was in the upright position. When the woman was placed in the dorsal recumbent position the loose redundant wall spread over the flanks and pubes. It was evident that the tonus in these muscles was low and also that they had previously been stretched beyond their elastic recoil limit. A careful analysis of obstetric case records yielded as one of the conclusions the belief that many forcep deliveries might have been avoided by the application of a tight abdominal binder. The proper development of the muscles of the abdominal wall before pregnancy would obviate the use of the abdominal binder. Were the tone of these muscles sufficiently raised before pregnancy the wall would yield less readily and less completely to the gradually increasing pressure of the enlarging uterus, and there would be valuable aid in their synergistic rhythmic contractions during the uterine expulsive efforts. Were the tone of these muscles sufficiently raised before pregnancy a point in the improvement could be reached which would allow a margin of extensibility beyond that encountered in the parturient period without reaching the elastic recoil limit, and thus insure elastic recoil. Progressive muscular exercise could raise the quality of the muscle to a higher efficiency. Before maternity, therefore, the abdominal muscles should be prepared for the expected strain by raising

their power through progressive exercise. The essayist suggested an exercise which he said was ideal, inasmuch as it met with all the requirements regarding results, was capable of universal application because it could be practised at home without apparatus, and presented a wide range of gradation of effort necessary for its accomplishment, thus making it applicable to individuals having different strengths of abdominal walls. This exercise consisted in lying on the back, the entire lower extremity, from the hip down, acting as a single lever, was flexed on the abdomen to a line perpendicular to the resting surface, and then lowered. Throughout the exercise there should be no flexion at the knee joint. When the exercise was first begun the average woman would find it difficult to repeat the maneuver twenty-five times without pause, but it was astonishing to note the rapidity of increase possible and the concomitant improvement in muscular tone. An expenditure of not more than four minutes was necessary for the performance of the movement one hundred consecutive times, than which no greater daily number was needed to ultimately develop a firm, elastic supporting wall.

Dr. HAROLD BAILEY told of a visit to a sanatorium at Pompton, N. J., the Adams place, and of the work that was being done there in the muscular development of women, and that so far as he could tell from the picture shown on the slide Mr. Adams employed the same movements as Dr. Koster had described. He had the women lie on their sides and make the same movement back and forth, called the "scissors exercise." Mr. Adams weighed about 200 pounds, and in order to demonstrate what was being done stepped on the abdomen of one woman who had been undergoing training for six or eight months.

Dr. WILLIAM P. HEALY said that it had been his experience in recent years that the average young woman did not wear an abdominal support and did not wear corsets. He was a believer in advisability of wearing an abdominal support during pregnancy and preferred a corset that laced in the back and not in the front, and one that maintained a compact support. He had the impression that those patients who had strictly observed his instructions in this respect had had much simpler labors. He was under the impression that the presenting part came down into the pelvis much easier. Many of these women who were very slender and whose pelves were below the average in size were able to go about in public without feeling that they were attracting attention until two or three weeks of delivery, and they had had rather easy labors. These facts had prejudiced him in favor of the abdominal support. The question had been brought up as to whether the wearing of a firm support caused harm to the child. He had seen nothing that would lead him to believe that normal retention of the abdominal walls by a properly fitted support harmed a fetus floating in amniotic fluid. These exercises which Dr. Koster had described were very essential not only prenatally but also after the women had been delivered of their babies, and especially after over-distention had been caused by lack of support in the first pregnancy. He felt, however, that the exercises would not help a great deal if the muscles were not supported during pregnancy while the abdomen was enlarging.

Dr. WILLIAM S. STONE said he thought the practical application of this work was very valuable. He had had a little experience with it some years ago. It was one of Dr. Tucker's hobbies that women should exercise during the last weeks of pregnancy, and he told of wonderful success attained by this means. It was a great help in dilatation if the head was on the perineum when labor began.

Dr. FARRAR asked Dr. Stone what kind of exercises Dr. Tucker used.

Dr. STONE replied that one form was similar to those just described, and he also had the women bend over with the knees straight and touch the floor; that exercise not only developed the muscles of the abdomen but helped crowd the fetus into the pelvis.

Dr. KOSTER, in closing, said that with reference to the remark that the abdomen was not properly supported during the first pregnancy, that seemed to him confirmatory of the idea that the abdominal walls might better be strengthened before pregnancy. When the abdomen was supported nothing was being done to increase the tone of the muscles or to raise the possibility of extension with complete elastic recoil. It seemed to him better to advocate something that removed the cause of trouble rather than something that was merely palliative, though abdominal support during pregnancy was a valuable adjunct.

Cancer of the Uterus in Young Women.—Dr. GORDON GIBSON presented this paper, in which he asserted that malignant disease of the uterus in women under thirty was of sufficient rarity to warrant the report of six cases, one of which had come under the care of Dr. Polak, one of Dr. Beck, and four under the care of the writer. It had so long been taught that cancer of the uterus occurred about the time of the menopause that unless one was alive to the fact that it could occur at any age an early case in a young woman might be overlooked because "the condition present was not thought of." It was only by continued repetition of the teaching that any undue vaginal discharge, bloody or not, demanded investigation with the cancer mind, and that any cervix which bled easily on examination, or which showed any friability, should be considered as possibly malignant until proven not to be so by microscopical examination, that this process could be controlled. It was the writer's belief that in a case in which the diagnosis was clear clinically, one in which there was a definite growth of the cervix, it was better not to wait for a microscopical report, but to operate immediately, as it had been his experience recently to see the process destroy the cervix and invade the parametrium during the week elapsing between taking the specimen and receiving the report. Peterson, in a recent study of 500 cases of cancer of the uterus, found 23, or 4.8 per cent. of his cases under thirty years of age. Their percentage was still higher, being 6 in 61 cases studied, or 9.9 per cent. This percentage would probably decrease as the series was extended. The value of statistical study was open to question. It was not so important how often cancer of the uterus could occur under thirty as it was important that it did occur under that age. The result of any method of attack of this disease did not so much depend on the method as upon the condition as found. In other words, any operation, either abdominal or vaginal, which removed all the infiltration of malignantly growing cells would cure the patient, while any operation, either abdominal or vaginal, that did not remove all the diseased tissue was a failure in that particular case. It was true that in some hands more of the parametrium could be removed after isolation of the ureters by the abdominal route than by the vaginal method. After reporting in detail six illustrative cases, Dr. Gibson concluded as follows: (1) Cancer of the cervix occurred with sufficient frequency in young women to make it imperative that the condition be kept in mind. (2) Epithelioma was the type generally found in younger women. (3) The growth was much more rapid than in older individuals, and only when seen in the first three months could a radical operation be done. (4) The extension was especially rapid when the parametrium became involved and followed comparatively soon.

Dr. BAILEY said that he was glad to hear that the patient he had operated on and treated afterward was still alive. He agreed with Dr. Gibson in regard to malignancy in young women, and was rather surprised to see among such a small number of cases so many that were so young. His youngest case of malignancy was 23 years of age, but he had had a considerable number in the twenties. He agreed with Dr. Gibson as to the lack of necessity of waiting and that clinical diagnosis was sufficient to warrant one in proceeding to apply radium at once without waiting for the pathological report; then if the report came back negative no harm had been done, and if it came back positive the patient had the benefit of radium treatment before operation.

Dr. VINEBERG stated that it had been his experience to see two cases of carcinoma in young women within two months. One of these women had had syphilis and had been treated for syphilitic disease of the cervix, but there was no doubt as to the diagnosis of carcinoma. She also had a large mass in the parametrium, so that the case was inoperable, and he had referred the

patient to Dr. Bailey. The second case was one of those unfortunate ones for which the profession was not to blame. The patient had only noticed a discharge for a few months. She went to a physician who recognized the condition, and she had come to the speaker the next day. The cervix was simply eaten up by the carcinomatous mass and he felt that radium was contraindicated, because there was so much carcinomatous tissue that it would not be effective. He worked with the cautery for an hour, and succeeded in removing most of the carcinomatous tissue. She now had a retroperitoneal mass and the most they could hope was to relieve the distressing discharge. He was sure Dr. Stone and Dr. Bailey would agree that radium would not be of any value in that case at that stage. A further point that occurred to him was that while radium was destroying the cancer cells on the surface the cervix cancer cells had a chance to spread to the inner parts of the cervical tissue. He had recently seen an illustration of this in a case.

Dr. GIBSON, in closing, said that in regard to the radium there were two propositions to be considered. If the case was seen early one did not want to waste time trying radium, but should operate immediately and then put radium in directly following the operation. The question was whether that was the correct way or whether one should use radium first and then operate. In the late cases there was no question but that radium should be applied. The method they had been following was, instead of cauterization, to remove all the growth possible and then apply the radium immediately.

Advantages and Technique of Total Hysterectomy.—Dr. JOHN OSBORNE POLAK made this presentation, which consisted of a lantern slide demonstration of his technique of total hysterectomy. He propounded the question as to whether supracervical hysterectomy was the operation of choice in fibroid tumors of the uterus. This question, he said, should be definitely settled in the interest of the patient, for owing to the ease with which the average supracervical hysterectomy could be done the procedure had become routine with most gynecologists, even in the presence of those cervical conditions which should demand total ablation of the uterus. Hence the patient was frequently left with an infected, lacerated, or hyperplastic cervix which remained the seat of a focal infection. Such a cervix, with its chronic endocervicitis, not only kept up a persistent leucorrheal discharge, but owing to lymphatic extension the uterosacrals became and remained involved and caused persistent backache; thus a patient who had submitted to operation for the cure of her hemorrhage, leucorrhea, and backache, remained uncured of two symptoms of her chief complaint. Not only was this so, but she was in constant danger of the recurrence of cancer in the retained uterine stump. That this was a reality and not a fancy was proven by the fairly frequent occurrence of epithelioma in the conserved cervix. The advantages claimed for the supracervical operation were: (1) That it was more easily performed; (2) more rapid; (3) had a lower morbidity; (4) did not shorten the vaginal wall, and, finally, that by retaining the cervical stump the keystone of the arch remained, thus maintaining the conformity of the vaginal vault, and therefore prolapse of the vaginal walls was less likely to occur. Were these contentions borne out by the clinical experience of the trained gynecological surgeon? To this question Dr. Polak replied in the negative. In their clinic at the Long Island College Hospital, after a long experience with the supracervical operation, and after following the end results in several hundred cases, they had found that the retained cervix, except in non-infected nulliparæ, did cause trouble and that, unless the condition of the patient or the technical difficulties of the case were such that even a slight prolongation of the operation would increase the risk, total ablation should invariably be performed. Since adopting this plan they had come to consider that total hysterectomy was the safest and most certainly curative of all gynecological procedures, for not only had their patients been cured of their leucorrheas and backaches, but their morbidity and mortality had been lowered. Perfection of the technique which he demonstrated had made the complete removal of the uterus a relatively simple matter. The technique of total hysterectomy was as follows: After the patient had been catheterized and the vagina and cervix thoroughly iodinized, the patient was anesthetized in the Trendelenburg posture, which allowed the intestinal coil to gravitate into the upper part of the abdomen. The abdomen was then opened through a long abdominal incision to the right or left of the median line, extending from the pubis to the umbilicus, or even above it. Two fingers were then introduced into the long angle of the incision and the edges of the abdominal wound lifted up. This permitted air to enter the peritoneal sac, and further displaced the intestinal coils upward. The wound edges were then protected by towels and the tumor exposed by proper retraction. With a large pair of Jacob's forceps the tumor was drawn out through the abdominal wound and as completely eventrated as possible. After the tumor was completely mobilized it was drawn well over to one side to expose the infundibulo-pelvic and round ligaments. A clamp was then placed close to the uterus, including the tube, utero-ovarian ligament, and the upper part of the uterine artery, and the infundibulo-pelvic ligament was tied distal to the ovary. The round ligament was now picked up and tied and both were cut on the uterine side of the ligature. The same procedure was repeated on the opposite side. Traction was now made on the tumor, which allowed the broad ligament to recede so that its anterior and posterior layer might be easily separated and the uterine artery exposed. The anterior flap of peritoneum was now caught with a pair of mouse-tooth forceps, just anterior to the round ligament, and a pair of Mayo scissors passed beneath it across the front of the uterus. These separated the vesico-uterine fold from its uterine attachment, and when it was completely detached it was cut across from round ligament to round ligament. This permitted a complete separation of the bladder from its uterine and vaginal attachment, and also increased the mobilization of the uterus. The tumor was then pulled forward over the pubis, and the posterior fold of the peritoneum incised transversely, just above the point of attachment of the utero-sacral ligaments, and with the Mayo scissors was carefully separated from the posterior surface of the uterus. This freely exposed the uterine arteries and by traction on the tumor the ureters naturally slipped out of the way, and the uterine arteries could be grasped by a Kocher clamp with perfect safety, and the uterus cut free proximal to the clamp. If the arteries had been properly isolated and the clamp had been applied at a point just distal to the origin of the vaginal branch, the remainder of the operation was practically bloodless. The bladder was then retracted with a Doederlein retractor and the vagina exposed just below the cervical-vaginal junction. With a long pair of sharp pointed curved scissors the vagina was entered by a transverse incision, just below its attachment to the cervix. The air entered the vagina and at once ballooned it, and a pair of Jacob's forceps grasped the cut edge of the anterior vaginal wall, while a second pair of forceps grasped the anterior lip of the cervix. Upward traction was made on this and the cervix and vaginal wall again iodinized, and a strip of iodine-soaked gauze was passed from above downward through the vaginal wound. The incision of the vaginal wall was continued completely around the cervix at the cervico-vaginal junction. It might be necessary before cutting the uterus free to apply a Kocher clamp transversely, so as to include the posterior vaginal wall and each uterosacral ligament. This absolutely controlled all of the hemorrhage from the cut edge of the vagina, and allowed one to cut the uterus free from its posterior attachments. The tumor and uterus having been removed, a suture was placed through the anterior and posterior vaginal walls, whipping these two surfaces together. With the hemorrhage controlled and the vaginal vault closed, the round ligaments were brought into and sutured to the vaginal vault making relaxation of the anterior vaginal wall less liable to occur. Furthermore, care had been taken to preserve the utero-sacrals, and they also were attached to and sutured into the vaginal vault, thus maintaining its high position in the pelvis. The final step of the procedure was the peritonealization of all surfaces. This was done by uniting the pos-

terior fold of the broad ligament with the anterior, burying the stumps of the ovarian and uterine arteries, and carrying the bladder reflexion of the peritoneum over the vaginal stump. When the toilet was completed there was a smooth peritoneal face extending from one pelvic wall to the other.

Dr. VINEBERG agreed with Dr. Polak that it was a great advantage to remove the cervix and he did so in about 95 per cent. of the cases, but occasionally the condition was such that it was not wise to do so. He was a little disappointed, however, to hear Dr. Polak reverse his judgment as to the wisdom of conserving the ovary. He must also say that he preferred to leave the vagina open for the reason that one usually got better results and less likelihood of exudates from the complete operation than from leaving the cervix was because the vagina could be left open and if any secretions occurred they would drain away. There would be no prolapse and no cystocele unless it existed before the operation, and if there was a cystocele simply suturing the edges of the vagina together would not cure it. He did not think it was good surgery to bring down the round ligaments and attach them to the vaginal walls.

Dr. M. R. ROBINSON said the technique of abdominal panhysterectomy as demonstrated this evening by Dr. Polak corresponded in the main with the standard operation adopted in the leading hospitals of the country. This demonstration, however, served to further strengthen his conviction, arrived at long ago, that while there were some gynecologists who could do excellent general surgery, there were but very few general surgeons who were doing gynecological work as it should be done. He had very seldom seen a general surgeon do a complete hysterectomy. He usually preferred the supravaginal type, and chose for his operation the uncomplicated, freely moveable, large fibroids or myomas. The general surgeon as a rule paid very little attention to the condition of the pelvic relaxation, which was present in a large number of these cases, and which required just as much attention as the existing neoplasm in order to restore the patient to complete health. The speaker said he had often seen a badly lacerated infected cervix left behind after a supravaginal hysterectomy performed in twelve minutes by a general surgeon. How many general surgeons took the pains to suspend the remaining cervical stump to the round ligaments, as shown on the screen this evening, in order to prevent a future prolapse. He, therefore, maintained that the hospitals in which gynecology was not recognized as a special branch of surgery were not fulfilling their mission properly, and that careful special training only would yield the excellent results obtained by Dr. Polak.

Dr. POLAK, in closing the discussion, said he had evidently been misunderstood. His point was with reference to an anastomosis between the ovarian vein and the ovarian artery in conserving the tube with the ovary. If the tube was not conserved there was a "one ended circulation," and the ovary became swollen. The uterine artery was pushed off the broad ligament in order to maintain the circulation between the ovarian vein and the ovarian artery. This was carried on by vessels going from the ovarian artery to the tube and back to the ovarian vein so as to effect a complete anastomosis. Dr. Polak said he was not enthusiastic about conserving an ovary, because following hysterectomy an ovary did not continue to secrete for more than two years. Where an ovary alone was left after hysterectomy, adhesions, cicatrizations, and cystic degenerations were likely to occur.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

WEST VIRGINIA STATE BOARD OF HEALTH.

July 13, 1920.

ANATOMY.

1. Describe a transverse section of compact bone.
2. Which are the peculiar ribs that require special consideration.
3. Describe the shoulder joint, and name the ligaments.
4. Give a brief description of the fascia lata.
5. Give a brief anatomy of the great sciatic nerve, and what it supplies.
6. Give a brief anatomy of the small intestine, and name the divisions.
7. Name the principal salivary glands, and where located.
8. Give origin and insertion of the external oblique muscle.
9. Give the function, origin, distribution, and branches of the abducens nerve.
10. Give the origin, insertion, innervation, and function of the soleus muscle.
11. Give the development of nerve-tissue.
12. Give the development of the humerus bone.

PHYSIOLOGY AND HISTOLOGY.

1. What is characteristic in structure and function of the heart muscle?
2. Describe the spinal reflex arc.
3. Discuss the coagulation of the blood.
4. How are the systolic and diastolic blood pressures determined?
5. Describe gastric digestion.
6. Give the histological structure of the salivary glands.
7. Compare the inspired and expired air.
8. Describe absorption in the small intestine.
9. Give the histological structure of the kidney.
10. What are the islands of Langerhans; their function?
11. Discuss the nutritive value of protein food.
12. How is heat produced in the body?

CHEMISTRY AND MEDICAL JURISPRUDENCE.

1. Define molecular weight.
2. What is the most common element in nature?
3. Give the atomic weight and valence of hydrogen, lead, sulphur, and mercury.
4. How is H_2S prepared? Give formula.
5. Name five acids used in medicine and give their formulæ.
6. What is uric acid and tell all you know about it.
7. Describe the bismuth test for sugar in the urine; state objection to this test.
8. What effect have albumin and sugar upon the specific gravity of urine?
9. What chemical reaction takes place when hydrogen dioxide is applied to sloughing wounds?
10. Give the color, reaction, and specific gravity of normal urine?
11. Differentiate between idiocy and lunacy.
12. How do you determine that an incised wound was inflicted by a blunt or sharp instrument?

ANSWERS.

ANATOMY.

1. A cross-section of a bone shows *Haversian canals;* around these the bone is arranged in rings or *lamellæ;* between these are spaces (*lacunæ*) in which are bone *corpuscles.* Each canal is connected with the lacunæ which are concentric with it, and the lacunæ with one another by means of fine canals (*canaliculi*) into which project processes of the bone corpuscles. A Haversian canal with its lamellæ, lacunæ, bone corpuscles, and canaliculi form a *Haversian system.* In a section of bone several of these systems may be seen, the spaces between them being occupied by *interstitial lamellæ.* Lamellæ which are on the surface of the bone, parallel with its circumference, are *circumferential lamellæ.* A longitudinal section of bone shows the Haversian canals to be what their name indicates, channels running through the bone. Their communications with one another are also seen. In each canal are an artery and a vein. If a piece of bone is treated with dilute nitric acid, so as to dissolve the lime salts which it contains, or by some other method of *decalcification,* a small portion may be torn off, which upon examination shows the fibrous structure of the lamellæ. Such specimens also show the *perforating fibers of Sharpey,* which hold the lamellæ together; elastic fibers may also be observed.—(Raymond's *Physiology.*)

2. *The peculiar ribs,* are: The first, second, tenth, eleventh and twelfth.

3. The *shoulder joint* is an enarthroidal joint formed above by the glenoid cavity of the scapula and below by the head of the humerus. Its ligaments are glenoid, coraco-humeral, and capsular. The glenoid surrounds the edge, deepens the glenoid cavity, and is continuous above with the long head of the biceps tendon. The capsular ligament, extensive and loose, arises above it from circumference of glenoid cavity behind the ligament, is attached below to the anatomical neck of humerus, and is pierced by tendons of two or three muscles. The coraco-humeral, or accessory, is a fibrous band which extends obliquely downward and outward from the coracoid process to the anterior part of great tuberosity, strengthening the capsular ligament. A *synovial membrane* lines the joint, and forms the bursa under the subscapularis. It is reflected round the tendon of the biceps, and lines the bicipital groove. The *nerve supply* is from the circumflex and suprascapular nerves. The *arteries* are branches of the anterior and posterior circumflex, and the suprascapular.

4. *Fascia lata* of the thigh envelops the muscles and surrounds the limb. Above it is attached to the back of the sacrum and coccyx, to the iliac crest, to Poupart's ligament, pubic body and ramus, ischial tuberosity and ramus, and to the lower edge of the great sacro-sciatic ligament. The *ilio-tibial band* is a thickened part attached above to the iliac crest and below to the head of the fibula and outer tuberosity of the tibia. The fascia lata is attached below to the head of the tibia and sides of the patella, being strengthened by aponeuroses from the vasti muscles. Behind the fascia passes across between the hamstring muscles, enclosing the popliteal space.—(*Aids to Anatomy.*)

5. *The great sciatic nerve* arises from the sacral plexus, and passes out of the pelvis through the great sacrosciatic foramen, below the pyriformis muscle; it extends down the back of the thigh, passing between the great trochanter of the femur and the tuberosity of the ischium; at the lower third of the thigh it divides into the internal and external popliteal nerves. It supplies the hip-joint and the biceps, semitendinosus, semimembranosus, and adductor magnus *muscles.*

6. The *small intestine* is situated in the abdominal cavity. It begins at the pyloric end of the stomach, in the epigastric region and ends at the ileocecal valve in the lower part of the right lumbar region. Its average length is about 23 to 25 feet. It is divided into three portions, the duodenum, the jejunum, and the ileum. The duodenum is the first part of the small intestine, it is about ten inches long, and extends from the pylorus to the left side of the body of the second lumbar vertebra. The jejunum and ileum form the coils of the small intestine and are covered by the great omentum; they form the remainder of the small intestine, the upper two-fifths being the jejunum and the lower three-fifths the ileum; there is no line of demarcation between these two parts. The coils of the jejunum and ileum are suspended from the posterior abdominal wall by the mesentery. The wall of the small intestine is composed of four coats, a serous, muscular, submucous, and mucous.

7. The *salivary glands* are the two parotid, two sublingual, and two submaxillary glands. The *parotid gland* is the largest of the salivary glands, and is situated outside the mouth, below and in front of the ear; its duct is called Stenson's duct; it crosses the masseter muscle, pierces the buccinator, and opens in the mouth opposite the second upper molar tooth. The *submaxillary gland* is situated beneath the lower jaw, and its duct is Wharton's duct, which opens at the side of the frenum of the tongue. The *sublingual* gland is in the mucous membrane at the side of the frenum of the tongue, and its ducts (ducts of Rivinus) open on the floor of the mouth near the frenum of the tongue.

8. THE EXTERNAL OBLIQUE MUSCLE (OF THE ABDOMEN). *Origin:* From the external surface and lower borders of the lower eight ribs. *Insertion:* Into the anterior half of the outer lip of the crest of the ilium, into the linea alba, and (by Poupart's ligament) into the spine of the pubis.

9. THE SIXTH OR ABDUCENS OCULI. "*Origin.—Superficial:* From the sulcus between the pons and medulla, anterior to the anterior pyramid. *Deep:* floor of fourth ventricle beneath fasciculus teres. *Course.*—Pierces dura mater on basilar process and grooves side of dorsum ephipii to reach cavernous sinus; lies to outer side of internal carotid, and below the other nerves. Enters orbit by sphenoidal fissure, between the heads of the external rectus, lying above ophthalmic vein. *Distribution.*—External rectus (ocular surface.)" (*Aids to Anatomy.*)

It has *branches of communication* with the ophthalmic nerve and the carotid and cavernous plexuses. It is the motor nerve of the external rectus muscle of the eye.

10. SOLEUS MUSCLE. *Origin:* From back of head of fibula and upper third of posterior surface of fibula, from oblique line and internal border of tibia. *Insertion:* With the tendon of the gastrocnemius (making the tendo Achillis) into the lower part of the posterior surface of the os calcis. *Innervation:* Internal popliteal and posterior tibial nerves. *Function:* It extends the foot and ankle, it is used in standing, walking, dancing, etc.

11. *Development of nerve cells and fibres.* "All nerve-cells in the body are developed from the cells of the neural groove and neural crest of the early embryo; the neural groove closing to form the neural canal, the cells of which form the spinal cord and brain, and the neural crest giving off at intervals sprouts which become the rudiments of the ganglia. The cells which line the neural canal are at first all long columnar cells, but among these, and probably produced by cell division from some of these, rounded cells make their appearance, and presently from each neuroblast a process begins to grow out. This is the axon, and is characterized by its enlarged extremity. As it grows, it may emerge from the antero-lateral region of the canal and become the axis-cylinder of a motor nerve or anterior root-fibre. The dendrons of the cell appear somewhat later than the axon. The axis cylinder processes of some of the neuroblasts remain within the nerve-center, and are developed into commissural, association, or intra-central fibers. The sprouts from the neural crest contain the neuroblasts from which the posterior root-fibers are developed. Axons grow out from these neuroblasts in two directions, so that the cells become bipolar. One set, forming the posterior root-fibers, grow into the postero-lateral portion of the spinal cord and ramify in the developing gray matter; the other set, containing the afferent fibers of the spinal nerves, grow toward the developing anterior roots, and eventually mingle with them to form the mixed nerves. As development proceeds, the bipolar ganglion cells become gradually transformed in most vertebrates, by a shifting of the two axons, into unipolar cells. The ganglia on the sympathetic and on other peripheral nerves are developed from small masses of neuroblast cells which separate off from the rudiments of the spinal ganglia and give origin to axons and dendrons much in the same way as do the neuroblasts within the central nervous system.

The manner in which the medullary sheath and neurolemma of the nerve fibers are formed is not well understood. It is usually assumed that they are also epiblastic in origin and are developed from epiblast cells which grow out from the embryonic central nervous system along the axis-cylinder processes of the neuroblasts. But this is by no means clear. It is indeed possible that the medullary substance may be formed by the axis-cylinder itself and that the neurolemma with its nuclei may be derived from extrinsic cells, perhaps of mesoblastic origin. The neuroglia cells appear to be developed from epiblast cells of the wall of the neural canal, which, in place of giving off axon and dendrons like the neuroblasts, send out a number of fine processes in all directions from the cell to form the fibers of the neuroglia."—(Schäfer's *Essentials of Histology.*)

12. *Development of the humerus.*—"From *eight* centers, one for each of the following parts: The shaft, head, each tuberosity, the radial head, the trochlear portion of the articular surface, and each condyle. The nucleus for the shaft appears near the center of the bone in the eighth week, and soon extends toward the extremities. At birth the humerus is ossified nearly in its whole length, the extremities remaining cartilaginous. During the first year, sometimes even before birth, ossification commences in the head of the bone, and during the third year the center for the greater

tuberosity makes its appearance, that for the lesser being small and not appearing until the fifth year. By the sixth year the centers for the head and tuberosities have increased in size and become joined, so as to form a single large epiphysis. The lower end of the humerus is developed in the following manner: At the end of the second year ossification commences in the capitellum, and from this point extends inward, so as to form the chief part of the articular end of the bone, the center for the inner part of the trochlea not appearing until about the age of twelve. Ossification commences in the internal condyle about the fifth year, and in the external one not until about the thirteenth or fourteenth year. About the sixteenth or seventeenth year the outer condyle and both portions of the articulating surface (which have already joined) unite with the shaft; at the eighteenth year the inner condyle becomes joined; while the upper epiphysis, although the first formed, is not united until about the twentieth year."—(Gray's *Anatomy.*)

1. PHYSIOLOGY AND HISTOLOGY.

CHARACTERISTIC	VOLUNTARY STRIATED	SMOOTH	CARDIAC.
Shape.	Long cylinder.	Spindle.	Stubby cylinder.
Length.	1-5 inches.	25-500 microns.	100-200 microns.
Nucleus.			
Number.	Many.	One.	One.
Location.	Peripheral.	Central.	Central.
Shape.	Intermediate.	Rod.	Oval.
Striations.	Cross and long.	(Longitudinal occasionally.)	Cross and long.
Sarcolemma.	Present.	None.	None.
Branches.	Occasional.	(Occasional.)	Always.
Arrangement.	In masses called muscles.	In layers.	As a syncytium.
Control.	By will.	Not by will.	Not by will.

(Radasch's *Histology.*)

Function of cardiac muscle.—Cardiac muscle, like other muscle, is excitable and contractile; it responds to mechanical, electrical, chemical, and thermal stimuli. The principal differences between cardiac and ordinary voluntary, striated muscle are: (1) The strength of the response of cardiac muscle does not vary with the strength of the stimulus. The cardiac response is "all or nothing." The smallest stimulus is either incapable of causing a contraction, or, if the heart contracts, it is a maximum response. (2) Cardiac muscle possesses a long refractory period. (3) The heart is incapable of entering into a condition of tetanus. (4) Cardiac muscle has a long latent period. (5) Further, cardiac muscle has an inherent tendency to contract rhythmically quite apart from a nervous mechanism.—(From Lyle's *Manual of Physiology.*)

2. *Reflex actions* are involuntary or unconscious movements, due to suitable stimuli. They depend upon the integrity of the *reflex arc*, which is a complex made up of: (1) A surface capable of receiving an impression; (2) an afferent nerve; (3) a nerve cell capable of receiving and also of sending out impulses; (4) an efferent nerve, and (5) a surface capable of responding to the impulse conveyed by the efferent nerve.

Example: The patellar reflex consists of a contraction of the extensor muscles of the leg and a movement of the foot forward when the ligamentum patellæ is struck; the quadriceps extensor must first be slightly stretched by putting one knee over the other. Its integrity depends upon a healthy condition of the entire reflex arc, consisting of tendon, afferent or sensory nerve, posterior roots, and anterior horn of the spinal cord, the efferent or motor nerve, and the muscle itself.

3. When blood is withdrawn from the blood vessels of the living body it first becomes viscid, then sets, and is converted into a jelly-like mass. This is due to the formation of fibrin. The jelly contracts, forming the clot; and at the same time the serum is squeezed out from the clot. Various circumstances and conditions will hasten or delay the process of coagulation. In man, the blood generally becomes viscid in from two to three minutes; it forms the jelly-like mass in from five to six minutes; a few minutes later the serum begins to appear; and the whole process is completed in from twenty-four to thirty-six hours. The clot then floats in the serum. The process is thus summed up by Halliburton. From the platelets, and to a lesser degree from the leucocytes, a material is shed out called *thrombogen;* from the formed elements of the blood, but also from the tissues over which the escaping blood flows, is shed out an activating agent, called *thrombokinase.* In the presence of *calcium* salts, thrombokinase activates thrombogen in such a way that an active enzyme is produced, which is called *thrombin.* In the blood plasma a protein substance exists, called *fibrinogen.* Thrombin acts on fibrinogen in such a way that it is transformed into the insoluble stringy material which is called *fibrin,* this entangles the corpuscles and forms the clot.

4. "The individual whose blood pressure is about to be recorded should be placed in such a position that his heart, the artery the blood pressure of which is to be determined, and the manometer are at the same level. It is usual to record the pressure in the brachial artery. The india-rubber bag of the instrument should be wrapped around the bared arm, the metal covering of the bag should then be adjusted and firmly strapped in position. The india-rubber tube leading from the bag is then adjusted to the proximal limb of the U-shaped manometer which contains mercury. The experimenter places the index finger of his left hand over the radial pulse of the subject, and with his right hand he compresses the syringe and so drives air into the india-rubber tube and the india-rubber bag around the individual's arm. The pressure of the air in the bag around the arm is recorded by movement of the mercury from the proximal to the distal limb of the manometer. The operator keeps on pressing the syringe until oscillatory movements are seen at the surface of the mercury in the distal limb of the manometer; the mean point of maximum oscillations registers the diastolic pressure. If the pressure in the bag is still further increased, the oscillations diminish in amplitude and finally disappear, and at this point the pulse can no longer be felt at the wrist. The height of the mercury supported then registers the amount of systolic pressure. It will then be noted that the mercury has descended in the proximal limb of the manometer, and has ascended in the distal limb of the manometer: the difference between the two mercurial levels will be the blood pressure of the brachial artery. The normal systolic pressure in man is about 120 mm. Hg, and the diastolic pressure is about 100 mm. Hg. In women the pressures are about 10 per cent. less. In children the systolic pressure may be as low as 90 mm. Hg, with a diastolic pressure of about 80 mm. Hg."—(R. Hutchison.)—From Lyle's *Manual of Physiology.*

5. On *entering the stomach* the food is already crushed, mixed with saliva, and reduced to a pulp; it is rendered slightly alkaline, and a small amount of the starch has been converted into maltose; the proteids and fats are unaltered. *In the stomach,* where the contents are rendered acid, conversion of starch into sugar ceases, connective tissue of fats is dissolved, and fats are set free. Proteids are dissolved by the pepsin of the gastric juice and proteses and peptones are formed. The albuminous foods are dissolved for the most part, and a grumous mixture of peptones, liquid fats, and starches is formed, which is termed chyme, and is gradually passed through the pylorus into the intestine. The contents of the stomach at the close of gastric digestion are: Water, inorganic salts, acidified proteids, peptones, liquid fats, starch, cellulose, and the indigestible residues of various foods.

6. *Histological structure of the salivary glands.*—"The salivary glands are all compound tubular glands. In man the parotid is serous; the sublingual and submaxillary, mixed serous and mucous. Each gland consists of gland tissue proper and of a supporting connective-tissue framework. The framework consists of a connective-tissue *capsule* which encloses the gland, but blends externally with and attaches the gland to the surrounding structures. From the capsule *trabeculæ* pass into the gland, subdividing it into *lobes* and *lobules.* The gland tissue proper consists of systems of *excretory ducts* opening into *secretory tubules,* all being lined with one or more layers of epithelial cells. Each gland has one *main excretory duct.* This divides into branches—*interlobar ducts*—which run to the lobes in the connective tissue which separates them. The

interlobar ducts give rise to branches which, as they pass to the lobules in the interlobular connective tissue, are known as *interlobular ducts*. From the latter, branches enter the lobules—*intralobular ducts*—and *split up into terminal secreting tubules* which constitute the bulk of the lobule. As the smaller intralobular ducts are lined with cells of a secretory type, and probably take part in the elaboration of the secretion of the gland, they have been called *salivary* or *secreting* tubules. These, in the submaxillary and parotid glands, open into tubules which have a narrow lumen and are lined with low or flat epithelium; lying between the secreting tubules and the terminal tubules, they are known as *intercalated or intermediate tubules*. From the interlobular connective tissue delicate extensions pass into the lobules, separating the gland tubules. The glandular tissue is known as the *parenchyma* of the gland in contradistinction to the connective or *interstitial tissue*."—(Bailey's *Text-Book of Histology*.)

7.

	EXPIRED AIR.	INSPIRED AIR
Oxygen	16.6 per cent.	21 per cent.
Nitrogen	79 per cent.	79 per cent.
Carbon dioxide..	4.4 per cent.	0.04 per cent.
Other gases.....	Often present.	Rare.
Watery vapor...	Saturated.	Variable.
Temperature	That of body.	Variable.
Volume	Diminished.	Varies.
Bacteria	None.	Always present.
Dust	None.	Always present.

8. *Absorption of carbohydrates.*—"During digestion the greater part of the carbohydrate of the food is converted into the glucoses. These are comparatively small molecules which are readily dissolved and easily passed through the columnar cells into the portal vein radical which lies beneath. It is possible that some maltose may be absorbed by the columnar cells, and that during its passage through these cells it is converted into dextrose before it enters the portal vein radicals. It is possible that in these columnar epithelial cells the glucose, which is being absorbed, is linked to the cell protein, and that, further down the cells, this loosely combined substance is split into two, the dextrose passing into the portal vein radical and the protein molecule remaining intact in the columnar cells and ready to combine with fresh glucoses to be passed through the cells. A small proportion of the dextrose, which is carried to the liver, goes on unchanged to the tissues to be assimilated, but the greater portion of the absorbed glucose on arriving at the liver is stored there by the liver cells as glycogen."

Absorption of fat.—"Fat is not absorbed as fat, but as glycerin and fatty acid or soap. It is generally accepted that the fatty acid set free in the intestine is dissolved by the bile salts, and in this way, together with the glycerin, is absorbed by the columnar cells, but that during absorption a lipase which is contained in the columnar cells re-synthesizes, by reverse action, the glycerin and fatty acid. In this way minute fat particles are found near the bases of the columnar cells, and these may be demonstrated by staining with a 1 per cent. solution of osmic acid. The fat globules are further taken up from the columnar cells by some of the lymphocytes, which are capable of exhibiting ameboid movements, and which are found in the lymphoid tissue between the columnar cells and the central lacteal. The fat is then deposited in the central lacteal by these ameboid cells, and in this way it gets into the general lacteal stream, and thence into the thoracic duct. The bile salts, which have been absorbed by the columnar cells, in all probability get into the portal vein radical, and in this way are taken back to the liver to be excreted again in the bile. After a fatty meal minute globules of fat may be demonstrated in the blood plasma of an animal; but they disappear rapidly, possibly existing in a soluble and invisible form absorbed to the blood proteins before they are deposited in the fat depots of the body."

Absorption of proteins.—"The view previously held with regard to the absorption of protein was that during digestion protein was finally converted into peptone, and the peptone so produced was absorbed by the columnar cells over the villi, and built up again by these cells into serum albumin and serum globulin, the chief proteins of the blood plasma. The view generally accepted now is that protein is completely hydrolyzed into the cleavage products known as amino-acids in the intestine; and it is these amino-acids which, being smaller molecules than the original protein, readily pass through the striated free border of the columnar cells over the villi and so get into the protoplasm of these cells. Here a synthesis takes place, and some simple and aromatic amino-acids are converted by the columnar cells into serum albumin and serum globulin, the native proteins, and this protein is conveyed to the tissues."—(Lyle's *Manual of Physiology*.)

9. "The kidney is a compound, tubular gland composed of microscopic tubules whose function it is to secrete from the blood those waste products which collectively constitute the urine. If the apex of each pyramid be examined with a lens, it will present a number of small orifices, which are the beginning of the uriniferous tubules. From this point the tubules pass outward in a straight but somewhat divergent manner toward the cortex, giving off at acute angles a number of branches. From the apex to the base of the pyramids they are known as the tubules of Bellini. In the cortical portion of the kidney each tubule becomes enlarged and twisted, and after pursuing an extremelv convoluted course, turns backward into the medullary portion for some distance, forming the descending limb of Henle's loop; it then turns upon itself, forming the ascending limb of the loop, reenters the cortex, again expands, and finally terminates in a spheric enlargement known as *Müller's* or *Bowman's capsule*. Within this capsule is contained a small tuft of blood vessels, constituting the *glomerulus*, or *Malpighian corpuscle*. Each tubule consists of a basement membrane lined by epithelium cells throughout its entire extent. The tubule and its contained epithelium vary in shape and size in different parts of its course. The termination of the convoluted tube consists of a little sac or capsule, which is ovoid in shape and measures about 1/200 of an inch. This capsule is lined by a layer of flattened epithelial cells, which is also reflected over the surface of the glomerulus. During the periods of secretory activity the blood vessels of the glomerulus become filled with blood, so that the cavity of the sac is almost obliterated; after secretory activity the blood vessels contract and the sac cavity becomes enlarged. In that portion of the tubule lying between the capsule and Henle's loop the epithelial cells are cuboid in shape; in Henle's loop they are flattened, while in the remainder of the tubule they are cuboid and columnar."—(Brubaker's *Physiology*.)

10. *The islands of Langerhans* are small clumps of cells scattered through the pancreas and which are not connected with the rest of the pancreas physiologically. They are supposed to produce an internal secretion which in some way (not at present determined) influences carbohydrate metabolism.

11. *The nutritive value of protein food.*—"Formerly it was believed that all the different proteins (with the exception perhaps of gelatin) have an equal nutritive value. But the knowledge that the composition of these proteins varies in regard to the number and character of their constituent amino bodies, and the fact that each animal out of the complex offered to it in its food selects certain amino-acids in certain proportions from which to reconstruct its own peculiar body proteins, suggest naturally the thought that the different proteins may have different values in nutrition. Experiments have demonstrated, in fact, that this is the case. From the standpoint of supplying the energy needs of the body, the proteins are, so far as we know, pretty much of the same value, but from the standpoint of supplying material for tissue construction they may differ a great deal. Some proteins, when fed together with an adequate supply of non-protein material and water and salts, furnish all the nitrogenous compounds necessary for maintenance and growth; others under the same conditions fail to support growth or maintenance, or both. The former group may be spoken of as *complete* or *adequate* proteins, the latter as *incomplete* or *inadequate* proteins. The difference between the two kinds seems to lie in the character of the amino-acids of which they are composed. Some of the amino-acids which the body tissues need for repair or growth may be made in the body from other amino-acids,

glycin, for example, but others apparently must be furnished in the protein of the food, and if they are lacking, tissue construction is not possible."—(Howell's *Text-Book of Physiology.*)

12. *Heat is produced in the body by:* Oxidation; muscular action; the action of the glands, chiefly of the liver; the food and drink ingested; the brain; the heart; and the thermogenetic centers in the brain, pons, medulla, and spinal cord.

"The immediate source of the body heat is to be found in the chemical changes which take place in all the tissues and organs of the body. Each contraction of a muscle, each act of secretion, each exhibition of nerve force, is accompanied by the evolution of heat. The chemical changes are for the most part of the nature of oxidations, the union of oxygen with the elements, carbon and hydrogen, of the food principles either before or after they have become constituents of the tissues. The ultimate source of the body heat is the latent or potential energy in the food principles, which was absorbed from the sun's energy and stored up during the growth of the vegetable world. In the metabolism of the animal body the food principles are again reduced through oxidation, directly or indirectly, to relatively simple bodies, such as urea, carbon dioxide, and water, with a liberation of a large portion of their contained energy which manifests itself as heat and mechanical motion."—(Brubaker's *Physiology.*)

CHEMISTRY AND MEDICAL JURISPRUDENCE.

1. *Molecular weight* of a substance is the weight of a molecule of the substance as compared with the weight of an atom of hydrogen; it is, also, the sum of the atomic weights.

2. The most common element in nature is oxygen.

3.

	ATOMIC WEIGHT	VALENCE.
Hydrogen	1	1
Lead	207	2 or 4
Sulphur	32	2 or 6
Mercury	200	1 or 2

4. H_2S *is prepared* by the action of dilute sulphuric acid on ferrous sulphide:

$$FeS + H_2SO_4 = FeSO_4 + H_2S.$$

5. *Five acids used in medicine.*—(1) Acetic acid, $CH_3.COOH$; (2) Boric acid, H_3BO_3; (3) Hydrochloric acid, HCl; (4) Phosphoric acid, H_3PO_4; (5) Sulphuric acid, H_2SO_4.

6. *Uric acid* is a crystalline solid, colorless, odorless, and tasteless, almost insoluble in water; it is a weak, dibasic acid, with the formula $C_5H_4N_4O_3$. It is found in small quantities in human urine, chiefly as the disodic salt. On being heated uric acid is decomposed into urea, ammonium carbonate, hydrocyanic acid, and cyanuric acid. It is closely related to the purine bases and may be derived from the purines of the food and of the tissues. It gives the murexide test.

7. *Bismuth test for sugar.*—"Equal portions of the liquid are placed in two test tubes, to each of which enough solution of Na_2CO_3 is added to make the reaction distinctly alkaline, and to one a little powdered bismuth subnitrate, and to the other a little powdered litharge are added. The contents of the two tubes are then heated to boiling, when, if the bismuth powder becomes black and the litharge remains unchanged, the presence of a reducing sugar may be inferred. The purpose of the litharge is to guard against error from the presence of sulphur compounds, which blacken both the bismuth and lead powders."—(Witthaus' *Text-Book of Chemistry.*)

Objections to the test.—It cannot be used in the presence of albumen; sulphur compounds vitiate the test.

8. The presence of *albumin* in the urine makes the specific gravity less; the presence of *sugar* in the urine makes the specific gravity greater.

9. When *hydrogen dioxide* is applied to sloughing wounds there may be effervescence, in consequence of the liberation of oxygen.

10. *Normal urine* is of a yellowish color, acid reaction, and has a specific gravity of about 1015 to 1025.

11. *Idiocy* differs from other states of insanity in the fact that it is marked by a congenital defficiency of the mental faculties. There is not here a perversion or a loss of what has once been acquired, but a state in which, from defective structure of the brain, the individual has never been able to acquire any degree of intellectual power to fit him for his social position. It commences with life and continues through it."—(Taylor's *Medical Jurisprudence.*)

12. A wound inflicted by a blunt instrument will have somewhat of the appearance of a contused wound; the edges will not be so clean cut as in the case of a wound inflicted by a sharp instrument, and moreover, the surrounding tissues will also be more or less bruised.

(To be continued.)

BULLETIN OF APPROACHING EXAMINATIONS.

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†
Alabama*	S. W. Welch, Montgomery	Montgomery...Jan. 11
Arizona*	A. Martin, 207 Goodrich Building, Phoenix	Phoenix.....Jan. 4
Arkansas	T. J. Stout, Brinkley	Little Rock....Nov. 10
California	C. B. Pinkham, Sacramento	Sacramento,...
Colorado	David A. Strickler, Empire Building, Denver	Denver.....Jan. 4
Connecticut*	R. L. Rowley, Hartford	Hartford.....Nov. 9
Delaware	H. W. Briggs, Wilmington	Wilmington....Dec. 14
Dist. of Col'ba	E. P. Copeland, Washington	Washington....Jan. 11
Florida*	W. M. Rowlett, Tampa	Gainesville....Dec. 6
Georgia	C. T. Nolan, Marietta	June
Idaho*	Robt. O. Jones, Boise	Boise.....April 5
Illinois	F. C. Dodds, Springfield	Chicago.....
Indiana	W. T. Gott, Crawfordsville	Indianapolis...Jan. 11
Iowa	G. H. Sumner, Des Moines	Iowa City.....
Kansas	H. A. Dykes, Lebanon	Topeka.....Feb. 8
Kentucky	J. N. McCormack, Bowling Green	Louisville.....
Louisiana	E. W. Mahler, New Orleans	New Orleans...Dec. 2
Maine	F. W. Searle, Portland	Portland.....Nov. 9
Maryland	J. McP. Scott, Hagerstown	Baltimore.....Dec.
Massachusetts*	W. P. Bowers, 1 Beacon St., Boston	Boston.....
Michigan	B. D Harrison, 205 Whitney Building, Detroit	Ann Arbor....June 14
Minnesota	T. McDavitt, St. Paul	Minneapolis...Jan. 4
Mississippi	J. D. Gilleylen, Jackson	Jackson.....
Missouri	G. H. Jones, Jefferson City	St. Louis.....
Montana*	S. A. Cooney, Helena	Helena.....April 5
Nebraska	H. H. Antles, Lincoln	Lincoln.....Nov. 10
Nevada	S. L. Lee, Carson City	Carson City....
N. Hampshire	C. Duncan, Concord	Concord.....
New Jersey	A. MacAlister, Trenton	Trenton.....June 21
New Mexico	R. K. McClanahan, E. Las Vegas	Sante Fe.....
New York	G. M. Wiley, Univ. of State of New York, Albany	New York.... Albany..... Syracuse..... Buffalo..... Jan. 24
No. Carolina	K. P. B. Bonner, Moorehead City	Raleigh.....June
No. Dakota	G. M. Williamson, Grand Forks	Grand Forks...Jan. 4
Ohio	H. M. Platter, Columbus	Columbus.....Dec.
Oklahoma	J. M. Byrum, Shawnee	Oklahoma City Jan. 11
Oregon	B. E. Miller, Portland	Portland.....Jan. 4
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia... Pittsburgh.... Jan.
Rhode Island	B. U. Richards, Providence	Providence....Jan. 5
So. Carolina	A. E. Boozer, Columbia	Columbia.....Nov. 9
So. Dakota	H. R. Kenaston, Bonesteel	Pierre,.....Jan. 18
Tennessee	A. B. DeLoach, Memphis	Memphis.... Nashville.... Knoxville....
Texas	T. J. Crowe, Dallas	Dallas.....Nov. 16
Utah	G. F. Harding, Salt Lake City	Salt Lake City..
Vermont	W. Scott Nay, Underhill	Burlington....Jan. 11
Virginia	J. W. Preston, Roanoke	Richmond.....Dec. 14
Washington*	W. M. O'Shea, Spokane	Spokane.....Jan. 4
W. Virginia	S. L. Jepson, Charleston	Charleston.....
Wisconsin	J. M. Dodd, Ashland	.....Jan. 11
Wyoming	J. D. Shingle, Cheyenne	Cheyenne.....
National Board	S. Rodman, 1310 Medical Arts Building, Philadelphia	.....

*No reciprocity recognized by these States.

†Applicants should in every case write to the secretary for all the details regarding the examination in any particular state.

The Ovary as a Cause of Pain.—Aleck. W. Bourne, in summing up a discussion on this subject, suggests the following: (1) That the ovary is a much less common cause of pain than usually believed. (2) That it does cause pain in some cases of premenstrual congestion and "middle-pain," in all cases of varicocele salpingo-oöphoritis and ovarian prolapse, with or without displacement beneath the fundus of the retroverted uterus. (3) That the key to the diagnosis is the presence of physical signs of ovarian fixity or displacement or excessive tenderness, discovered by the bimanual examination. (4) That varicocele may exist without discoverable physical signs, but is usually associated with ovarian prolapse and retroversion of the uterus. (5) That the commonest errors of diagnosis are made in cases of neurasthenia.—*The Clinical Journal.*

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Original Articles.

PREVENTION OF RESPIRATORY DISEASES.*

BY CHARLES LYNCH, COLONEL, M.C., U.S.A.,

WASHINGTON, D. C.

IN the midst of the present world turmoil which has followed the great war and not less from the experiences of the war itself, it is difficult to realize that war is other than a wholly destructive process. Fortunately for mankind this is not the case, however. Without naming other possible benefits from war, I will curtail my discussion at once by limiting it to the prevention of disease due to war experience. Much of permanent value in preventing illness and untimely deaths has resulted from such experience. Doubtless if other than an American were telling this story, he would find good illustrations of what I have said in the war history of his own nation, but the point can be proved so very easily from our own war history that it is not necessary to go outside of it.

The Spanish-American War was the first war fought by us under modern conditions so far as medical science is concerned. I am sure that many in this audience will recollect the medical triumphs of that war. Yellow fever has been almost eliminated as a result. Its old hot beds—Cuba and Panama—no longer have cause to fear it. Their bondage is broken. The Panama Canal has been built and this was made possible primarily through the knowledge of how to prevent yellow fever gained by Major Walter Reed and the Medical Department of our Army in Cuba. The name Gorgas stands out among the sanitarians of all time.

Over 20,000 cases of typhoid occurred among our troops at home in the summer of 1898. The epoch-making work of Reed, Vaughan, and Shakespeare followed with the establishment of the fact that contact infection is of far more importance under conditions of camp life than is contaminated water supply which had been regarded as mainly responsible before that date. Their investigation proved of great value in preventing typhoid before Colonel Russell developed for us so successful a system of vaccination. The Spanish-American War opened up a new domain, the Tropics, which at that time had not been so well studied from the medical standpoint as the other parts of the world. In Porto Rico, Colonel Ashford discovered the presence of hookworm in 1900, while later he succeeded in reducing the high mortality from it by about 90 per cent. He treated some 300,000 patients in 1903-4. He is now at work on tropical sprue in the same field. In the Philippines, Colonel Craig did some notable work on malaria and dysentery; also on certain parasite amebæ, and in other important directions. There, too, Colonel Vedder made important investigations on beriberi in connection with its dietetic origin. This officer also was the first to determine that emetine has a specific action in amebic dysentery. Colonel Whitmore established the Pasteur Institute in Manila, investigating rabies and tropical dysentery. Colonel Chamberlain also did important pioneer work as head of the tropical disease board in the Philippines. In Cuba, General Kean did yeoman service in the prevention of infectious diseases.

The sum total gained by these efforts to save human life cannot be measured in figures. Their effects were too world-wide for that. Without any question, in much less than 25 years they have amounted to tens of thousands. I am sure my first point that wars sometimes contribute in large measure to the saving of life through knowledge gained of the prevention of disease has been proved without going any further. But it may be interesting to know that so good an authority as General Leonard Wood once said that the whole cost of the Spanish-American War had been more than repaid by the information gained which led to the control of yellow fever alone.

The medical profession entered the World War, I think, with high hopes. We had a magnificent sanitary record to point to on the military side, our accomplishments in civil sanitation had been no less notable, and the best trained sanitarians, both civilian and military, were available to our forces. Nor were we lacking in knowledge of where our danger lay so far as disease was concerned. Our experiences on the Mexican border in 1916 indicated that respiratory diseases would be the class of disease most to be feared in a war of to-day. In fact, this prophecy was freely made before we became actively engaged.

The figures taken from the last annual report of the Surgeon General show that our hopes have been justified, except that we have made no appreciable advance as yet in the control of the respiratory diseases. An enormous reduction in deaths occurred, but this was due to a better knowledge of intestinal and insect-borne diseases, as well as smallpox, etc. But let the figures speak for themselves.

"The number of deaths from pneumonia is slightly greater than for the Civil War comparison and much greater than for the Spanish War comparison. The Spanish War rates were low because the war period

*Read before the Alumni Association of the College of Medicine of Syracuse University at the annual meeting held June 12, 1920; published with permission of the Surgeon General, U. S. Army, who is not responsible for any opinion expressed or conclusions reached herein.

was entirely in warm weather when pneumonia is infrequent. The greatest cause of the high pneumonia rate for the present war was the epidemic of influenza, a factor which occurs only about once in thirty years. Had this epidemic not occurred the rate would have been much lower than for the Civil War and probably lower than for the Spanish War. *Taken all in all, however, it must be confessed that the secret of the control of respiratory diseases, particularly pneumonia, still remains undiscovered."*

	Number of deaths occurred in present war, Sept. 1, 1917—May 2, '19. Average strength approximately 2,121,396.	Number of deaths that would have occurred if the Civil War death rate had obtained.	Number of deaths that would have occurred if the Spanish-American War death rate had obtained.
Typhoid fever	213	51,133	68,164
Malaria	13	13,951*c*	11,317
Dysentery	42	63,898*b*	6,382*b*
Smallpox	5	9,536	37
Pneumonia	41,747*a*	38,962*a*	6,086*a*
Scarlet fever	167	112	222
Diphtheria	100	1,188	149
Tuberculosis	1,220	9,574	631
Meningitis	2,137	3,859	4,081
Other diseases	3,768	34 881	15,587
Total for disease	49,412	227,094	112,656

a. Includes deaths listed from measles, influenza, empyema, inflammation of the lungs and pleurisy, as well as pneumonia.
b. Includes dysentery and diarrhea.
c. Includes malaria and remittent and congestive fevers.

It will perhaps now be useful first to consider the theory, or theories, of transmission of the respiratory diseases which obtained in largest measure at the beginning of the World War and during its course. They are embraced under the term "droplet infection." Of course everybody knows what droplet infection is, or thinks he does. Minute drops are expelled in the act of coughing or loud speaking. They contain the infective agent. The recipient inhales them from the air and thus becomes infected.

Based on this theory, procedures were early put into operation in the army which, theoretically at least, would diminish the dangers of such transfers from man to man. That they likewise diminished other possible methods of transmission is true and unfortunate from the scientific point of view, as this much increased the difficulties in many cases in reaching correct conclusions as to the exact method of transmission.

The most important of these procedures were wider separation of men in tents and barracks and separation first of all to give maximum distance between the mouths and noses of the men. The head and foot sleeping of adjoining men is an example of this, as is also seating soldiers on only one side of the table at mess. Cubicles were used, largely in hospitals, to impose an aerial barrier between men in adjoining beds. Free ventilation was also advocated in the belief that this produced dilution of germs floating in the air. Floors were oiled so that the infected material falling to the floor would be caught in its sticky covering and would not be kicked up to infect other men. Then masks were used, at first in hospitals only, then en route to hospital and finally, during the influenza epidemic especially, quite generally throughout some camps.

Intentionally nothing has yet been said on quarantine and vaccination. These procedures are of course based on other theories. Quarantine excludes all contagious individuals from the well. In theory at least it can be made effective, and sometimes is under army conditions. Rarely is much accomplished by it, however. There are too many loopholes and closing them effectually would tie an army hand and foot. Vaccination for pneumonia has up to the present time no figures to commend it. Neither quarantine nor vaccination will be referred to again.

There is, of course, no disposition on my part to criticise what has been done. It had a scientific basis theoretically and droplet infection had then, and has still, I think, the general support of the medical profession.

The results have already been given. If figures do not lie, they are to say the least very disappointing. There are other figures for comparison, but these are perhaps even more disappointing. I am speaking of the relative death rates for pneumonia between army and civil population of the same age period. They are fragmentary even for the period of the influenza epidemic, yet in order to secure anything authoritative, it is essential to confine ourselves to that period. The best we have been able to secure came to us in a private communication from one of our largest insurance companies. Better opportunities for securing accurate statistics exist in the army than in civil life, it is true, but this does not help greatly here, as we are searching for a comparison with our civil figures. The army death rate from respiratory diseases during the influenza epidemic was just about twice that of the policyholders of the insurance company in the same age group—20 to 34; 14 per thousand in the army as compared with 7 per thousand in civil life, as represented by the policyholders in question. If the civilian life figures can be taken as a fair measure for civilians, and I am quite sure that we shall be led into no material error by so accepting them, our only conclusion can be that, with all that was done in a sanitary way in the army as compared with civil life during the influenza epidemic, pneumonia deaths were not only not less in the army, but actually double those in civil life. From all that has been said, it is certainly fair to conclude that at the time of the influenza epidemic we had not found the answer to the control of respiratory diseases.

To a few sanitarians the droplet theory of infection in respiratory diseases never much appealed. Speaking only for myself, adequate proof was lacking to my mind. Dose is a big factor in infection and despite some laboratory experiments in projecting non-pathogens to some distance from the mouth, it seemed to me that, save under very exceptional circumstances, we must assume, if we accept the theory of droplet infection, that these droplets are not subject to the laws of gravitation and that the recipient swims through a sea created by them much as a fish swims through water. Likewise, he would have to have gill slits like the fish. So far as I know, no one as yet has collected any figures which offer any proof that these various measures of preventing droplet infection are of value, though it is fair to say that many good men say that in their opinion they served to lessen the spread of respiratory disease. A British commission on meningitis reduced the percentage of car-

riers by spreading men out more widely in barracks, but at the same time they removed the carriers then present. I mention this because it is sometimes stated as a proof of the benefits of wider separation of men in barracks. Of course it is no proof at all.

Mere chance attracted my attention, and that of my associates, to other possible avenues of transmission. I should say right here that some of these associates, notably Lieutenant-Colonel Cumming, have carried on experiments in indirect transmission much further than I have. Our first observation regarding insanitary methods of washing mess kits were made as early as August, 1917, at Tanforan, a small camp on the old race track near San Francisco, then occupied by the 144th Field Artillery in process of organization. We found the accepted method of washing mess kits was by setting out two or three pails of lukewarm water, into which each man plunged his mess gear and hands, after scraping the former into another pail. Later this organization had a severe and fatal epidemic of measles, the deaths being due to the ensuing pneumonia.

Now to explain in some detail what our conclusions were from this Tanforan experience. Of course we concluded at once that the practice of more than 200 men plunging their mess gear—mess tin, knife, fork, spoon—and hands, into the same dirty water was a most disgusting one. Later on, however, it came to us that not only was this disgusting but that it might have great sanitary importance; that is to say, we wondered if in straining at the gnat we had not been swallowing the camel, the gnat in this case being represented of course by the direct method of transmission by droplets, and the camel by the indirect method, the saliva of infected men being carried to their hands and eating utensils, then to the mess kit washing water, thence to other men's kits and hands, and finally to the mouths and hands of the recipients. This possibility occurred to us nearly three years ago. But no opportunity to study the question presented itself for some time. We have written a good deal in recent medical literature regarding indirect transmission of respiratory diseases or, as we prefer to call them "saliva-borne diseases," our point here being that this is the active agent in transference and to use the word "respiratory" gives a false idea as the inference is drawn that transfer is direct from respiratory apparatus to respiratory apparatus in the act of respiration. We have made no attempt as yet to summarize all our evidence, as it should be, or even to indicate what we consider most convincing. I will try to do so this afternoon as well as the necessarily limited time permits.

Our evidence is of two classes—(1) Field; (2) Laboratory. Field will be discussed first. When the influenza epidemic struck us at Newport News we had two groups of soldiers, one of which used mess kits which were washed in tepid water; the other group used table ware or washed their mess kits in boiling water. Our consolidated tabulation shows the latter—the table ware group—including the individual method but with boiling water, had a strength of 9,778 with 412 cases of influenza, and the former—the individual mess kits in tepid water—had a strength of 12,727, with 2,543 cases. Our method of investigation was simply to take these groups as we found them and to set down the results. Fourteen different organizations were concerned, and so far as we could make out, there were no differences in their living conditions except their mess sanitation. Their susceptibility to influenza seemed to be quite the same so far as their history went. While time does not permit going into these various organizations in detail, I desire to invite particular attention to one of our posts. This was Pig Point, Virginia, an Ordnance depot, where high explosives were stored, and consequently wholly and widely separated from other military and civil communities. Besides the soldiers present, many civilians were employed there. They, and the small Ordnance organization, constituted 1,150 persons, and messed from table ware. Their rate of influenza for the 18-day period was 82 per thousand, with an average daily incidence of 4.5 per thousand. The two Fire and Guard organizations, whose strength was 445, ate from mess kits washed by the old line method. In 18 days they had 171 cases. In every respect the two Fire and Guard organizations were better off from the sanitary standpoint than the greatly overcrowded civilian group, save only in their method of washing their eating utensils.

Our rates at Newport News for the whole epidemic of influenza compared very favorably with other camps. Furthermore, our death rate was less than the figures given for the average civilian population. A word of explanation as to the reasons for this is needed here. We were fortunate in having a number of organizations eating from table ware, also others that were boiling their mess kits prior to the epidemic. Then as soon as we concluded that the usual method of washing mess kits was dangerous, we changed it to boiling them, and this for all the organizations in the Port. Our conclusions from our first study were as follows:

1. Influenza, as well as the other so-called airborne or respiratory diseases, is essentially a hand-to-mouth infection.

2. There are major and minor modes of transmission by indirect contact—by the former through tepid mess-kit washwater, and by the latter through intermediate inanimate objects, the hand being the conveyor in both instances. Among troops approximately 75 per cent. of the cases arise by the major route. This applies to troop transports as well as camps.

3. Transmission by direct contact is only subsidiary to the indirect routes.

4. The adoption of a universal method of washing mess kits in boiling water will enormously reduce the prevalence of all mouth-borne infections.

5. The prevention of the hand-to-mouth infections may be accomplished by any measure which will prevent the unclean hand from visiting the mouth and nose and by the thorough cleansing of the hand after all such visits.

6. The incubation period of influenza would appear to be from two to three days.

7. An epidemic of influenza among troops may be controlled by elimination of hand-contaminated dish water.

A little later we were able to supplement somewhat the figures obtained in the influenza epidemic at Newport News, giving us a total of 66,076 troops.

In one group of collective table-ware washing there were 33,452 men, among whom 1,710 cases of influenza occurred, giving a daily incidence rate per thousand of 3.7, and a period rate per thousand of 51.1. The individual mess-kit washers were represented by 32,624 men and had 8,208 cases of influenza, a daily incidence rate per thousand of 18 and a period incidence rate per thousand of 252. It will be noted that there were five times more cases in the latter group. In order to ascertain if the same condition obtained in the civil population during the influenza epidemic, we examined certain restaurants in which washing machines and boiling water were used, as well as those in which the dishes were hand washed. In six first-class restaurants, washing machines and water at or near the boiling point, of 1,350 employees, 13 had influenza, or a rate of 9 per thousand. In six eating houses in a poor district, dishes hand-washed, of 25 employees, 7 had influenza, or 40 per thousand. In four department stores in the shopping district, of 13,500 employees, 181 had influenza, a rate of 13 per thousand. These stores employed washing machines and boiling water. In an employees' dining room in another department store in the shopping district, of 3,100 employees, 250 had influenza, a rate of 84 per thousand. Their dishes were hand washed. This again confirms the efficacy of the pasteurization of eating utensils.

Investigation on the same general lines was made by Colonel Cumming of influenza-pneumonia as influenced by dish washing in 370 public institutions. This was done by means of a questionnaire. The institutional population on which the report is based was 252,186. There were 84,748 inmates in institutions in which machine washing was employed for dishes. Their mortality per thousand population was 10.4. In the 167,438 in institutions in which hand washing was employed for dishes, the mortality per thousand was 22.9—a rate twice as great.

The laboratory work carried on was exhaustive. I can only indicate the more important findings here.

As a matter of fact, before any of our field work was done and as early as the winter of 1917-1918 in San Antonio, we made examinations of different classes of soldiers to ascertain the streptococcus index. This work was attempted because it seemed to us there must be something to account for the high pneumonia rate in soldiers. In recruits we found streptococcus in 5 per cent. I might mention that another observer, in 32 rural recruits recently found no streptococci at all, thus in a measure confirming our observation; but as I have said in recruits as they ran at San Antonio, the rate was 5 per cent., and from month to month this increased with length of service. According to our findings, which were based on approximately 6,000 examinations, this is a camp and not a hospital infection. This caused grave doubt of the usefulness of cubicles and masks in hospital. In our opinion this is closing the door after the horse has been stolen. Of those who entered the hospital with measles, 36 per cent. were streptococcus carriers and 98 per cent. of all who developed streptococcus-pneumonia belonged to the healthy carrier class.

After the influenza epidemic we undertook work involving a total of 160 separate experiments with a view to ascertaining by laboratory methods just how much contamination of the hands and mess gear could occur. We found that in warm weather, when a number of men wash their hands in warm clear water for thirty seconds, each man contributes 50,000 organisms; and in cold weather 200,000. If warm soapy water is used this number increases to 4,000,000 on warm days, while on cold days the number is 240,000,000. This increased contamination in cold weather is accounted for by the excessive contamination of the hands with organisms from the nose and mouth, this due to increased coryza, sneezing, and coughing. We believe that the increased prevalence of the so-called respiratory diseases during the winter months can be accounted for by the increased mucous secretions during that period.

Early we also succeeded in isolating streptococci from the hands of streptococcus carriers. This condition of course indicates the danger of the contamination of inanimate objects by sick or carriers. A further investigation involved some hundreds of examinations of the hands and eating utensils of sick and of carriers, and of inanimate objects, and showed the following results:

	Dishes per cent.	Hands per cent.	Inanimate objects per cent.
Streptococcus hemolyticus	84	38	13
Pneumococcus	63	17	50
Streptococcus viridans	65.6	100	26.6
B. Diphtheria	1.9	5.5	2.7
B. tuberculosis		1.8	

We were unable to find the streptococcus in air at a height of over 2 feet from the floor, but many streptococci could be found in the floor dust.

Tubercle bacilli were obtained from the hands of 45 per cent. of open cases; from the hand-washing water in 35 per cent., and from the rinse water in which their dishes had been previously hand washed in 25 per cent.

About this time it occurred to us that perhaps common dish water in public eating houses is responsible but to a less extent than mess kit wash water in the army for the spread of mouth-borne diseases. Therefore, 54 specimens of dish water from ten different restaurants were examined. They showed the average bacterial count to be four million per c.c.—approximately 50 times greater than sewage. But we recovered twelve million organisms from the ladle of a spoon used by a streptococcus carrier and many of these organisms were streptococci. A spoon may be contaminated with the culture of common organisms, then dried and washed with eating utensils in the usual manner, and then identified by the original contamination which had adherred to it during the washing process. We discovered later in 98 examinations that 78.82 per cent. of organisms were removed by hand washing, while machine washing removed 99.17 per cent.

One of the most interesting of our experiments to my mind was the one on transmission made by Colonel Cumming and Captain Cox at the Port Laboratory, Newport News, Virginia.

Before describing it, it might be well to summarize the exact steps in the transmission in the saliva-borne infections through mess-kit wash water. It is of course well recognized that in this

group of infections the saliva is heavily laden with the infectious virus or organisms. In making a transfer of these organisms through mess-kit wash water, the infected individual, presumably the mild, unrecognized case, contaminates his hands and his mess kit with these mouth-borne organisms. Consequently, in the washing process, the organisms from the mess kit and the hands are washed into the lukewarm water which does not destroy them. In the case of the donor then, there are two avenues by which the mouth organisms are introduced into the wash water—one through the contaminated mess kit, and the other through the contaminated hands. The wash water serves as a central focus of distribution after it becomes contaminated by unrecognized cases or carriers. Here again the distribution from the contaminated wash water to healthy men is through the contamination of both mess kits and hands. The contaminated mess kits and hands both go to the mouth, where the infectious virus or organisms are planted. Thus we have a two-link chain for the donor which is connected with the two-link chain of the recipient through the intermediate link formed by the mess-kit wash water. In carrying out this series of transmission experiments many preliminary tests were made, and finally a series of experiments which involved both donors and recipients was carried out.

Ten men were used in this experiment. Prior to each of six successive meals, the throats, mouths, and lips of five of these men (donors) were sprayed with a suspension of *B. prodigiosus*. After each meal these same men washed their mess gear in one gallon of warm water. The hands were used as mops in the washing process. Then, after the washing process had been completed by the five sprayed men, the five unsprayed men (recipients) likewise washed their mess gear in this same dish water.

In the examination of donors, that is the men whose oral cavities had been infected with *Bacillus prodigiosus*, it was found that 33 per cent. of their hands and 16 per cent. of their mess kits had become contaminated with the organism. It was next found that 66 per cent. of the mess-kit wash water specimens used by the donors were contaminated with this same organism. In investigating the recipients who used the same contaminated wash water for washing their mess kits, it was found that 45 per cent. of their hands became contaminated, and finally that the *Bacillus prodigiosus* was transferred to the oral cavities of these recipients by the hands and mess kits in 30 per cent. of all the examinations. Thus it is shown that organisms inoculated into the mouths of men can be transferred through lukewarm mess-kit wash water to the mouths of other men.

These results are wholly corroborative of our previously advanced theory of transmission through warm mess-kit wash water, and of the paramount importance of the use of boiling water as a means of closing the major avenue of saliva-borne disease distribution.

Figures are not available to me in regard to the influence of clean mess-kit washing and clean hands, or the reverse, in the recent small epidemic of influenza. I have been privately informed that at Camp Devens, Mass., where great interest is manifested in the subject, not a single death occurred last winter.

You will perhaps be surprised to learn how difficult it is to insure the sanitary washing of mess kits in the army. It may be admitted at once that it takes some trouble, but there is no sanitary procedure known to me compared with which an insanitary one under like circumstances would not be less troublesome for the time being. Who will take the trouble is another matter. Machines can take it all in permanent camps or posts. In the field it is up to the individual soldier to a great extent just as is the case with field sanitation generally.

I should point out that the situation in the army during this past year has not been one lending itself either to valuable research or to the best sanitary demonstration. But the Surgeon General has not been unmindful of the army's possibilities for learning how to control respiratory diseases. He has appointed an Advisory Board for this purpose.

While Doctor Wynkoop informed me, in inviting me to be present to-day, how very large a percentage of the Syracuse medical alumni saw service during the World War, I would have felt hardly justified in discussing my present subject if it had only military interest. As a matter of fact, it has no less interest for civil communities. Against pneumonia, the captain of the men of death, neither the civilian nor the soldier has a defense except that accorded by the observance of certain sanitary laws, and these laws must be directed against this disease, and not general laws which answer for other diseases. For example—what possible effect can the Imhoff tank have in the control of pneumonia? We believe we have found what should be done to prevent pneumonia in civilian and soldier alike. The civilian, it is true, does not use a mess kit, nor does he usually belong to a large messing group. Therein lies his comparative safety, but on the other hand, we all know that pneumonia often attacks more than one member in a family. Very likely this is through poor dish washing at home, or possibly through contaminated hands.

If one indulges in group messing, large groups, as in a restaurant, he is in a position of a soldier who uses table ware. The safety of each depends on proper pasteurization of the dishes. The mess-kit soldier, in our opinion, is always worse off than the civilian. This is a war danger that is much less thought of than bullets but is none the less real for all that. The wise commander and his soldiers by intelligent action can much diminish this danger, save under exceptional conditions in the face of another enemy. The civilian does not have this reason for not minimizing it. His enemy is a relentless disease. Like a good soldier he should not fear his enemy, but at the same time he should, as a matter of good judgment and common sense, take due and intelligent precaution to insure himself the victory.

I trust if I have made no converts to our theories, I have at least commanded your interest to a sufficient extent to induce you to study this subject carefully with our experiments in mind. No one realizes better than we do the magnitude of the problem or that additional work is demanded.

EPIDEMIC ENCEPHALITIS.*

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No disease has so taken the medical profession by surprise as epidemic encephalitis, for it arrived here in the wake of the influenza epidemic almost unheralded. Its expected recurrence this winter makes its consideration still a matter of extreme importance.

Like most of the epidemics of the past decade, it has travelled from East to West, originating somewhere in that center of disease, Southeastern Europe, whence came poliomyelitis, influenza, meningitis, and lastly encephalitis. The accepted terminology for the disease has become epidemic encephalitis because the term encephalitis lethargica is incorrect and misleading. For, as it has been aptly said, it is not the encephalitis which is lethargic but the patient and when lethargy is present in only a small proportion of the cases, is it not a mistake to consider that the disease and lethargy are inseparable? A word of caution against the use of the term "sleeping sickness"; the tsetse fly in Africa has usurped that name for its own and trypanosomiasis is clinically a different disease from encephalitis.

The first report on the disease was by von Economo from Austria in 1917. He gave an excellent description of the clinical aspects and pathology of the disease and was the first to name it encephalitis lethargica. After that reports filtered in from Germany, later from France, and soon afterward a wealth of material appeared from England. In the fall and winter of 1918-19 the disease made its appearance in the United States in epidemic form, lasting until the spring. After that sporadic cases occurred until the first of this year, when it again appeared in large numbers and in a greater variety of forms than in the previous year. It has now spread to Latin America and the Orient, therefore becoming world-wide in its distribution.

Let me impress upon you that this is not a new disease. A study of the literature shows that an epidemic "sleeping sickness" was reported in 1712, again in 1745, and in 1800, and in 1890 the predilection of the influenza toxin for nervous tissue was noted by Leichtenstein in a splendid monograph and an encephalitis was described by him coincident with the great influenza epidemic of that year. Since then there have been described various encephalitic syndromes whose etiological factor was unknown and of sporadic occurrence. (Strumpell's "Primary Acute Encephalitis," Wernicke's "Polioencephalitis Superior Acute," and Leichtenstein's "Post-influenzal Encephalitis," etc.) However, to the younger generation of medical men the occurrence of encephalitis in epidemic form is a disease of considerable novelty.

Etiology.—Almost any age may be attacked, the disease having been reported in an infant four weeks old and in a man over sixty but, like influenza, it seems to strike particularly young adults between the ages of twenty and thirty-five.

*Read before the Medical Association of the State of Maine, July, 1920.

The sexes seem to be equally susceptible; one fact of interest is the large number of reports of pregnant women developing the disease who seem to be particularly liable to the infection, as they are to influenza.

There is a seasonal occurrence, the epidemic in each country reaching its height in the winter with sporadic cases appearing through the remainder of the year, most rarely in summer. During the past winter in New York the medical wards of all the large hospitals contained from five to ten cases all of the time, the disease being especially prevalent during January.

There is a special susceptibility on the part of the present generation to the invasion of what is to them a new disease. At its outset the cerebral forms were encountered, but this winter a greater variety of new types, notably those in the spinal cord, were seen; whether this has to do with the attenuation of the organism it is impossible to say.

The etiological factor is unknown. Several organisms have been reported, namely a diplostreptococcus by Von Wiesner[1] and others, and a "globoid" organism by Strauss and Loewe.[2] The latter investigators have carried out successfully inoculation experiments into monkeys with nasopharyngeal washings, brain tissue, and spinal fluid, and have reproduced the disease from the cultured organism. Recently Levaditi and Harvier have reported similar success.

The mode of transmission is supposed to be through the nasopharynx. However, its appearance in such large numbers in such widely separated localities almost simultaneously makes one feel that perhaps atmospheric conditions may disseminate it.

The question of communicability is an interesting one. There have been cases reported of a father and son contracting the disease, and a member of the house staff of a New York hospital died from the disease after having had several cases under his immediate charge. In spite of these incidences, which of course do not prove the point, neither at the Neurological Institute nor at the general hospitals in New York are these patients separated from the others, and no contact cases have as yet been reported from them.

Pathology.—In discussing the histopathology, I should like to lay emphasis upon the disproportion between the severity and extent of the signs of encephalitis and the slight changes found in the brain on necropsy. Many cases with signs indicating profound disturbances of the brain stem and encephalon will show macroscopically almost nothing and microscopically very little. In a very small number the reverse is also true.

In general it may be said that the toxic factor in encephalitis has a predilection for the grey matter; the most extensive changes are found in the basal ganglia, nuclei of the brain stem, and the floor of the fourth ventricle and aqueduct of Sylvius. Lesions have also been found in the posterior roots and the cranial nerves with resulting radiculitis and neuritis. The most characteristic lesions to be found in encephalitis are a perivascular infiltration and microscopical hemorrhages usually occurring from the venules. Mononuclear and plasma cells are seen invading

the tissue spaces about the blood vessels and edema is also encountered. Neuronophagia and engorgement of the pia mater are relatively mild in encephalitis in contradistinction to poliomyelitis.

Symptomatology.—General symptoms: The antecedent history of a previous catarrhal or grippe infection is obtained in a small percentage of cases, and some have followed an influenzal pneumonia. Most commonly the onset of the disease is acute without previous infection, and is ushered in by chills, lassitude, malaise, headache, anorexia, and fever, and differs very little from the onset of any acute infectious disease. However, the occurrence of a diplopia, dizziness, or delirium, and the signs of a localizing cerebral or spinal lesion soon serve to differentiate it from other conditions. There are mild forms of the disease which are never severe enough to put the patient in bed; the diagnostic points are few and may often be no more than a transient oculomotor palsy, or perhaps a slight drowsiness for a week or ten days, which may not even have made the patient stop work. The severe fulminating forms of encephalitis are rarely seen, but when they do occur the picture within ten or twelve hours from the onset will consist of vertigo, vomiting, and collapse, perhaps a convulsion, and then the signs of a severe involvement of the brain stem, as evidenced by paralyses of the limbs, cranial nerve palsies, delirium and coma following rapidly upon one another to death.

The temperature in the great majority of the cases is increased; in the average varying from 100° to 102°, subsiding gradually until by the fourth or fifth week it is gone. Fever is occasionally absent in the mild form and in the fulminating and fatal forms is apt to become very high. Hyperpyrexia is sometimes extreme, probably from a lesion in the temperature regulating center in the medulla.

The pulse commonly corresponds to the temperature and in a few cases a tachycardia of 140 to 150 is seen.

The headache accompanying encephalitis is seldom troublesome, and usually occipital in location. When severe it is apt to be due to an involvement of the posterior nerve roots at the highest cervical level.

Skin rashes, especially herpes, have been mentioned in some reports.

Photophobia is present and in a hiccough we have evidence of a phrenic nerve affection. In connection with this latter sign, I should mention an epidemic hiccough[8] which developed before and during the outbreak of encephalitis, both in this country and abroad. A few of these cases eventually developed evident signs of encephalitis.

Special symptoms: Having sketched the picture presented by the abortive, the usual, and the fulminating forms of encephalitis and having detailed the general symptoms, I will take up the remainder of the symptoms and physical signs in conjunction with their localizing centers in the cerebrospinal axis. In that way perhaps we may avoid attempting the impossibility of classifying definite fixed types of this disease—a very futile thing to do because of the diversity of localization in each individual patient.

The most evident symptoms of involvement of the encephalon are the mental attitude and status of the patient. Lethargy, which was at first thought to be present in all cases, is absent entirely in more than half of them. When present, it may vary from slight dullness and apathy to coma. At the outset patients may fall asleep during the day, or they may have prolonged hours of sleep; later in the course of the disease they may with difficulty be kept in conversation for any length of time and be quite somnolent. The impression they give of somnolence is often erroneous, presenting a picture of relaxed facial expression and a ptosis of the eyelids, but they are easily aroused to answer questions or enter into conversation, following upon which they will relax to their apparently stuporous condition. Such a patient may even complain of insomnia. The cause of this peculiar lethargy which accompanies encephalitis has been variously described as a toxic action upon the cerebral cortex or an interference with the corticothalamic sensory tracts.

Many of the patients in the febrile stage of the disease, excepting those with pain, are in a pleasing *euphoric* state, no matter how seriously ill they are. Delirium is also commonly seen and takes the form of the occupational type, rarely developing into an acute mania. It often simulates the muttering delirium of the third week of typhoid. Irritability, restlessness, mental depression, and anxiety are also seen. Aphasias of mixed types, catatonic states, and catelepsy are occasionally observed; especially noteworthy is the frequency with which we are now seeing mental disorders as residua of the disease; these may be paranoid states, expansive episodes of a paretic type, depressive psychoses, and many psychoneurotic states.

Next to the oculomotor and cortical symptoms those referable to the basal ganglia are the most important. Here there are four sets of symptoms comprising: (1) the Parkinsonian syndrome, in which is seen the mask-like unemotional facies, rigidity of the muscles, and flexed attitude of the body with stooping, the slowness of movements, and a tremor of a coarse oscillatory type suggesting though not always quite characteristic of the "pill-rolling" tremor of paralysis agitans, this may be unilateral or bilateral; (2) Wilson's syndrome of extreme spasticity of the limbs with involuntary smiling, indicating lenticular degeneration; (3) Choreiform and athetoid types which also may be limited to one-half of the body; (4) an involvement of the internal capsule or of either the pyramidal tract or lemnisci will result in hemiplegias, monoplegias, hemianesthesias, or hyperesthesias; rarely a hemanopsia has been observed.

Midbrain lesions are by far the most important and may involve any of the oculomotor nerves, paresis or paralysis of the third, fourth, and sixth nerves being seen either singly or in combination. Accompanying the diplopia and ptoses are seen interesting changes in the pupils; they may be unequal, irregular, and react sluggishly, or are fixed to light and accommodation. In no other disease than cerebrospinal lues is this condition so frequently found. A typical Argyll-Robertson pupil, however, is very rarely seen.

When the disease affects the pontine and bulbar region the syndrome is like that of a polioencephalitis inferior acuta. Trigeminal neuralgia perhaps with herpes indicates a Gasserian ganglion involvement, and anesthesia over its peripheral distribution has been noted. A bilateral or unilateral facial paresis may be present, but this must be differentiated from the Parkinsonian mask. Facial tics are often seen. The eighth and eleventh nerves have not been affected in my experience, but dysarthrias, dysphagias, and extreme tachycardia were noted late in the disease, indicating ninth and tenth nerve lesions. A thickness and slurring of the speech, and deviation or hemiatrophy of the tongue frequently occur and are evidence of lesions of the hypoglossal.

Convulsions have been seen of either the grand mal or Jacksonian variety.

The occurrence of symptoms of cerebellar involvement in the disease is more common in children and is evidenced by acute ataxias, asynergy, hypotonicity, and nystagmus.

Our first conception of this disease was essentially a cerebral one, but during the past winter we have observed frequent evidence of the involvement of the spinal cord. I should like to place particular stress upon the cases showing symptoms of posterior root disease; the radicular types which I have reported elsewhere[4] are characterized by myoclonic twitchings, hyperesthesia, paresthesiæ, and severe lancinating radicular pain. This may occur in isolated areas, such as the face, abdominal muscles, or arm, or it may progress in a descending fashion from the highest cervical to the lowest sacral segment. Carnot and Gardin[5] have reported an ascending myoclonic form. Herpes zoster has also been noted (Tilney and Riley[6]). Localizing symptoms in the brain may or may not accompany this type.

Involvement of the anterior horn will result in a clinical picture simulating an acute muscular atrophy. This is rarely seen, as are those types showing signs of a transverse myelitis with marked sensory impairment below the level of the lesion in the cord.

The relative infrequency of evidences of meningeal inflammation is noteworthy and is shown by the lack of headache, the rarity of stiff neck and Kernig's sign, and the low cell count in the spinal fluid.

In this connection I will mention also the rarity of choked disc. It is sometimes seen though and when pappiloedema occurs along with localizing symptoms of a cerebellar, brain stem, or cortical lesion, it is most confusing for diagnosis, and only the presence of an epidemic saves the patient from a decompression operation for brain tumor.

Sphincter involvement is not usually seen until late in the course of the disease and accompanies an increasing coma.

Before closing the discussion of the symptomatology, I should like to lay emphasis upon the marked asthenia, the low blood pressure, and the brachycardia which occur in these patients as the disease advances toward convalescence. This is an evidence of a vagotonic adrenal complex, a hypoadrenalemia, from the toxic effect upon the suprarenal glands.

Clinical Pathology.—The condition of the spinal fluid has been one upon which little stress has been laid. Probably about 70 to 75 per cent. of the cases will show pathological changes of some variety. The fluid is clear, and no film forms on standing. The cell counts in my experience have varied from zero to as high as 250, the usual range being from ten to seventy. An increase of globulin is observed in a greater percentage of cases than an increased cell count. Wassermann reactions have been uniformly negative, but the colloidal gold test has in many cases shown curves which are identical with either that of paresis or that of cerebrospinal lues.[7] The most frequent curve encountered would be represented by 1 1 1 2 1 1 0 0 0 0, or the so-called "irritation" curve. In a recent paper C. Dopter[8] has presented some interesting figures upon the inceased sugar content of the spinal fluid in encephalitis. This is a fact of considerable importance and may prove to be a differential point of value in diagnosis.

The blood may show a slight leucocytosis and a polynucleosis. One observer has noted an increase in the non-protein nitrogen, but otherwise the blood chemistry has been little studied.

The urine does not show evidence of any characteristic changes other than the usual febrile urine.

Course and Prognosis.—The tendency in the disease is toward chronicity, the majority of the cases extending over several weeks to months. A fatal termination may, however, occur within 24 hours or not until after eight or nine weeks. As the epidemic becomes more and more past history the chronic lesions are becoming a matter of greater concern to those of us who have given hopeful prognoses. Certain of the manifestations of the disease have a special tendency to become chronic. These are the Parkinsonian, psychotic, and a few of the oculomotor disturbances. The mild types are apt to have a short and uninterrupted convalescence, while the rapid and more severe types tend to relapse to chronicity. The prognosis for life in encephalitis is good. Recoveries occur in from 65 to 90 per cent. of the cases, varying with different reports. The prognosis in children seems to be better than in adults, and one author, E. L. Hunt,[9] notes that in cases with spinal fluid in which a cell count is very low or very high, the outlook is unfavorable, while intermediate counts of 40 to 60 offer a better prognosis.

Differential Diagnosis.—There are four diseases which epidemic encephalitis tends most to simulate, viz.: botulism, poliomyelitis, tuberculous meningitis, and brain tumor. The English observers in 1918 considered encephalitis to be an epidemic of botulism. In many characteristics, especially the ophthalmoplegia, they are similar, but we now are able to differentiate them. The absence of acute gastrointestinal disturbances is of importance in differentiation, also the absence of an epidemic.

Poliomyelitis differs from epidemic encephalitis because it occurs mostly in children and in the summer time; flaccid palsies are rare in encephalitis, and the extreme acuteness of both the cerebral and spinal forms of poliomyelitis is seldom found in encephalitis.

We find differentiation from tuberculous men-

ingitis often fraught with the greatest difficulty. The chronicity of tuberculous meningitis, the marked meningeal irritation, the increased tension of the spinal fluid, and lastly the presence of the tubercle bacillus will help us to a correct diagnosis; from the clinical aspect alone it is often impossible.

A certain few cases will in every particular simulate a brain tumor, as I have already mentioned, showing papillo-edema, vomiting, headache, and localizing signs. I well remember a patient who was seen in January by the best consultant in internal medicine and two leading neurologists of New York and whose case was diagnosed as one of frontal lobe tumor, in whom complete and permanent recovery occurred.

Cerebrospinal lues may simulate encephalitis. However here the serology will easily clear the diagnosis.

Still other diseases which may more rarely confuse the differential diagnosis are typhoid fever, uremia, paralysis agitans, Sydenham's chorea, the delirium of acute infectious diseases, hysteria, and the various psychoses which it may simulate.

Treatment.—The treatment of encephalitis is entirely symptomatic, for as yet no specific remedy has been found. During the acute febrile stage the patient should be in bed on a fluid diet. Elimination is of importance, fluid being forced by mouth and by rectum if necessary. Colon irrigations have been advocated. Should the fever be high, cold sponges may be used to bring it down and also allay restlessness. For the insomnia and delirium medinal or veronal and bromides or paraldehyde may be given. For the severe hyperesthesia and radicular pains the cold tar drugs help, but codeine and morphine are usually necessary.

Hexamethylenamine is frequently given because of its supposed bactericidal effect on the cerebrospinal system. A method of approach upon which A. Netter[10] lays emphasis is the production of a fixation abscess by the injection of 1 c. c. of turpentine, the improvement resulting being obtained from a stimulating action on those organs which provide the natural means of defense. This theory is not yet an accepted fact. The intraspinal injection of convalescents' serum is a procedure which has been attempted, but so far antibodies for the virus of encephalitis have not yet been demonstrated in the blood. Further effort promises more specific results with this therapy than along any other line. Repeated spinal punctures, as in other types of cerebrospinal disease, have also been found to have a beneficial result from their drainage effect.

The convalescence of encephalitis is apt to be prolonged. A partial rest cure must be prescribed for the patient and the marked asthenia which I have mentioned should be combated with suprarenal gland, gr. 1 to 5, t.i.d. General hygiene must be excellent to bring about the most rapid recovery.

In the residual paralyses and contractures, massage and galvanic electricity will give the most comfort to the patient and the best functional result.

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74 WEST FORTY-EIGHTH STREET.

THE MENDELIANISM OF MIGRAINE.

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THE conception that disease is hereditary seems to rest on the consideration that it is hereditary provided it occurs in parents and their children. This belief is strictly out of accord with the laws of heredity as originally exemplified by Mendel, and by innumerable investigators since the publication of Mendel's observations in 1865.

A disease is understood to be hereditary when it is transmitted as an integral part of the male or female germinal cells to the product of the union of these two cells. Heredity can occur only through the medium of the chromatin and the cytoplastic structures of the germinal cells and conditions that are hereditary are transmitted from generation to generation in a fairly definite numerical ratio. The determiners of the transmitted characters are constant.

The first law of heredity, and the one with which any disease must comply if it is to be considered hereditary, is known as the segregation of characters or the law of numerical distribution of characters in the products of a mating. This law makes it necessary that the determining factor of a disease shall be present either actively or inactively in one or the other parent. Among the products of a mating the ratio between those with the disease and those without it can be ascertained only by a statistical tabulation of the offspring.

Migraine is one of the most common affections of man. It was considered hereditary even before Mendel published his observations. The belief that migraine is hereditary rests apparently more on a traditional than on a statistical basis, but this is not to be wondered at when it is recalled that an active controversy exists with regard to the actual reality of migraine as an entity.

In order that no confusion may arise, the term migraine, in this study, labels an affection characterized by paroxysmal attacks of pain, usually in the head, either unilateral or bilateral, but occurring also in the abdomen and associated with nausea, vomiting, mental depression, disturbances of sight, and many vague somatic disturbances. One or all of the symptoms may occur in an attack. The affection starts in early life, and as a rule terminates during the fourth decade.

During the year 1919, 1,300 persons (2.1 per

cent. of the total registrations) were examined at the Mayo Clinic who fulfilled the foregoing requirements for migraine. Of this number 127 families were studied and the data obtained are as follows:

1. At least four offspring from each mating.
2. Definite notation of the presence of migraine directly or indirectly in parents or near relatives.
3. Total number of children with and without migraine in each family.

A clear conception of what is to be expected from an affection that fulfills the law of the segregation of characters can be secured by a brief review of the behavior of plants and fowls.

Example 1.—The study of the transmission of the character's tallness and dwarfness in the edible pea gives a clear illustration of the numerical ratio of the Mendelian phenomenon. If a tall pea is crossed with a dwarf pea the hybrid is tall. By breeding the tall hybrid three tall and one dwarf are obtained. Of the talls one always breeds true to tall, and two talls always breed three tall to one dwarf. The dwarf always breeds true to dwarf. This process is kept up indefinitely so that from each generation one pure dwarf and one pure tall, and two talls which have concealed within them the ability to produce both tall and dwarf are always obtained.

The ratio of 3 to 1 is only approximate, as Mendel in his observations found in a series of 1,064 plants that there were 787 tall plants and 277 short, or a ratio of 2.84 to 1. In the study of color of seed coats Mendel found that among 929 plants 705 bore violet red flowers and grey brown seed coats; 224 bore white flowers and white seed coats, giving a ratio of 3.15 to 1. The exact ratio of 3 to 1 is rarely seen in plants or animals.

Example 2.—The transmission of characters in fowls is illustrated in the Andalusian fowl which is blue; by crossing it with another blue fowl, the result is always one black, two blue and one white. The black always breeds black. The white always breeds white. Crossing the black with the white results in blue offspring; this demonstrates the Andalusian fowl to be a hybrid.[3]

With these simple examples in mind as an expression of the Mendelian phenomenon, a study of migraine gives striking figures:

Study I. Mother or Father with Migraine.—This group comprised the offspring of 100 families made up of 143 children with migraine and 488 without migraine or a ratio of 3.13 to 1.

Study II. Parents with Migraine with Epileptic Offspring.—This group was made up of seven families giving a total of ten children with epilepsy alone or a migraine-epilepsy syndrome and thirty-seven children without migraine or epilepsy. This gives a ratio of 3.7 to 1. The relation of migraine to epilepsy was brought out in a previous study in which it was found that 75 per cent. of the patients studied had migraine as either an ancestral or a personal history. The relation of migraine to at least one type of epilepsy must be very close.[1]

Study III. Crossing of Persons with Dormant Migraine.—Under this heading seventeen families were tabulated in which the migraine was not present in the father or mother of the family studied, but was present in brother, sister, father, or mother of the parents of the family studied. In this group thirty children had migraine and eighty-five did not have migraine, or a ratio of 2.83 to 1. It is our purpose to investigate further the ratios which result from the mating of a person without migraine with one who has dormant migraine, or a person with true migraine with one who has dormant migraine. The occurrence of these crossings gives unusual ratios in families and unless this is borne in mind migraine may not be considered a true Mendelian character.

Study IV. Parents with Migraine.—Three families were found in which the presence of migraine in both parents was carefully investigated. The total number of children born was fifteen, and, as might be expected from the crossing of two pure types, all had migraine.

The total number of children in this study was 198 with migraine and 610 without migraine, giving a ratio of 3.08 to 1. This tabulation places migraine in the Mendelian ratio, and definitely establishes the hereditary nature of the affection.

The conception of migraine as an hereditary character has an important bearing on the therapy of the affection. Surely no one could hope to modify by therapy an hereditary character which is as definite a part of the economy of a person as the color of his eyes. It could not be hoped to alter or modify the course of migraine by cerebral decompression, cholecystectomy, gastroenterostomy, colectomy, appendectomy, unilateral or bilateral oophorectomy, salpingectomy, partial or complete hysterectomy, or any of the many other operations of greater or less magnitude which have been and are still being performed on the patient with migraine. If such operations have not helped the patients, they have at least shown that surgery has nothing to do with the treatment of the affection.

Summary.—Migraine is a distinct type of disease, and should be easily identified after the appearance of the symptoms. The disease is an expression of the Mendelian phenomenon with a ratio of 3.08 to 1; there is no medication known that will alter its course; it is a distinct part of the patient's economy, and it will have no harmful influence on longevity.

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NASAL DEFORMITIES DUE TO THE SUBMUCOUS OPERATION, THEIR PREVENTION AND THEIR TREATMENT.

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IN view of the great popularity of the submucous operation for the relief of nasal obstruction due to deflected septa, and on account of the increasing number of depressed nasal bridges due to this procedure that are coming under my observation for operative correction, I feel that a communication upon this subject will not only be timely, but that it may be of distinct value both to the general prac-

titioner and to the rhinologist as a reminder that disagreeable results may and do follow this operation when it is performed without taking into consideration the age of the patient and without due regard for the anatomical and architectural structure of the nose. I trust, too, that my suggestions may serve to protect from undeserved discredit an operation which, when properly performed, is one of the most artistic and useful procedures in the field of rhinological surgery. The conditions prompting me to throw out this warning are not fanciful, for no less than twenty-six cases of depressed nasal deformity, due to the submucous operation, have come to me for correction, and I have seen several others in the practice of other men. In none of the cases to which I refer was the deformity due to infection introduced at the time of the operation, it was due either to the operation having been performed at too early an age, or to the destruction of the integrity of the nasal arch by interference with its architectural structure. I am happy to say that this accident has never occurred in my own practice, though I have to my credit many hundreds of submucous operations. In view of this experience, I feel that I am fully justified in attributing to the methods I employ and which I have always advocated, the immunity I have so far enjoyed from having my operations followed by sunken-in bridges and a general weakening of the architectural structure of the nose.

The nasal arch is subject to the same mechanical laws that govern any other arch. It is a curved structure composed of an indefinite number of segments so placed that it may be supported at its two extremities. The growth of the nasal septum is a prominent factor in the development of the arch, and its presence strengthens it, but as a vertical support it takes only a minor part in the preservation of its integrity. The upper edge of the septum, however, wedged in as it is between the upper lateral cartilages, constitutes the keystone of the arch, and if by operation, accident, or any other influence this keystone is displaced or destroyed, the dorsum of the nose falls in and the nasal arch is established on a lower level. The problem at first is purely a mechanical one; the deformity, however, is later increased by the formation and contraction of scar-tissue and by the elasticity of the skin of the face. Once the keystone has been destroyed, the deformity resulting can be corrected only by the transplantation of bone or cartilage. The method by which this is done was devised by me several years ago and has been previously described. The results I have secured in these cases have been excellent; not only is the nasal arch restored to its original strength, but even the flexibility of the tip is preserved by using a transplant composed of conjoined cartilage and bone—a refinement in my technique which I introduced several years ago. I may say here that the promise of relief from the deformity following an unwisely or unskilfully performed submucous operation is no excuse for the employment of lax or unsafe methods.

One of the most important considerations in connection with the submucous operation, if not the most important, is the age of the patient; and yet this is frequently ignored by the surgeon in his enthusiasm to relieve a distressing nasal obstruction in a child. I quote from a paper read by me before the New York Academy of Medicine on April 26, 1906, and published in the *Laryngoscope*, June, 1906: *While I am convinced that the septum as a vertical support takes no part in the preservation of the contour of the nose, I am equally certain that it does take a most important part as one of the forces in the development of the symmetrical adult organ, and therefore should not be removed during the years of most active growth.* This warning of the dire results which might follow the resection of the septum in the young, appeared in the original in italics, and it is, so far as I know, the first recorded reference to this important subject. At that time it was purely prophetic and was based upon knowledge I had gained by studying the dynamics of nasal development, a subject which has greatly interested me for many years. I have since found ample justification for this warning in several cases of saddle-back nose brought to me for correction, where not the slightest doubt could be entertained as to their cause being the absence of the developmental influence of the septum.

This raises a question of great practical importance and one which we are called upon almost daily to decide, namely: What shall we do for the child suffering with pronounced nasal obstruction due to a badly deflected septum? This problem cannot be solved without a painstaking anaylsis of the case and a careful estimate of the relative advantage to be gained by the course pursued. The assumption is warranted that the septum cannot be straightened and the obstruction to nasal respiration relieved without an operation of some kind. My experience in nasal deformity work teaches me that in a child extensive destruction of the septum, such as occurs in the usual submucous operation, is certain to result eventually in a deformity of the nose. The character of this deformity varies only slightly in different cases:—the base of the nasal triangle is very broad, the bridge of the nose is flattened, and the concavity from above downward is uniform, the greatest depression being at a point corresponding to the ends of the nasal bones. In most of these cases the whole face eventually becomes broad and flat and for some reason, I know not why, there is a strong tendency to the early development of atrophic rhinitis. There are, therefore, a number of potent reasons why the developmental function of the septum in the young should not be interfered with. On the other hand the conscientious surgeon, though he has clearly in mind the dire results which may follow any operative procedure extensive enough to destroy this function of the septum, is equally impressed by the urgent necessity of relieving a bad obstruction to nasal respiration which, if long continued during the years of active development of the child, is likely to be followed by conditions not only objectionable from a cosmetic point of view, but what is of far greater importance, injury to the general health, due to deformity of the jaw resulting in malocclusion of the teeth, maldevelopment of the chest, mental dullness, etc. These important considerations leave in my mind no doubt as to the course to be pursued—the obstruction must be relieved with as little disturbance of the septum as possible.

In attempting the relief of these cases my object is to accomplish this as nearly as possible by

the replacement of the septum into its normal position. In order to do this it may be necessary to remove a small amount of cartilage and bone if there are spurs or if there is a marked bulging in the center of the septum.

The technique of the operation which I employ in these cases varies according to the location and degree of the septal deviation but the principles involved are the same. Before the details are decided upon, a careful study of the deviation must be made. The chief observations are whether the septum bulges at the center or whether the entire septum is displaced and lies diagonally, the upper edge being on one side and the lower on the other. We must note also whether the deviation is accompanied by spur formation. To me all intranasal operations are easier and I can carry them out more accurately and quickly with the patient conscious and in a sitting posture—that is if the patient is amenable and will sit quietly while the work is being done. It is unreasonable to expect this in any child of the age now under consideration, so it is better to employ general anesthesia in all cases.

Ether is the anesthetic of choice. When its administration is begun, I pack both nasal cavities with adrenalin 1-1000, and immediately before the operation is begun a few drops of adrenalin in physiological salt solution 1-5000 is injected hypodermically along the mucocutaneous junction and along the base of the septum.

We now proceed as if our intention is to do the usual submucous operation. My first and only incision is made along the entire septal mucocutaneous junction, extending it across the floor of the nose. Through this incision, if necessary, the mucoperichondrium is elevated over the entire septum on both sides. I use for this purpose my curette elevator. The instrument must be sharp, for the perichondrium is more closely adherent to the cartilage in the child than it is in the adult. Working through this incision with very small knives of various shapes and angles devised for this purpose, I reduce the septum to a vertical plane. I then place one of my paraffin splints on either side of the septum and pack both nasal cavities with vaseline gauze. A tin-lined copper splint, made to fit the nose, is then placed in position and kept on for about a week. During this time the nose must be inspected and if necessary dressed each day.

I have treated a number of these very puzzling and difficult cases in this manner and so far in no instance has a saddle-back deformity developed, and I regard this as the best method of dealing with marked septal deviations in the young.

The prevention of deformity in the adult following the submucous operation is chiefly a matter of avoiding infection and preserving the integrity of the nasal arch by exercising the greatest care not to displace or destroy the upper edge of the septum which is wedged in between the lateral cartilages, constituting the keystone of the arch. This upper strip of cartilage should be left as thick as possible, and, *regardless of the intranasal cosmetic effect, only those portions of the septum should be removed which constitute a menace to free nasal respiration.* In order to observe these precautions, it is necessary to use an instrument for the removal of the septum which does not drag and which removes a definite amount of the tissue from the exact location desired. No instrument is so satisfactory for accomplishing this as the punch-forceps. The instruments I devised for this purpose were described in the *Laryngoscope*, March 1916; I have made no modification in their construction, and am still using them with great satisfaction in my work.

Treatment.—The course to be adopted in the treatment of the depressed deformities resulting from the submucous operation, in my opinion, admits of no discussion; there is, so far as I know, only one satisfactory method by which they may be corrected, and that is by the transplantation of bone or cartilage by the method which I devised some fourteen years ago; or preferably by a combination transplant composed of both cartilage and bone, as first described by me in the *Laryngoscope* five or six years ago. I use in these cases a transplant from the ninth rib, composed of two-thirds bone and one-third cartilage; this is taken at the junction of the rib with the costal cartilage. The transplant is introduced from within the nose and no scar results. The full strength of the nasal bridge is restored and the repair is permanent, for some of my cases have been under observation long enough to demonstrate this fully. The bone transplant establishes a firm bony union with the frontal bone and supports the nasal bridge in its normal position; the cartilage preserves the normal flexibility of the nasal tip.

In conclusion I will say that while the number of deformities resulting from the submucous operation are few in comparison with the number of cases operated upon, still the knowledge that these deformities are serious in their import and that they may and do occur in the hands of unskillful operators and others when proper precautions are not observed, is sufficient justification for this presentation of the subject.

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AURAL AFTERMATHS OF THE INFLUENZA.

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The recent epidemic of influenza has been followed by more ear trouble than any previous epidemic of the kind. Ever since the first invasion of the grippe in 1890, the so-called grippe ear has been feared by physicians, both on account of the danger to life and because of the effect upon the hearing. In infants of tender age the grippe ear is often disastrous. The organ of hearing is the most delicately constructed mechanism in the entire body, not excepting the eye. In babies not only is the auditory apparatus extremely frail, but it is especially assailable, owing to the close connection between the nose and the ear, the Eutachian tubes in infants being relatively shorter and the caliber larger than in adults. Deaf-mutism is nearly always the result of ear disease in infancy. So delicate is a babe's organ of hearing that even a fall, boxing the ears, or throwing a child up in the air has been known to destroy the hearing.

Singular as it may seem, most ear infections from the influenza do not give trouble until the symptoms of the influenza are abating and the patient is apparently recovering. This is in the

second week, when the vitality is lowest and the recuperative power is in abeyance. Whenever symptoms of mastoid disease occur in the early stage of influenza, it is probable that the ear disease antedates the attack of influenza, the latter disease having simply rekindled smoldering embers. It is not unusual, when operating for mastoiditis, during an attack of influenza, to discover evidence that the disease has been going on for a long time. It takes time for pus to destroy bone and it is doubtful if bone necrosis can occur wtihin two weeks after the cells have become infected.

The middle ear is really an antechamber of the nose and often shares in nasal disturbances. In an attack of influenza the middle ear, in common with the nose, becomes intensely congested, and paves the way for disease. The healthy middle ear is a sterile chamber and difficult to infect. When infectious matter is experimentally forced into the middle ear, by way of the Eustachian tube, it is promptly expelled by the ciliated epithelium. In influenza, however, the various agents that ordinarily safeguard the integrity of the middle ear fail to functionate, and infection of the middle ear becomes an easy matter. The nose at all times harbors disease germs and these can readily gain access to the tubes by such expiratory blasts as sneezing, crying, coughing, or even blowing the nose. Infection from using the nasal douche is extremely common.

When the febrile symptoms of the influenza subside, the engorged mucous membranes of the upper air passages pour out their inflammatory exudate and a copious flow of mucous issues from the nose; generally to the relief of the patient. This is commonly known as the breaking up of the cold. Some of this secretion comes from the middle ear, and is apt to contain infectious germs. If for any reason the Eustachian tube—the drain-pipe of the ear—fails to functionate, the accumulating exudate soon fills the various compartments comprising the middle ear, especially the mastoid cells, and presently, by its pressure upon the drum-head, causes earache, than which no pain can be greater nor more significant of danger. Often the blockage of the Eustachian tube is but temporary. This accounts for those mild attacks of earache which are controlled by rest, and the application of heat or of cold, the symptoms passing away as soon as nasal drainage becomes re-established.

In infants the onset of an ear infection is usually sudden, owing to the active secreting function. The middle-ear fills rapidly. The child becomes feverish and fretful and declines food. It rubs the ear and refuses to lie upon it. There may be nausea, vomiting, and perhaps an irritating reflex cough. The infant whines rather than cries, because the latter act is more painful than the former. Accidentally touching the ear elicits a sharp outcry. When the pain becomes unbearable convulsions occur and the child becomes unconscious. Frequently the symptoms of a middle ear infection in a babe are so obscure and misleading that the attending physician is perplexed until the ear begins to discharge and discloses the seat of the trouble.

In adults the earliest symptoms of an infected ear are throbbing and fulness in the ear. Presently there are head noises, dizziness, and restlessness. Every movement of the head, and especially the jar of walking, increases the distress. Soon the hearing becomes dull and the feeling of discomfort merges into pain, which is worse at night and when lying down. Within a few days symptoms of mastoiditis supervene and intensify the suffering.

The only way to ascertain the true condition of the middle ear is with the ear speculum. Subjective symptoms may be misleading. Often the drum-head is hidden from view by some foreign substance, perhaps wax. Not infrequently the inflamed drum-head is covered with a whitish layer of exfoliated epithelium which disguises the membrane and deceives those not familiar with ear diseases.

A beginning earache should be treated with rest, fluid food, a saline laxative, and the ice-bag. If the pain fails to subside after six hours, the drum-head should be incised. In earache, as in appendicitis, prompt surgical measures are the most conservative ones that can be employed. Nothing is gained by waiting, for the danger and the distress become hourly greater. To wait for a drum-head to break as is often done, is a grave error. It is a course which has been attended by much unnecessary suffering and by many deaths. When we see some of the old spontaneous perforations with their sad results of chronic invalidism, we cannot but feel that one of the great boons conferred upon humanity is the timely incising of the drum-head. Pressure and pus are the basic factors in nearly all ear complaints and the sooner they are released the better.

Aside from the risk of waiting for a drum-head to burst, the opening made by nature is seldom all that can be desired from a surgical standpoint. It may be too small for adequate drainage, or, perhaps, it is too large or irregular and fails to close when the active discharge has ceased. Almost all the discharging ears that last through life can be traced to a spontaneous perforation.

Merely to puncture the drum-head, as is done in paracentesis, is inadequate for the escape of thick fluid, and often fails to confer relief. This operation has been discarded for the more thorough one of making a free incision under a general anesthetic. The incision should begin at the lowest part of the drum-head, extend upward behind the malleus, and terminate in the swollen posterior canal wall. In the right ear, the incision resembles the letter *z*; in the left the letter *s*. This procedure, the so-called internal Wilde incision, not only drains the middle ear freely, but it also depletes the congested area near the mastoid process, and encourages drainage of the mastoid cells.

Incision of the drum-head is rarely followed by the escape of pus. Generally only a few drops of serum are released. After a few hours, however, the discharge becomes copious and purulent, and the patient is eased. Even physicians often wonder where all the secretion comes from, considering the small size of the middle ear. As a matter of fact the secreting surface of the entire middle

ear has been computed to be larger than the palm of the hand. Usually the ear flows freely for a week. Then the discharge gradually abates and a week later it ceases entirely. Here again we note the merits of a clean incision for as soon as the discharge stops, the aperture in the drum-head closes and the resulting scar in no way interferes with the functions of the membrane.

In most instances, the moment the pressure within the middle ear becomes relaxed, the distressing symptoms ameliorate. Occasionally they do not, implying that drainage is imperfect. If symptoms of mastoiditis persist it is evident that the infected secretion within the mastoid cells is unable to escape. The mastoid antrum communicates with the middle ear proper, by means of a tiny aperture—the aditus—and this opening, besides being small, is unfavorably situated for drianage. It easily becomes occluded and then it causes retention of the septic contents of the cells and mastoiditis.

The severity of a middle ear infection is governed by the virulence of the infecting organism and by the resistance of the sufferer. The best time to examine the aural secretion for the offending organism is directly after the flow begins, for presently foreign germs from the exterior contaminate the discharge and the identity of the infecting organisms is lost. Discharge containing either diplococci or streptococci should be carefully watched. A frequent blood count is desirable, to note the course of the disease in relation to the blood current. Normally the general leucocyte count is about 8,000, of which 67 per cent. are polynuclear leucocytes. An increased leucocytosis, say 12,000, shows an active inflammatory lesion with good resistence. A leucocytosis of 6,000 indicates poor resistance. The polynuclear percentage is of great importance in these cases. When it rises to 80 it denotes an active septic process. This coupled with a low leucocytosis, shows a serious condition. After an operation, both leucocytosis and polynuclear percentage should return to normal. If they do not, it is evident that the progress of the disease has not been checked, and that septic absorption continues.

When a person has recovered from a middle ear infection, especially after the influenza, the ear should be examined and the hearing tested at frequent intervals. The formation of fibrous tissue is the last stage of all inflammatory lesions. In the middle ear, after the exudate has been absorbed, some fibrin is left behind. This is apt to produce adhesions between the movable parts, in the same way that a severe rheumatic infection of the large joints is followed by stiffness and ankylosis. Chronic progressive deafness is often the result of such adhesions. The oval window is the place where intratympanic adhesions do the most harm. This membrane, to which the stapes is attached, is of far greater importance than the drum-membrane. The sound-waves cause the oval window to vibrate, and for every excursion there is a compensatory movement of the round window. The condition of the oval window can be determined by means of the Gellé test.

Ankylosis of a large joint is overcome by massage and forcible movement, to sever and relax the adhesions. The same treatment in modified form is applicable to the middle ear. If it is neglected, the movements in the middle ear become restricted and a remediable condition lapses into an incurable malady.

Normal hearing can be likened to a curved line, which rises from zero at birth, reaches the crest at the completion of adolescence, and drops to one-third in old age. If the curve be deflected by disease, the subsequent line becomes depressed and shows premature loss of hearing. The otitis of influenza is especially apt to alter the normal contour of the curve.

This disturbing sequences of the influenza may not become apparent until months or even years have elapsed. It frequently happens that long after an attack of influenza, a patient comes to us complaining of head noises or of vertigo, nothing being said of the hearing. But when the latter is tested, it is found to be deficient. Normally we are endowed with twice as much hearing power as we require in ordinary usage, so that when a person does complain of poor hearing, it is probable that the defect is greater than anticipated. The higher degrees of hearing are not used to anything like the same extent as those of the eyes. For this reason a defect in hearing will pass unnoticed where a corresponding error in vision will attract attention. Many individuals with dim hearing derive consolation from the fact that they can hear well on the phone. They do not know that the sound is being conducted by the bones in the head and not by the air—a bad sign.

A running ear is one of the commonest and most troublesome aftermaths of the influenza. Not only is the discharge discommoding, but the condition is usually attended with poor hearing and head noises. The source of the discharge is an ulcerative lesion, either of the mucosa or of the bone. The longer the flow lasts the less amenable it becomes to treatment.

The difficulty often encountered in treating these cases is largely owing to the fact that the disease involves the attic, and is not easily reached. Generally, as soon as the tympanum has been cleared of foreign substances, the aperture in the drum-head will close. The drum-head possesses remarkable power in mending its defects with cicatricial tissue. Most holes in the drum-head can be repaired if we will assist Nature by stimulating the reparative process, either by incising the edges of the perforation or by freshening the edges with acid. All perforations, about to close, become round, no matter what their former shape has been.

Frequently, especially in children, a discharging ear cannot be brought under control until the nose and the throat have been restored to a healthy state, since these organs often supply the infecting material that keeps up the ear discharge. The removal of tonsils and adenoids in a person with a running ear, should be supplemented with the removal of granulations from the middle ear. The measure of last resort to stop a running ear is the radical mastoid operation.

Head noise, or tinnitus aurium, is an annoying complaint that often follows the influenza. It is

especially harassing to a person with a musical ear. The noise interferes with hearing and frequently it is the forerunner of deafness. The depressing effect of the noise makes certain individuals weary of life. I know of instances where suicide was contemplated. A noise may be but temporary, as from anemia, from drugs such as quinine and aspirin, from cerumen, or from alcohol and tobacco. The noise mostly complained of is likened to escaping steam. The sound may change and frequently a variety of noises are present. The noise seems loudest in a quiet place and in the recumbent posture. Any condition that dulls the hearing, such as illness, exhaustion, and damp weather, intensifies the noise. Whenever bone conduction is amplified, as in middle-ear disease, normal sounds within the body, hitherto unheard, often become audible. This applies especially to the blood circulating near the middle ear. A pulsating sound is of arterial origin, a low hum of venous. Most sounds of low pitch are suggestive of middle-ear trouble. Those of high pitch, of internal ear disease. Of course progressive middle ear disease finally involves the internal ear also.

The pitch of a subjective sound can be determined by holding a vibrating tuning fork of medium register, say a C^1 fork of 256 vibrations, close to the ear, requesting the patient to state if the head noise is higher or lower in pitch than the fork.

The vertigo that is often associated with internal ear trouble is very annoying and often dangerous. The sixth or static sense resides in the semi-circular canals of the internal ear and it controls the equilibrium. The least derangement of these tiny canals affects the balancing sense. Seasickness is caused by the agitation of the contents of the canals. The incoordination in drunkenness is due to the irritating effect of alcohol upon the tiny nerve filaments in the canals. Infants and deaf mutes seldom become seasick. In the former the sensitive mechanism in the canals is undeveloped. In the latter it is atrophied from disuse. The proper functioning of the organ of equilibrium is of great importance, especially to aviators, structural workers, and others engaged in hazardous undertakings that call for quick action and exact equilibration. Many aviators have met with disaster by flying directly after an attack of the influenza.

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VACCINES IN GENERAL PRACTICE.

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The general practitioner seems to think that vaccine therapy should only be employed by one who is especially skilled and trained in its use—in other words, by the specialist. This is decidedly erroneous. Vaccine therapy is here to stay, and it behooves the general practitioner to become thoroughly familiar with this new science of healing, for into no better hands can this new art be entrusted than into those of the man on the firing line—the general practitioner.

It is not my intention to go into a lengthy discussion of its theories, but I shall endeavor to present its practical application from my viewpoint, as a general practitioner. And I will start by saying that the citation of individual case-records is wearisome and valueless, although this could be done ad infinitum. Such action on my part would only call forth the timeworn argument of a patient recovering in spite of the treatment. The merits of any new therapy demand clinical evidence of a cumulative nature based on the experience of many investigators in like cases.

The use of vaccines does not preclude any proper surgical procedure, such as might be called for, for instance, in disease of the tonsil, of the bone, of the gall-bladder, or in pus accumulation, etc. Vacines are, however, strongly indicated when the patient shows unmistakably a continued impairment of vital resistance. It was believed, at one time that a careful opsonic index observation was imperative, but this entailed an extensive practice in a laborious technique, which, after all, proved irreliable on account of fluctuations in the activity of the opsonins.

Clinical observations will soon show to what extent immunity is being established. That a reaction of more or less degree follows the injection of vaccine should be anticipated, this in itself being an excellent guide. The physician should call his patient's attention to this expected phase, and should estimate the subsequent dosage and frequency of administration by succeeding manifestations, while experience shows that it is better to start with a small dose and gradually increase the same to the height of toleration, severely acute conditions tolerating large doses well.

The purpose of giving a vaccine injection is to establish an immunity against the rapid invasion of bacterial elements. Ordinarily where phagocytosis is normal and the invader is not too virulent, nor great in number, recovery takes place under established methods. On the other hand, take for instance a pneumonia case. Would I be justified to wait and see how phagocytosis was taking care of the pneumococcus and its concomitants? Would there be time to make a culture of the patient's own pneumococcus, prepare a suspension, and make the inoculation? Would not the undertaker have long superseded the doctor if he engages to make an autogenous vaccine? I am sure that your experience has taught you the impossibility of this and the exceeding rarity of cases permitting recourse to this step.

Now we have a corresponding stock vaccine immediately available and which may be relied upon, based upon innumerable applications to produce in a majority of cases an early, favorable reaction. This immediate accessibility to a standard stock vaccine is of immeasurable advantage and hardly leaves the adherents of autogenous vaccine debatable ground.

The United States Government has reduced typhoid to a negligible degree in its army and navy. It uses a stock vaccine. Why, then, should we hesitate to use stock vaccine in general?

Many objections are raised from sources "higher up" against the promiscuous use of mixed or polyvalent vaccines. It seems that it is rigidly expected of the busy practitioner to absolutely know what

particular germ is causing the abscess or the infection, and from experience he does know. He further knows that there are other species of germs involved. Who would venture to say that an otitis media was caused solely by one specie? Who would venture to say that he had an exclusive colon bacillus cystitis? Who would venture to say that the sputum of the tuberculous contained only T. B.? If it is the concomitant bacteria, which add in no small measure to the destruction of the living being, why not then use mixed vaccines?

On this subject I will quote Prof. John O. Polak, *Journal A. M. A.*, November 22, 1911, page 1739: "Autogenous vaccines of a single strain have given me unreliable reactions. This, I think, can be explained by the fact that the coccus is attenuated in its strength and, after it has produced is first reaction, the leucocytes become more or less accustomed to the particular variety of coccus, and are less liable to effect a defense than when a vaccine of polyvalent strain is introduced. Mixed vaccines of reliable laboratories have given better results than when a single variety was used. This has been shown repeatedly in the blood-picture when an autogenous vaccine of single strain used in large doses, even up to 500,000,000, has failed to increase the leucocyte count or diminish the polynuclear percentage, the mixed vaccines of several strains have promptly produced a marked leucocytosis. Even colon bacillus infections, such as infection of a pelvic hematocele by the colon bacillus, have yielded more promptly to mixed vaccines of polyvalent strains, than when a single autogenous germ had been used. One characteristic which has been noted throughout all of our experience is that, even before any definite effect has been noted on the temperature, the well-being of the patient has seemed to be improved by vaccine injection."

When a diagnosis has been established vaccines should be given early. It is surprising how readily your patients consent to be inoculated when the intent and purpose of the inoculation has been explained. It is a frequent occurrence for people to request the injection of a vaccine which cured them the previous year or two or three years ago.

Probably the most frequent ailment a physician is called upon to treat is the ordinary so-called "cold," or rhinitis. The affection is self-limited and runs a course of three or four days, but we all know what a cold may lead to. Now one injection of vaccine is cheap insurance against possible extension of the disease and inasmuch as many patients suffer repeated attacks of colds, immunizing inoculations are exceedingly practical and of great value. Finding that the nasal discharges contain principally the streptococcus, straphylococcus, pneumococcus, and *Micrococcus catarrhalis*, we give a small dose of mixed vaccine containing these bacteria and repeat the same at intervals of four or five days. This method of treatment produces a speedier convalescence and eliminates drugging almost entirely.

Accessory sinus disease of the nose is too often overlooked as a chronic rhinitis. Untold amount of discomfort and invalidism is thus permitted to continue, whereas immunotherapy can, and generally will, provoke a cure.

Otitis media is a very painful infection, which frequently results in deafness and more serious mastoiditis. The pathogenic organisms found here are streptococci, staphylococci, and pneumococci, and a mixed vaccine of such organisms brings prompt amelioration.

Quinsy sore throat, or peritonsillar abscess, occurs often enough to make a comparison of various forms of treatment. Ordinarily quinsy runs a course of eight or nine days and terminates in a spontaneous opening of the abscess, provided an incision has not been made previously. Recurring quinsies rupture earlier, sometimes on the fifth day. But in each instance the patient becomes severely toxic from the absorption of the infecting matter, and convalescence is correspondingly slow. In your next series of cases use vaccines and then note the milder course and the more speedy recovery of what would prove to be a most painful and distressing ailment.

Young adults suffering from frequently returning spells of tonsillitis are markedly benefited by immunotherapy.

We all have among our patients one or two old people who, annually in the fall of the year, make their appearance with a well-developed bronchitis. This cough, no doubt, furnishes a steady and legitimate income to the physician until the warm and balmy days of spring appear, our patients, in the meantime, having coughed their way through the winter. A series of mixed vaccine inoculations would have added immeasurably to the comfort of these old people.

Pneumonia still exacts its heavy toll of victims and present methods of treatment are, at their best, discouragingly inadequate and unsatisfactory. Immunotherapy opens up a new field of promises and offers a near-specific form of treatment. As in every infection, the speedy establishment of an efficient phagocytosis and the rendering inert of toxic substances is the keynote. What medicine would you care to stake your life on to do this for pneumonia and when a proper suspension of killed pneumococci is injected into one who is ill with pneumonia, a reaction occurs, antibodies are increased which, in turn, make the leucocytes more phagocytic. In our experience vaccines given early in pneumonia have considerably shortened the disease and brought on an early crisis. The most hopeless cases have been tided over into a favorable termination. Mixed stock vaccines have been our chief reliance in our treatment, the temperature and physical signs constituting our only guide in the frequency and dosage of administration.

The pleurisies are treated in like manner. It is needless to say that effusions, when present, should be evacuated.

Typhoid fever is the one disease in which the results of the vaccines can be observed and carefully studied. The usually low and insidious onset, the steady elevation of temperature in the second or third week, and the gradual decline is in striking contrast to the behavior of temperature in pneumonia. One single dose of vaccine administered in pneumonia will drop the temperature from two to three degrees within 12 hours and keep it checked without any untoward symptoms. In typhoid the

temperature falls considerably after an injection, but tends to rise again if the inoculation is not repeated within three or four days. If the typhoid vaccine is administered regularly and systematically, a decided amelioration of all symptoms becomes unquestionably apparent. The anxious facies, the brown tongue, dental sordes, abdominal distention, pain and delirium are missing, and the patients exhibit an appearance of comparative safety. The regaining of strength during convalescence is more rapid. I will quote Forcheimer's Therapeusis: "Regarding the complication of typhoid, such as periostitis, glandular suppurations, cholecystitis, mastoiditis, cystitis due to the bacillus typhosus or secondary infecting organism an autogenous or stock vaccine is the undoubtedly great service."

Acute inflammatory rheumatism has been the bane of the family physician. Pick up any textbook and the first remedies mentioned are the salisylates or coaltar products, and how absolutely inadequate these remedies are we all know. Instead of establishing an immunity they break it down, instead of creating a phagocytosis they disturb it by their intolerant action on the blood cells. Since it has been established that inflammatory rheumatism is an infective process, we must look towards an immunotherapy for relief. The mixed vaccines are daily demonstrating their practical efficiency in this omnipresent disease and it is to be regreted that the profession undertakes the treatment of rheumatism in such a half-hearted way. Rheumatism must be treated aggressively from the onset. Patients should be placed into as favorable condition as possible. The practice of starvation and strict dieting is criminal, every effort should be made to raise their vital resistance to the top notch, and by all means mixed vaccines should be administered, not haphazard, but regularly and, to avoid relapses, over a long period of time. A mixed vaccine containing streptococcus, staphylococcus, pneumococcus, and colon bacillus has been our main standby.

In closing, I will mention one more condition which the general practitioner is frequently called upon to treat and that is septic infections of the extremities following injury. We will take, for instance, the alarming disturbance following a neglected wound or abrasion on the hand with rapid involvement of lymphatic glands in the elbow and axilla. This is a threatening condition, customary poulticing and lotions do not ameliorate but often increase the pathogenic process. By cauterizing the wound with phenol and heading off the bacterial invaders by means of mixed streptococcus and staphylococcus vaccines you are rendering your patient an actual service.

I moderately estimate that I have given almost 15,000 injections within the last twelve years. To be sure, a small amount in comparison with other vaccine practitioners. Fortunately, there have been no untoward results, such as abscess formation, thrombosis, etc., nor any directly attributable fatalities. This has impressed me with their absolute harmlessness. In order not to let my enthusiasm distort my perspective, I abandoned the vaccine form of treatment for several months and treated my patients in true textbook style, and my observations were as follows: As a rule my patients got better, the duration of incapacity for work, however, was prolonged. I was more frequently discharged on that account, also complications were more frequent, such as otitis media, pleurisy with effusions, cardiac complications. Many of my inflammatory rheumatism cases lingered from three to four weeks longer. I had four fatal pneumonia cases in succession. Several otitis media cases were sent to the hospital to undergo operation. Septic infections were decidedly prolonged and were more threatening.

Vaccine therapy, in its own field, does not accomplish everything. Some disappointments are met with. Even the administration of diphtheritic antitoxin under the most favorable circumstances shows up some disappointment. Antitoxin continues to be used nevertheless. In the meantime a mass of evidence is gradually developing, ushering in a new therapeutic era in which the raising of vital resistance, by means of benevolent sensitization, is being accomplished. The employment of vaccines towards this end is not only logical, but practical.

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THE MANAGEMENT OF MALIGNANCY BY COMBINED METHODS.

By J. THOMPSON STEVENS, M.D.,

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STATISTICS show that malignant disease is steadily becoming more common throughout the United States and in other parts of the world. Statistics show also concerning the treatment of this disease with surgery only, with radium only, and with the roentgen rays only, each having its encouraging results, that we have as yet to find a method of treatment whereby a larger percentage of the cases will be cured. The most successful physicians of to-day are coming more and more toward the management of this dread disease through a skillful combination of all the useful methods, and so have increased somewhat the percentage of cures. Of course, by any method of treatment we shall have failures unless some one in the future demonstrates the actual cause of the disease, so that we may enter the contest on an equal footing with the disease, and treat it not only curatively but with prophylaxis. Statistics again show that we, as physicians, can ill afford to depend upon any one method of treatment in all cases, but must use the combined method of surgery, roentgen rays, and radium.

It has been proved that radium is the most powerful form of radiation that we have when applied to a malignant growth. At present, in various parts of the country, cases are being treated either with radium alone, or in combination with the other agents, and in the end we shall have statistics, that will prove beyond doubt, the exact place that this agent should occupy in the management of malignancy. The hopeless cases are being treated in the institutes, many of them with radium alone when better results might be expected if combined with surgery or electrothermic coagulation to remove broken down tissues, and with the roentgen rays for the extensive lymphatic involvement.

When the roentgen rays are indicated we must make sure of our technique, of our apparatus, etc., lest we do no good, or more harm than good. It is indeed painful to note with what crudeness many of the roentgen technicians apply this wonderful agent. They may be excellent men at roentgenography, but being without any knowledge of the physiological action of the rays, and entirely ignorant of the history of malignancy, any good results obtained by them would probably be accidental.

The apparatus must be suitable for the work. There are many good picture machines on the market, but because a machine will turn out excellent roentgenograms we must not assume that it has the capacity for successful roentgenotherapy. In spite of the fact that it is next to impossible for one to do deep work satisfactorily with the ordinary gas tube, it is surprising to note with what frequency the technicians in the smaller towns and cities attempt to administer a dose of the rays with it. In Europe, a good many of the men are still using the gas tube, while we make use of the broad focus, universal type, Coolidge tube. Right here probably lay the reasons for the difference of results obtained in this country and abroad. Usually, we must also have a special tube holder, for it is impossible to get the target of the tube close enough to the skin with the ordinary radiographic stand.

The physician who does roentgen therapy must give his entire time and attention to the work, since a single series will often occupy from six to eight hours, for if it is to be at all successful the treatment must not only reach the affected parts but must be general.

Not many years ago the only recognized successful method of treatment was by surgical removal, regardless of the location or type of the disease. If the growth was inoperable when first diagnosed, nothing was done, or else an operation for relief of symptoms for the time being was done. At present the surgeon realizes that palliative operations are seldom if ever indicated, and that a removal of the growth alone will only hasten its progress. Anti-operative radiotherapy is beginning to be prescribed by the careful surgeon, and nearly all are sending their patients for post-operative radiotherapy.

In the past, the physician or surgeon used to advise the method of treatment with which he was best acquainted, instead of selecting the combined method, or the one that was most sure to give the best final results. There is no question that many cases have been cured by the use of the different methods singly, and many more will be cured by this same method in the future. Each form of radiation has its use in the management of malignancy. We must not only know the indications for the various forms of radiation, but must be in a position to make use of them. Again, radiation should not be used when operation is indicated any more than operation should be done when radiation is indicated. Such a practice soon brings both the radiologist and surgeon into disrepute, since the medical profession is rapidly learning that there is a place and time for each.

Electrothermic coagulation is the method of choice for the removal of broken down necrotic tissue, but the adjacent lymphatics, as well as the diseased area itself, must first receive a thorough course of radiation to prevent the possibility of metastasis. I consider this method of the removal of tissues of prime importance in the prevention of metastasis, as the operation of electro-coagulation seals the lymphatic channels and blood vessels, making the actual removal of the tissues with scissors bloodless. We must keep well within the coagulated area, leaving the remainder to slough off.

The rays given from a Coolidge tube backing up the equivalent of 90,000 volts and filtered through six millimeters of filter material are of practically the same type as the useful gamma rays of radium. There is, however, a difference in the action of the two agents upon both diseased and healthy tissue. And so in spite of the fact that those making use of the roentgen rays alone say that they get the same results without radium, and *vice versa*, show that they have had a limited experience with either method. Time and again Pfahler, and Boggs, and others have proven beyond doubt that the best results will be obtained when radiation is indicated by the use of both methods. However it should be remembered that both roentgen and radium rays are closely related and should be considered together.

To destroy malignant disease with either roentgen or radium rays, it is necessary to get sufficient quantities of the rays to the disease without destroying surrounding healthy tissues, or the tissues through which the rays must pass. When the rays are brought to the disease, a certain quantity of the rays will restrict proliferation, and will gradually produce a necrosis of the growth, while cells farther away may be only stimulated to more rapid growth. There is a definite limit to the quantity of rays that can be safely passed through healthy tissue, without destroying it, and so to surmount these difficulties we must make use of "cross-firing." By this method, we deliver enough of the rays to the disease to destroy it, and only pass through each of the healthy tissues only that quantity of rays which they can safely stand. It has been shown that radiation to a depth of 1½ inches is generally enough to destroy most malignant new growths, but these rays will not produce any appreciable effect upon the surrounding cells in the lymphatics. To produce a deeper effect, we must "crossfire." With a tube of radium or the roentgen bulb eight inches from the skin and passing the rays through from seven to eight ports of entry, a tumor four inches under the surface will receive about the same quantity of the rays as will any one area of skin. Since it is known that healthy tissue is five times more resistant to the destructive action of the rays than is abnormal tissue, it can be easily seen how a destructive quantity of the rays can be delivered to the diseased area without destroying the overlying and surrounding tissues.

I do not believe in the insertion of a radium tube into a cancerous growth unless the surrounding tissues have been efficiently radiated first, so as to more or less completely wall off the diseased from the healthy area. The opening of the growth for the insertion of the radium tube acts the same as an incomplete surgical removal of the disease, i. e., it stimulates the neoplasm to more rapid develop-

ment. And just here lies the main point of difference of radium and the roentgen rays. For localized action radium is generally the better, but for the raying of large areas of the tissues the roentgen rays have first call.

Each tissue of the body reacts in its own way to the rays of either radium or the roentgen bulb. Each tissue has a selective action so to speak. Small doses of the rays act as a stimulant, and if the exposure be long enough and intense enough any tissue of the body can be destroyed. The cells of the disease are first to be destroyed, then the cells of the glands, and the connective tissue last, etc. Then too, there is a difference in the action of the rays on different types of disease; for example, sarcoma of the lymphatics is destroyed by less radiation than is necessary to destroy carcinoma. In sarcoma of the mediastinum roentgen examination reveals a rapid response to either roentgen or radium treatment, while in carcinoma the disease is destroyed with great difficulty, or is only inhibited for the time being. At times there is even a difference in the reaction of the tissues to the rays in different patients, both having the same lesions. It should always be made a rule to give as massive a dose of the rays as the normal tissues will stand in treating either carcinoma or sarcoma. The treatments should also be general. They should cover nearly the entire portion of the body, i.e., if one breast is affected the whole chest should be radiated, front, back, and both sides, always crossfiring onto the disease from each port of entry. It is only in this manner that we can hope to prevent metastasis. Epitheliomata of the rodent type are destroyed by less radiation than is necessary in those of the squamous type. But the fact that the squamous cell epithelioma is so much harder to cure, is no argument against its being radiated. A case of this kind merely throws more strain upon the radiologist and his apparatus. If the case comes to us in the inoperable stage a careful history and study of the physical findings, when coupled with roentgen examination, will show the paths of metastasis, and will have much to do with the success or failure of the radiation treatments. Roentgen and radium treatments are the methods of choice in the management of epitheliomata, since when properly applied, practically all cases are cured and the recurrences are fewer than by any other method. The results obtained by such methods have proved them to be equal or superior to the results obtained by surgery. This is true not only in the early but in the late cases as well. In epithelioma of the lower lip 90 per cent. or more of the cases can be cured, without deformity, while the inoperable cases receive palliation and occasionally one will be cured. It is usually best to use radium locally, both inside and outside the lip, while the roentgen rays can be used to cover front, back, and both sides of the neck to prevent metastasis. When treating epithelioma of the lower lip, we must make sure that we know the paths that the growth is apt to take in the act of spreading through the lymphatics. The two sides of the lip have an anastomosis, and so we must not only ray the side upon which the lesion is found, but both sides. The deep cervicals extend from the mastoid region to the clavicle, some of the lymphatic nodes lying behind the jugular vein and cannot be reached surgically, without first removing the vein. These areas must receive just as careful radiation as the actual ulcer itself if we are to even hope for success. It is a pity to note that in several roentgen laboratories it is the custom to radiate the lesion only.

These cases frequently show an early recurrence in the scar following surgical removal not followed by radiation, and so this is not an entirely satisfactory method. It is no easy matter to reach and remove all the superficial glands, to say nothing of the deeper ones which cannot be reached surgically, and which are probably already infected or soon will be.

Radiation reaches not only the lesion itself but all the glands, both superficial and deep. With a skilful operator the growth and the glands are crossfired upon until they are destroyed. By this method there are fewer recurrences and there is very little scar formation. This is undoubtedly the method of choice, and for once surgery and electrothermic coagulation should be used only for the removal of the actual neurotic area. This operation, however, should not be done until the patient has been thoroughly radiated.

Given a case of epithelioma of the lip, the ideal management would take some such course as is about to be outlined, and by so doing we would stand the best chance of curing the patient forever. The lesion itself, the surrounding areas, the probable lymphatic paths already infected, as well as those to which any possible infection might be carried, in fact, all the lymphatics both sides should be thoroughly radiated. This decreases the vitality of the whole growth, and is more than likely to destroy any metastasis that has already taken place. Then in twenty-four hours the growth is excised or removed by electrothermic coagulation. As soon as the wound is sound, *i.e.* in about ten days' time, we should radiate again and we should push the radiations to the point of utmost tolerance of the skin. The postoperative radiations should be given at about monthly intervals for a year to a year and a half. By this management nearly all cases can be cured forever.

What has just been said about the management of an epithelioma of the lip applies equally well to almost any type of malignant new growth. Any of the technique as well as the order of use of the various methods will have to be altered to suit the case in hand, but more cases can be cured by a skilful combination of surgery, electrothermic coagulation, and radiation than can be cured by any method singly.

The radiation of a growth of the breast does not consist of simply raying the mamma itself, but of raying from the chin to well below the diaphragm at least; front, back, and both sides. always crossfiring toward the disease. We must also go down the arms well past the elbows at times. In fact, the radiations will have to be general at times, if we are to insure our patient against recurrence in some distant part of the body. The axillæ must be crossfired upon, too, likewise the supraclavicular regions, the mediastinum, and the epigastric region.

In carcinoma of the uterus, we must be just as thorough as about the breast, and perhaps more tireless in our technique, for here our rays will be filtered by the thick pelvic bones, in addition to the filtration of the thick soft tissues. Radium justly finds one of its largest fields of application here, but in addition we must cover the abdomen, front, back, and both sides, crossfiring onto the disease and the lymphatics, with the roentgen rays.

In view of the results that have been obtained in the past fifteen years, and which are becoming better all the time, as our technique in applying radiation improves, it seems reasonable to conclude that better results can be obtained in the management of malignancy through friendly co-operation between the surgeon and the radiologist, followed by a combination of surgery, electrothermic coagulation, and radiation, or by the selection of the single method by the surgeon and the radiologist, as the one most likely to give the best results. In the present state of our knowledge let us all, surgeon, physician, and radiologist, insist upon our patients having anti-operative and post-operative radiations so that they may have the maximum protection from this dread disease. Inoperable cases should always be given the advantage of radiation. Some of them can be cured by radiation alone, others can at times be made operable.

A Comparison of Roentgen and Radium Rays for Therapy.

X-Rays.	*Radium.*
1. Technique very exacting.	1. Easy to apply.
2. Rays less penetrating but in greater volume.	2. Rays more penetrating but in less volume.
3. Apparatus large and cumbersome	3. Applicators small.
4. Non-portable.	4. Portable.
5. Danger from high tension.	5. No high tension danger.
6. Large areas can be efficiently treated.	6. Areas much smaller.
7. Costs moderate.	7. Costs high.
8. Deteriorates.	8. No deterioration.
9. Breakdowns frequent.	9. Spontaneous generation.

55 Park Street.

Medicolegal Notes.

Aiding and Abetting Violation of Harrison Act by Issuing Prescription.—A physician duly registered as such with the collector of internal revenue and who had paid the tax was charged with violation of the Harrison Narcotic Law by unlawfully and willfully aiding and abetting certain named druggists in making illegal sales of morphine and cocaine, by giving the persons to whom the sales were alleged to have been made prescriptions, which were by them presented to the druggists and filled by the druggists. The persons to whom the prescriptions were issued were at liberty to have them filled by any druggist selected by them. There was no preconcert between the physician and the druggists charged. It was charged that the defendant contemplated that his prescriptions would be filled by druggists who knew that they were issued to gratify the appetite of addicts for the drugs, and not the alleviation of suffering or the cure of disease. The illegality in the sale was charged to have consisted in the act that the sale was made neither to one who had or was entitled to have an order blank, nor was it made on the prescription of a physician within the meaning of exception (b) of Section 2 of the Harrison Act. That exception is as follows: "To the sale, dispensing or distribution of the aforesaid drugs by a dealer to a consumer under and in pursuance of a written prescription issued by a physician . . . registered under this act." The Circuit Court of Appeals, Fifth Circuit, holds that notwithstanding this exception, a sale by a druggist who knows that the prescription was issued to gratify the holder's appetite, and not to cure disease or alleviate suffering, violates the law, and the physician issuing the prescription, knowing it is to be filled by a druggist having such knowledge, aids and abets the violation. Knowledge by a druggist that a perscription under the act was issued to gratify the holder's appetite, and not to cure disease or alleviate suffering, is essential to guilt, and negligent failure to inquire will not take the place of knowledge. But it was held that an instruction erroneously authorizing a conviction, though the druggist had no actual knowledge that a prescription was wrongfully issued, was not ground for reversal where reasonable men could have drawn but the one inference that the druggist had such actual knowledge.—Doremus v. United States, 262 Fed. 849.

Liability for Injuries Caused by Using Defective X-ray Machine.—In an action for damages for injuries from the use of an *x*-ray machine not equipped with proper appliances, in attempting to secure two *x*-ray pictures of plaintiff's fractured hip, it was alleged that the defendant exposed the plaintiff to the rays 12 or 15 times, more or less, within two weeks, and that plaintiff was given too much of the ray by exposing him for approximately 375 seconds at a target skin distance of about 10 inches, using about 30 milliampères of current, and with a spark gap of not less than 2½ inches, as a direct result of which the plaintiff received severe and lasting burns. It was held that evidence tending to show the use of a machine lacking certain appliances was admissible. There was no pretense that the absence of a filter was, itself, negligence; but, a filter being absent, it was held negligence to make a certain kind of exposures for a certain time without the protection of a filter. Such evidence was necessary for framing an intelligible hypothetical question to an expert. Evidence showing that the sore made by the burn would probably become malignant was held justified under the facts set out in the petition. It appeared that the defendant, having failed after several exposures to procure a picture, induced the salesman who had sold the machine to attempt to take a picture, and upon the salesman's failure resumed his efforts with the same defective machine. It was held that he was not, because of the salesman's effort to take a picture, as a matter of law absolved from liability for the injury caused by the frequency with which the exposures were taken within a given time. The question of whether the defendant was responsible for the effort of the salesman was a question for the jury. The same principle applied to the fact that the defendant, after his first failure, procured another physician to take an exposure with the same machine.—Gross v. Robinson, (Mo.) 218 S. W. 924.

City Does Not Impliedly Warrant Purity of Water Supply.—The New York Appellate Division holds that, where the charter of a municipality provided for the maintenance of a waterworks system, either by general taxation or assessment on the property supplied, the city, though it collected water rates, cannot be deemed engaged in the selling of water, in the ordinary use of the term. Assuming, however, that the municipality is a seller of water, it is held that where it furnished contaminated water and one using it became inoculated with typhoid fever, the municipality is not liable for breach of implied warranty to furnish pure water, in view of the New York Personal Property Law, Section 96, which provides that there is no implied warranty or condition as to quality or fitness for any particular purpose of goods sold, except where the buyer makes known to the seller the particular purpose for which the goods are required, and it appears that the buyer relies on the seller's skill and judgment. The soil through or over which the water passes cannot be minutely examined; contamination of the water can be restricted, but not prevented; inspection alone will not reveal the presence of bacteria; analyses of the great volume of moving water collected in the ponds for distribution cannot be made; and an inspection, an examination, or an analysis of every drop of water furnished is beyond the power of the seller.—Canavan v. City of Mechanicsville. 180 N. Y. Supp. 62.

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THE PROGNOSIS OF ERYSIPELAS IN THE AGED.

ERYSIPELAS has the reputation of being very serious at the two extremes of life. Decorse examined the case histories of 3,072 patients with erysipelas and found a mortality of 5.37 per cent., and he concludes that in the aged or in debilitated subjects in adult life the prognosis is almost always fatal. More recently, Lucien and Parisot have given 18 per cent. as the mortality in fifty cases in subjects between sixty and eighty years of age. The death-rate at other ages given by these observers is 4.7 per cent. from 0 to 20 years; 7.2 per cent. from 20 to 40, and 6 per cent. from 40 to 60 years. Lamy's statistics of cases occurring between 60 and 87 years gives a lower mortality. There was only one death in thirty cases, otherwise 3.30 per cent. which is a lower death-rate than in youth and adult life, and Lamy inclines to the belief that extreme age in no way aggravates the prognosis. In elderly subjects erysipelas does not find a soil favorable for its virulence, and the attenuated forms of the process described by Juhel-Rénoy and Bolognesi—so common in old people—never have a bad prognosis. When death occurs in streptococcal dermatitis in elderly subjects a blood examination might indicate a bad prognosis if it contained the streptococcus, since Achalme maintains that the presence of this bacterium in the general circulation is a proof of severe infection, but this fact does not necessarily imply a fatal issue as has been erroneously supposed. Visceral morbid stigmata in old people, such as diabetes, renal, hepatic, and cardiac affections, are badly influenced by erysipelas so that in them the prognosis is bad. Juhel-Rénoy and Bolognesi think that the state of the kidneys is an important factor in the prognosis and even the symptomatology of erysipelas, but Lamy has observed cases of old people with chronic nephritis in whom erysipelas ran a mild course.

In his thirty cases of erysipelas in old people Lamy states that all had manifest arteriosclerosis, some with very high blood-pressure and an intense accentuation of the second aortic sound. Almost all had bronchitis; one with chronic nephritis and cardiac hypertrophy was a tabetic in the paralytic phase and this was the only fatal case. Of the remaining twenty-nine who recovered, seven had renal lesions and three of the latter offered evidences of mild hepatic lesions. The recovery of these patients cannot be regarded as contradicting the opinion of other observers because Lamy says that they had moderate renal and hepatic symptoms such as are present in the usual semeiology of senile pathology, but he nevertheless believes that the pessimism of most text-book writers concerning preexisting visceral lesions in erysipelas cases are exaggerated and susceptible to the physician in his prognosis in cases of erysipelas in the aged. Finally, the prognostic gravity of preexisting cardiac lesions mislead, whether mitral or aortic insufficiency or disturbances of the contraction of the myocardium, seems doubtful. It is difficult to admit with Lucien and Parisot that every perfectly compensated latent cardiac process should make the prognosis gloomy in ordinary erysipelas in old subjects. It is known that the heart shows only a mild intolerance to the infectious lesions of streptococcal dermatitis and Teissier has recently studied the frequently mild manifestations of this disease on the pericardium and myocardium.

As in the adult, so in the aged the prognosis of streptococcal dermatitis is poor in cases of advanced phthisis, lead, morphine, or alcoholic intoxications, likewise when the erysipelas is associated with typhoid fever or other infectious disease. It should be recalled that the prognosis of preexisting diseases to which an erysipelas becomes added has been the subject of numerous discussions and in many of them the skin process has had a salutary effect. From the viewpoint of local affections streptococcal dermatitis superadded to a varicose ulcer results favorably, since Roger records six recoveries from the ulcer out of seven cases he observed. Lamy met with one case in which the ulcer was made rather worse by the erysipelas.

As to the prognosis of preexisting general affections, Roger believes that cardiac, hepatic, and renal lesions—the most common in elderly subjects—are not aggravated by erysipelas, while the torpid form of phthisis, so common in old age, does not benefit by this disease. It has been affirmed that tuberculosis, influenza, and measles subside after an erysipelas, but pulmonary tuberculosis is known to undergo a new and fatal evolution after erysipelas.

The general prognosis of senile erysipelas should be regarded as favorable and is not distinctly darkened by moderate renal or myocarditic processes, compensated valvular lesions, or hepatic disorder.

DIETETICS IN DEFICIENCY DISEASES.

MOURIQUAND considers in the *Journal de médecine et de chirurgie pratiques for* September 10, 1920, xci, 17, the increase in our knowledge from a study of the dietetics of deficiency diseases and our new acquisitions in alimentary biochemistry. In collaboration with Professor Weill he has done much original work in this field. The conception of deficiency diseases must first be illuminated. The ideas of ordinary inanition and of autointoxication

are quite foreign to the subject, and lack of balance or monotony of diet is a separate subject. The real deficiency is in substances of the nature of enzymes or catalysts, and unlike calories, these units do not require to be present in quantities but only in quality. The vitamines may be shown to be living substances, although the word "living" may be used more or less figuratively. Thus the juice of a freshly picked lemon may be imagined as containing some unknown substance in a state of life which is forfeited after a certain period and which is destroyed by cooking, preserving, etc. This unknown substance present in fruits is able to persist after the latter are plucked and for an indefinite period. It seems only necessary that the fruit retains its juices. Ordinary sterilization and the decortication of cereal grains cause the loss of the vitamine content of the dried grains, and it is evident that the vitamines in the latter, which may be preserved indefinitely, must differ from the vitamines in fresh fruit juices. This is also evident from their activities in the body, for the deficiency diseases corrected by the fresh juices are known as scurvies, while the related affections due to sacrifice of the cortex of grains are expressed chiefly as polyneuritis. Conditions not yet shown to belong to the avitaminoses are pellagra and rachitis. Other vitamines are believed to preside over ordinary growth, so that there must be some cooperation between vitamines and hormones. The question of identity was at one time broached, but at the present moment it has been apparently demonstrated that certain aminoacids in minute quantities (lysin, tryptophane) are indispensable for growth or equilibrium of development. Certain minerals, as manganese salts, have also been regarded as catalysts in promoting the utilization of proteid foods, so that the hormones of the thyroid, hypophysis and other endocrine glands may not be able unaided to preside over growth and development. No mention is made of cholesterol and other lipoids in this connection.

If a human subject is fed on food poor in vitamines the first consequence is indigestion, although the food may be of the most bland and easily digested type. These disorders comprise loss of appetite, intestinal disturbances, chiefly diarrhea (the diet is ordinarily favorable rather to constipation), and pallor. These threshold symptoms, like the fully developed deficiency diseases, respond quickly to the vitamine regimen—meats, butter, legumes, and fresh fruits. Where beriberi is endemic the nursling may be benefited by proper feeding of the mother or nurse. In artificial feeding it is possible to avoid deficiency disease by using fresh milk only, avoiding both sterilization and conservation of the fluid. There is a danger attached to weaning, for the solid food given the child may be lacking in vitamines and the same danger is present in theory during the entire period of growth and development. The adult does not require growth vitamines but does still demand those which preside over equilibrium. Dyspepsia, anorexia, and diarrhea should cause an investigation of the diet for vitamine deficiency.

THE ACIDOSIS SYNDROME.

LABBÉ gives a sort of synthetic review of the general subject of acidosis in the *Journal de médecine et de chirurgie pratiques* for September 10, 1920, xci, 17. The term was first introduced by Naunyn in connection with the presence of oxybutyric acid in diabetic coma. Levy extended the meaning to include any condition characterized by insufficiency of bases and excess of acid in the economy. Of conditions affiliated with diabetic acidosis are cyclic vomiting with acetonemia, so-called dyspeptic coma, diaceturia in certain cases of incoercible vomiting of pregnancy and other expressions of gestational autotoxemia, these being associated with hepatic insufficiency. The acidosis of inanition from whatever source belongs in the same category. All forms are characterized by the presence in the urine of oxybutyric and diacetic acids and acetone. Recently shock has been ascribed in part to acidosis. Any condition which benefits by intravenous or subcutaneous infusion of sodium bicarbonate solution may be an acidosis. From this viewpoint surprising therapeutic effects have sometimes been obtained.

The author is especially interested in the form which proceeds from hepatic insufficiency. One patient with abscess of the liver showed glycosuria and diaceturia and died in coma. Others also exhibited delirium with coma and after death lesions of the liver were found. But not always do we find lesions in the liver when they should be present, and so we must postulate the existence of a functional insufficiency of the liver. Acidosis is not seen at all in acute infectious diseases and is usually absent in digestive and hepatic diseases, but is not uncommon in visceral inflammations such as appendicitis and salpingitis. To a certain extent it is an index of the severity of appendicitis and is therefore absent in the milder cases. It is still more common in cholecystitis and pericholecystitis. In hepatic colic it may be intense.

These types are probably due to the fact that the liver is closely related through the portal circulation with the gall ducts and bladder and the appendix. The acidosis element in chloroform and ether death has a similar motivation. In all of these affections there is an inhibition of the hepatic functions.

Acidosis is an anomaly of metabolism due, in the author's opinion, to hepatic insufficiency. He has found the acetone bodies in these cases associated with aminoaciduria and urobilinuria, which have the same significance. The acetone bodies are largely derived from the fats but also in part from protein. The author distinguishes between latent, somnolent or comatose, deliriant, dyspneic, and gastric forms in which vomiting is a marked symptom. Diagnosis is made essentially through the urine although the acetone bodies therein found may not be associated with symptoms (latent forms). Generally speaking, the prognosis is serious although many cases are benign. Treatment comprises feeding, which has to be done chiefly with carbohydrates, the use of alkalies, hepatic stimulants, and in theory hepatic extracts.

THE PHYSICIAN'S ROLE IN THE TREATMENT OF RECTAL CANCER.

THE authors below mentioned refer not to any exclusive medical management of cancer in this locality but to the rôle of the physician in dealing with the patient who consults him. According to Bensaude, who writes the article in association with Ernst (*Journal de médecine et de chirurgie pratiques*, September 25, 1920, xci, 18) it is usually the physician who first sees the patient. In connection with digital and rectoscopic examination in routine work he comes at times on rectal cancer when it is low placed, but if the location is high he will be very likely to overlook it. If he finds a suspicious growth he should know the conditions of operability and if operation is refused he should at once recommend a radium expert and keep the case under observation during treatment. The formation of an artificial anus should also be thought of in certain cases and the medical man may be of use in overcoming the repugnance of the average patient to this step, as well to extirpation itself. The anus may be either temporary or permanent. The physician should know the contraindications to radical operations, such as cachexia, metastases, extension of the process into nearby organs, advanced age, etc. Colloid cancer in relatively young subjects is practically certain to relapse fatally and may be regarded as inoperable. In all such cases an iliac anus is the only resource. Operable cases may have the additional benefit of radium, as may cases on the border line.

The major questions of operation, such as the route, the amount of tissue to come out, etc., are strictly within the province of the surgeon. In France the sacral operation has been discarded chiefly in favor of the abdominosacral in two stages. The mortality here is very high and if we include the recurrences a patient has a little less than an even chance. Certain figures from other countries seem much better than these, which may be due to selection of cases and hold good for small personal series, but we can only take the general results as we find them. In all radical interventions the artificial anus is a necessary preliminary step which eliminates the inflammatory complications and leaves a simple cancer for removal. The medical man can assist nature by appropriate treatment after the establishment of this anus and in two or three months' time the degree of improvement is often remarkable. The cancer is presumably increasing its boundaries, but left to itself its growth rate is naturally slow—sometimes lasting several years before the final issue. The artificial anus requires the daily supervision of the medical man, and the authors enumerate many useful details of management.

It is the supervision of the artificial anus which is indicated under such a variety of circumstances that makes rectal cancer peculiarly a medical disease for the family practitioner. This does not happen in other forms of cancer. Suitable diet plays a major rôle in the management of artificial anus, and this is even more true of cases in which no anus has been established, for the necessary opiates produce constipation which must be antagonized by giving laxative foods.

THE MALE HOMOSEXUAL AS A SOCIAL PERIL.

THE quasi-humanitarian attitude of medical jurists like Hirschfeld towards homosexuals finds no echo in the pages of a monograph by Fried of Vienna, reviewed in the *Schweizerische medizinishe Wochenschrift* for July 29, 1920, i, 31. This author insists that homosexuality is none of the things claimed in its extenuation. It is not a neurosis nor is it amenable to psychoanalysis or any other method of treating neuroses; it is not due, as Hirshfeld alleges, to an irresistible impulse; there is no question of diminished responsibility. There are indeed severe defects of character—spite, opportunism, absence of honor, cowardice, joy in injury to others. Fried repudiates the teaching that geniuses and great artists have homosexual inclinations. There is a fundamental tendency to form cliques and it is through this tendency that the homosexuals are a social menace. A prominent member will surround himself with underlings of his own type. It was an Austrian commander with his homosexual satellites who sold out the garrison of an important town to the Russians. The police will never move against a rich homosexual. On the other hand, the female homosexual is not a social menace, evidently because she does not associate herself with her kind on a large scale. Normally sexual men often pervert themselves for gain. The reviewer of the book approves of much of its teachings, and a reaction against the doctrine of irresponsibility of the male homosexual which takes him from the jurisdiction of the ordinary police magistrate is bound to come, and the pendulum is bound to swing back to the natural attitude of the public against this class of offenders.

BILHARZIOSIS IN THE NEAR EAST AND MEDITERRANEAN SOUTH SHORE.

THIS affection, according to Abbatucci writing in the *Bulletin Médical* for July 17, 1920, xxxiv, 36, now prevails in practically all of the colonial possessions of the French—Madagascar, Martinique, Guadaloupe, and especially Africa, and there not only in the Northern possessions but in Guinea. It follows the Mediterranean south shore from Morocco to Syria. The question must arise why the immunity of France? The host is a fresh water mollusk and Roubaud has examined various congeners of this creature in the regions of Paris for evidence of the bilharzia with negative results, although there have been in Paris various colonials with the disease. The parasite in any case is probably unable to find a host in the waters of the temperate zone. Ordinarily only urine containing the parasite, certain gastropods for hosts, and methods for contaminating the water supply are needed to develop the disease. It has been shown beyond doubt that bathing in infected water will lead to infection. Washing in the water of certain wells also suffices and all collections of fresh water, whether wells, cisterns, or open ponds, etc., contain the mollusks in question. The most

important country at present from this viewpoint of the spread of the disease is Syria, including Palestine, where French troops have recently been stationed. Until recently we have had no therapeutics for bilharziosis, but now good results are attainable from the use of emetine according to a special technique of injection introduced by the English army surgeons.

Arsenic in Parkinson's Disease.

Many years ago Erb reported unfavorably on the use of inorganic arsenic in this malady. In 1899, however, Gautier introduced the cacodylates into medicine and recommended them especially in the same. It was extensively tested and in a small minority of cases seemed to give results. Dr. Carlotta Porru, assistant to Professor Rossi in the University of Sassari, publishes the experience with this resource in *Il Policlinico*, Sept. 6, 1920, xxvii, 36. In 1911 the then new organic arsenical salvarsan was tried out in an especially rigid case of paralysis agitans without evidence of syphilis and the result was apparently *nil*. The idea then slumbered until the report in 1919 by Lhermitte and Quesnel in praise of sodium cacodylate, the action of which was said to have been brilliant. The technique was new and consisted in incorporating as much as 2.5 gm. in a day at intervals of several days, with a minimum of half a gram. The treatment was at once tested at the Sassari clinic. One woman received 13 grams of cacodylate in ten days with but slight relaxation of the rigidity. It was an extreme case of twenty years' duration. Three patients whose malady had lasted ten years were next treated. One received 14 grams in twenty-five days, another but 4 in twenty-two days, and the third 13 in twenty days. The injections appear to have been made daily without periods of intermission. There were no instances of intolerance to arsenic and there was a certain amount of general improvement, but without the disappearance of any of the characteristic symptoms. In a third group of three individuals whose malady had lasted about six years, the dosage was slowly elevated until the patient received 15 grams in fourteen days. One of the three was decidedly benefited in all respects while the other two were uninfluenced. The remedy then holds out a little hope in cases of relatively brief duration. The method is being tested in spastic paralysis as well.

Rasmussen's Aneurysm.

Letulle reports 5 cases of this affection in the *Bulletins et Memoires de la Société Anatomique de Paris* for June, 1920, xvii, 6. The affection thus described is a tuberculous aneurysm of the pulmonary artery. A student, Tétard, will write his graduation thesis around these cases and in view of the approach of this event great pains have been taken with the histological studies. The first 4 cases were classical and in agreement throughout with Rasmussen's description—small, whitish pockets in part effaced, projecting into pulmonary cavities and formed at the expense of branches of the pulmonary artery of considerable importance. Each of these minimal parietal aneurysms is empty and fissured, being thus without the clots seen in syphilitic arterial aneurysms. The fifth and atypical case was of notable size, spheroidal, resembling a small and partly healed cavity. Technically it was a Rasmussen aneurysm cured by thromboarteritis obliterans. In the four typical cases the walls were calcified; rupture had caused death by pulmonary hemorrhage. The portion of the artery which projected into the cavity was in close contact with caseous matter. The aneurysmal pocket had undergone tuberculization and had been infected from the caseous focus just mentioned, but the mechanism is obscure; for how could bacilli cause a panarteritis such as undoubtedly occurs? The inflammation is succeeded by ulceration and aneurysmal dilatation aided by the pressure of the blood. Study of analogous syphilitic aneurysms, however, appears to show that the mechanism must be identical in the two affections. It appears that a vascular reaction occurs in the affected arterial segment which becomes transformed into fibrovascular tissue and this in turn undergoes caseation. The wall is rapidly disorganized and dilates. Along with caseation we see vitrification and hyaline degeneration which in animal experiment can be made to develop with great rapidity.

News of the Week.

Russian Food Situation Serious.—Press reports announce that Soviet Russia has never experienced such a food crisis as exists at present. Moscow and other cities are said to be paralyzed by famine. The Red Army, too, is in dire need of food.

Drug Addiction Increasing in France.—Opium smoking and the use of cocaine and morphine are said to have increased enormously of late in France. A regular traffic in drugs is carried on in the less reputable cafés. Much of the "dope" is smuggled through from Germany.

American Supplies for Jews of Soviet Russia.—The first large shipment of relief supplies for the Jews of Soviet Russia was started recently from the Baltic port of Reval, Esthonia, for Moscow. The supplies were purchased with $500,000 appropriated by the Joint Distribution Committee of the American Fund for Jewish War Sufferers. Distribution will be under the direction of the Moscow committee of Jews, with the cooperation of Dr. Frank Rosenblatt of New York, who represents the committee in Moscow.

Danger of Typhus Not Abating in Poland.—Colonel Harry L. Gilchrist, commander of the American Polish Relief Expedition which has been working more than a year, in conjunction with the Polish Government, in an effort to control the typhus situation, considers the danger greater than ever. The Bolshevist activities in August, when the fate of Warsaw was hanging in the balance, augmented the danger of the spread of the disease, for the following reasons, according to Colonel Gilchrist: Complete abandonment of all typhus fever work in the worst typhus fever districts of Poland; capture by the Bolsheviki of all Eastern quarantine stations and removal of the barriers established under great difficulties; capture and destruction of much of the paraphernalia and materials which had been distributed in many towns and villages

throughout the typhus districts; in reduction by Bolshevist troops of a new source of contamination to places free from the disease, and the infecting of the armies of Poland and infecting of the populace returning to homes recently occupied by Bolshevist soldiers. It is predicted by the most conservative that the number of new typhus carriers scattered over all Poland will reach many thousands, and the financial loss due to the destruction of sanitary materials, crops and other property will run into millions of dollars.

"The-All-Year-Round Suit."—According to press reports, London doctors are waking up to the fact that the majority of people wear too much clothing, particularly wool and fur. If paper clothing could be made "silent" and untearable, they claim, it would be more hygienic and effective than woolen or cotton clothes. An all-the-year-round suit is advocated as a hygienic measure.

Pine Coffins in Switzerland.—The Department of Commerce has received advices from American consuls in Switzerland to the effect that the cantons generally provide free burial for everyone, pine coffins, stained outside and unstained within, being provided. Coffins of material other than pine are prohibited by law. A veneered pine coffin, decorated as desired, may be purchased provided nothing is used which will tend to delay decay of the coffin and the body within.

One Bath a Week for the Viennese.—Report comes to the effect that Saturday is official bathing day in Vienna. The scarcity of coal makes hot water a luxury, and since cold water bathing seems to be practically tabooed by the Viennese, it has been made a misdemeanor to waste hot water, the natural corollary being an official decree limiting the number of baths. A farther stroke of economy limited the bathing time to one day, Saturday being selected. Signs in hotels read: "It is officially decreed that only on Saturday may baths be taken."

High Infant Mortality.—The infant mortality rate is higher in Akron, Ohio, than in the majority of Ohio cities and one of the highest rates in the country. The rate of infant mortality in Akron is 114 for every 1,000 babies born. The congested conditions arising through inadequate housing facilities are blamed for the abnormally high rate of infant mortality.

Public Health Service Takes Over Army Hospitals.—The O'Reilly Hospital, Oteen, N. C., eight miles from Asheville, has been taken over by the Public Health Service, and will be continued as a tuberculosis hospital with about one thousand beds. Hoff General Hospital at Fox Hills, Staten Island, will be continued by the Public Health Service as a general hospital with a capacity of about five hundred beds.

Nurses Needed.—The United States Public Health Service announces the need of hundreds of graduate nurses for its general hospital work and particularly for the care of former soldiers suffering from nervous and mental disorders. The Public Health Service accordingly purposes to establish a training school for nursing in neuro-psychiatric diseases in its special hospital (No. 49) on Grays Ferry Road, near Philadelphia, where nurses with general training may take a special course in this class of work. This hospital has a capacity of 240 patients and will afford exceptional opportunities for instruction in the most modern treatment. The hospitals now operated by the U. S. Public Health Service are already 150 nurses short; and the Service faces the necessity of opening several new ones with an inadequate force. Applications should be made to the Surgeon General, U. S. Public Health Service, Washington, D. C.

Anesthetists Needed.—The United States Civil Service Commission announces an open competitive examination for anesthetist, to fill a vacancy in Freedmen's Hospital, Washington, D. C., and vacancies in positions requiring similar qualifications. Salary, $1,200 a year, plus the $20 a month increase granted by Congress, with board. Applicants should apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C., or to the Secretary of the local United States Civil Service Board. Receipt of applications closes December 7, 1920.

Radium Thrown Away.—A woman patient in Faxton Hospital, Utica, N. Y., was being treated for cancer of the breast, a milligram of radium, valued at $13,000, being used. Because it irritated her, so the story goes, she went to the bathroom, took off the bandage, and threw the radium away, being ignorant of its value. Workmen were immediately put to digging up the sewers in the vicinity of the hospital, in the effort to locate the metal.

Red Cross Drive Begun.—Armistice Day, November 11, marked the beginning of the Red Cross drive. Five thousand men and women in New York City will conduct the two weeks' canvass. The New York Chapter expects to reach the goal of $400,000.

Anti-Litter Campaign.—The Merchants' Association of New York City, through its Anti-Litter Bureau, has enlisted the cooperation of the Boy and Girl Scout organizations in the work of keeping the streets of New York City free from litter and in educating the public to maintain these conditions.

Columbus Hospital.—The Missionary Sisters of the Sacred Heart, who have conducted Columbus Hospital in East Twentieth Street since it was founded in 1892, have recently taken over St. Lawrence Hospital in East One Hundred and Sixty-third Street, and the old institution will be moved to the uptown quarters. In the near future the hospital will be enlarged by the erection of a modern ten story building on a vacant lot adjoining the St. Lawrence Hospital site.

Gifts to Fifth Avenue Hospital.—The opening of the two weeks' drive to raise a $2,000,000 building fund for the new Fifth Avenue Hospital was marked by gifts aggregating $485,000, contributed as follows: Corn Exchange Bank, $30,000; J. H. Emery, $30,000; Fifth Avenue Bank, $30,000; Mrs. George J. Jackson, $30,000; Mrs. R. L. Sweet, $35,000; T. F. Manville and H. E. Manville, $300,000. This new institution is intended by those constituting the Fifth Avenue Hospital Committee, to take the place of the Hahnemann Hospital and the Laura Franklin Free Hospital for Children.

Hahnemann Hospital Association.—Homeopathic physicians and laymen interested in the perpetuation of Hahnemann Hospital (which it is proposed to replace by the new Fifth Avenue Hospital) as set forth in the charter have organized the Hahnemann Hospital Association, with offices at 145 West Forty-

third Street. George A. Gangloff is Acting Secretary.

Bronx Maternity Hospital Opened.—With a capacity of forty beds, the Bronx Maternity Hospital has been formally opened for the reception of patients.

Obituary Notes.—DR. THEODORE G. WRIGHT of New York City died Nov. 1, at the age of eighty-seven. He was graduated from New York University Medical College in 1865. He was a member of the Connecticut State Medical Society.

DR. L. J. DENCHFIELD of New York City died suddenly Nov. 4. He was graduated from the Medico-Chirurgical College of Philadelphia in 1899.

DR. CHRISTIAN OSWALD JOERG, for thirty years a practising physician in Brooklyn, N. Y., died Nov. 4, at the age of seventy-seven. Dr. Joerg was born in Leipzig, Germany, and was graduated from the University of Leipzig in 1870, specializing in gynecology. He came to this country in 1881. He was a fellow of the American Medical Association.

Obituary.

SAMUEL J. MELTZER, M. D.

NEW YORK.

Dr. Samuel J. Meltzer, distinguished physiologist, died of heart disease Nov. 7. He was born in Russia in 1851, received his general education in Königsberg, Prussia, was graduated in medicine from the University of Berlin in 1882, came to this country the following year, and entered the practice of medicine in this city.

In 1906 Dr. Meltzer became Director of the Department of Physiology and Pharmacology at the Rockefeller Institute for Medical Research, in which capacity he served to the time of his death. In the course of the research work which he conducted at the Rockefeller Institute he made many important observations, among them being his well-known findings concerning resuscitation, pharyngeal insufflation, peripheral mechanism, and tetanus. He was one of the founders and first president of the American Association for Thoracic Surgery, organized in 1918.

During the World War Dr. Meltzer served as major in the Medical Reserve Corps of the United States Army. Among the societies to which he belonged may be mentioned the American Medical Association, the American Association of Anesthetists, the Association of American Physicians, the American Gastro-enterological Association, the American Asssociation of Pathology and Bacteriology, the New York Pathological Society, and the American Society for Experimental Pathology.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, Oct. 15, 1920.

The Opening of the Session of the Medical Schools.—In a former letter two or three of the addresses given at the opening of the London medical schools were referred to at length, but no mention was made of the fact that generally speaking this time honored custom has almost fallen into desuetude. Up to the end of the year 1800 most of the great medical schools made a distinct feature of the opening address on October 1. In the metropolis these introductory addresses were delivered as a rule by distinguished members of the staff who undertook the duty in rotation and who discoursed on the nobility of the career the student had chosen, emphasizing the point that he would have to work hard only to find probably that his labor was inadequately rewarded, finally impressing upon him that he had done well to join this school on account of the eminent attainments of the scientific leaders who had joined the staff. At the present time orations of this nature are obsolete. The opening address with its obvious truisms is either abandoned or a well known man not connected with the institution is asked to speak, his theme being medicine or sociology, in whichever subject he had made his name. This is evidence of the new spirit of the medical schools, and shows that the universality of medicine is now fully recognized. One of the most striking addresses was given by Professor Swale Vincent, Professor of Physiology, University of London, at the opening of the session at the Middlesex Hospital Medical School. He dwelt upon the various problems with which medical research and education are concerned and ventured to prophesy that in the evolution of the British medical curriculum there would be a general if not universal adoption of the arrangement which had been found most advantageous in the universities of Europe and America. Professor Swale Vincent pointed out that perhaps the greatest hindrance to progress in medical education in Great Britain had always been, and still continued to be, the difficulty in finding money to defray the expense of buildings and laboratory equipment, to say nothing of the salaries of teachers. He urged that the Government should support the universities rather than separate research institutions, which they were now accustomed to do. He said that the reason for the deplorable condition of the British universities from the scientific standpoint was clearly to be sought in the lack of interest in and appreciation of scientific work on the part of the general public and the reflection of this state of affairs in the attitude of the British Government. In regard to medical education, the public had never realized that efficient training of doctors was absolutely dependent upon a sound scientific education. This was, of course, only an expression of the British suspicion and scepticism as to the value of science. There had been a partial awakening, but the poverty-stricken universities still stood as a sign that everything had yet to be done. State support to the universities should be generous and complete. Mr. Richardson Cross gave the inaugural address at King's College Hospital and the address was prepared especially for the students and dealt with the development of the modern doctor. He sketched the personal characteristics and skill of the men on the staff of King's College Hospital 35 years ago when Lister's methods had not been introduced, or were only commencing to be introduced, and when the the most skilful

surgery was frequently rendered useless by the blood poisoning that followed operation. At that time, the mortality after amputation on operations of a similar grave character was not lower than 25 per cent. and even reached 40 per cent. Mr. Cross went on to describe the revolution in surgical methods which followed the work of Lister, who joined the staff of King College Hospital in 1877. Dr. Gossage in the opening address at Westminster Hospital drew attention to the tremendous increase in the number and the complexity of the subjects which the medical student had now to be taught compared to what was the case when he was a student. However, it was with the teachers that Dr. Gossage was more concerned than with the students. Teaching was the least well paid of all the professions, and, as in other branches of secondary and technical education students' fees were completely inadequate even to supply the necessary apparatus, much less to pay a salary commensurate with their labor to the teachers. In the past professional men taught their future colleagues in their spare time while they earned their livelihood by the practice of their profession, and were repaid because the successful teacher obtained the largest professional reward. To some extent, in the more purely professional subjects of medicine, surgery, and midwifery this still held, and it was a great advantage to the student to be taught by active practitioners. Other subjects of the curriculum, such as pathology, were now demanding the whole of the teachers' energy, leaving him no time for practice and even if there were time, eminence in these sciences did not lead to remunerative professional work. There was, too, a tendency both here and in other countries to demand that a major part of the teaching in even medicine, surgery and midwifery should be done by wholetime teachers and assistants. In America and to some extent in England the difficulty was partly met by the munificence of private individuals, who had endowed universities and schools for medical education; on the continent of Europe the financial responsibility was undertaken by the Government. London, the largest British center for medical education, had never received much assistance from endowment, and in these days when it was becoming impossible to raise from the charitable even sufficient money for the hospital treatment of the sick, further endowment of education became excessively unlikely. As the *Lancet*, Oct. 9, last, in an annotation on the subject pointed out, it was to the Government that the schools must turn for adequate provision so that in material and personnel the schools should be equal to the best. Before undertaking any such responsibility the Government must be expected to insist on economy of management, and it might be expected that it would insist on a reduction in the number of competing schools and hospitals, which might be considerably reduced by amalgamation. The proper use of London's unrivalled opportunities was also likely to be demanded, so that the teaching possibilities of the numerous special hospitals and infirmaries should be utilized, and a further multiplication of unnecessary institutions to the detriment of those already existing prevented.

Hospital Dinners.—Although St. Bartholomew's Hospital was one of those which has discarded addresses the annual hospital dinner was held after a lapse of seven years due to the war. It was found that the Great Hall of the hospital would not seat all those who wished to be present and so the offer of the Lord Mayor of London to place the City Guildhall at the disposal of the hospital was accepted. The dinner took place there on the evening of Oct. 1, last. Sir Anthony Bowlby, President of the Royal College of Surgeons, occupied the chair. Among other distinguished members of the medical profession present were Sir Norman Moore, President of the Royal College of Physicians, who proposed the toast of the evening, "The Hospital and School"; Sir Clifford Allbutt, Regius Professor of Physic at the University of Cambridge, and Sir Archibald Garrod, Regius Professor of Medicine at the University of Oxford, who is a member of the staff of the hospital and until recently head of the hospital medical unit. At a luncheon held on Oct. 1, last, to inaugurate the appeal for funds to establish a department of industrial medicine at St. Mary's Hospital, Sir Almroth Wright, director of its pathological institute, said that in medicine practice is always outrunning knowledge and at present this must be so. Advice was given to patients to the best of the doctor's ability, but the doctor himself knew only too well that he was not always competent to give it. He therefore considered that a hospital ought to have two staffs, one to apply the knowledge already available, and the other a research staff. At St. Mary's Hospital the directors of departments of the Pathological Institute were now recognized as members of the staff of the hospital. He laid stress upon the importance of having both staffs attached to a hospital instead of segregating research work in separate institutions. One advantage was the ease with which the research worker could obtain material selected and sent on to him by the clinician. Sir Almroth Wright then discussed the subject of industrial medicine. In the Crimean War ten men died from disease for everyone who died from an injury; this disease mortality in war had been prevented only by medical concentration on the "soldiering" industry and equally marvelous results would be obtained if the same attention were given to conditions of life work and ill-health in all industries.

Women in Medicine.—An endeavor is to be made to obtain funds for the purpose of extending the Royal Free Hospital, London, School of Medicine for Women. This is the only school of medicine in Great Britain solely for women, although some of the other London schools have opened their doors, and others are thinking of doing so to female medical students. The jubilee of this school is approaching, and the committee appointed to launch a campaign for funds are very anxious that the event should be celebrated in a fitting manner. The great work which the school has done and the promising future which lies before its students was discussed recently by a high authority in an interview given to a representative of the *Observer*, the foremost London Sunday journal and published in that journal of Oct. 10, last. The School of Medicine for Women according to this authority

has been a pioneer in university education. Through its work women have taken good places in medicine and surgery, in physiology, chemistry, radiography and research, and have helped largely in opening responsible posts in all branches of work. The special need at the moment is to place the medical education of women on a wider and firmer basis. Five years ago the school was enlarged for an annual entry of seventy-five students. Already it has far outgrown that number, the average entry being about 105. In the same way the school has outgrown the hospital. However, the need for more funds comes at a happy juncture, because, whilst the hospital receives as, hitherto, free of all charge poor patients who are unable to contribute anything towards their maintenance, numerous patients, men, women and children, seek admission who can pay the cost of their maintenance. If only, therefore, more wards can be built there will be no extra charge on the revenue of the hospital. The question is often asked why the authorities should try to extend this school when some of the men's medical schools in London now take women students. These schools only began to take them during the war, and the number is in many cases limited to 5 or 10 per cent. It is strongly felt by the authorities of the women's school, that though the co-education of men and women students has been carried on for many years in the newer universities, yet the hospitals and infirmaries connected with these schools have hitherto withheld posts of responsibility from women graduates, and it therefore seems best to have a strong school for women students only, until all medical schools, together with all hospital appointments are open to men and women on equal terms. As to the future that lies before medical women, at present, and so far as can be judged, there are plenty of openings both in public services and in private practice, at home and abroad for qualified medical women. The large number of women desiring to enter as medical students has proved quite embarrassing to those London medical schools which have thrown their doors open to them. The rush of men students is greater than ever known and there are also the ex-service men to be considered. These will be received at considerably reduced fees. There is not only lack of accommodation at most of the hospitals but the financial state of affairs enforces great economy. The situation is also delicate in more than one respect. The woman student demands to be placed on an equality with the man and to be given her due share of hospital appointments. Thus the authorities of the hospitals to which she is allowed to enter are placed somewhat on the horns of a dilemma. It seems that if the female student has shown herself fitted to hold appointments it will be unfair to deny her. The apportionment of such appointments in equitable proportion is in itself a matter requiring a good deal of diplomacy. Moreover, while some women may have proved themselves equal to any medical or surgical task, this is not to say that the average woman doctor can cope with the rough and tumble of general practice. It is said that at the Royal Free Hospital where the majority of the appointments are held by women, that the work is done by them in a most satisfactory manner. It has been a belief held for years, but perhaps after all this is only a tradition, that women are hampered by certain physical disabilities, and it might be interesting to learn what Sir Almroth Wright has now to say on the subject. In any event it is certain that women are flocking to the medical profession in large numbers, and that this constitutes a problem which must be faced squarely and fairly. There is likewise no doubt that there is plenty of scope for the exercise of their abilities in the medical profession. For public health matters, child welfare, and for some other branches of preventive and curative medicine women are peculiarly well qualified by the genius, intuition, and physical characteristics of their sex, putting on one side any special aptitude they may display for a particular branch of medicine or surgery.

THE TREATMENT OF CANCER.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—May I be permitted to refer to one or two remarks contained in Dr. Percy Robinson's letter in the MEDICAL RECORD of October 2, under the heading of "Potassium Nitrate Treatment of Cancer"; and to reply to questions he has put to me?

In the first place, I am glad to note that he agrees with me, and with other writers on the subject—Dr. Bulkley for instance—that "the disease is dependent upon the *condition of the blood.*" I would have been better pleased had he placed the adjective "vitiated" before the word "condition" instead of at the end of the paragraph. Then we should have arrived, in a few words, at the true cause of cancer; because healthy cell metabolism cannot possibly coexist with autotoxæmia, or maintain that normal *metabolism* which is, in these circumstances, replaced by cell *metamorphosis.* And if Dr. Robinson will take the trouble to refer to the MEDICAL RECORD of June 5, 1915, he will there receive my answer to his statement, that I do not state "what cancer is."

My old friend, Dr. Braithwaite of Leeds, advanced the same theory, that Dr. Robinson now propounds, over twenty years ago. He believed cancer was due to the ingestion of too much salt, NaCl. But this theory, so far as this country was concerned, fell to the ground as untenable.

With regard to a statement I made in my letter, which he describes as the "heritage of an old wife," I may assure him that at the Battersea Hospital, eight years ago, I made experiments with this salt of potassium upon several cases of cancer, but unfortunately with only negative results. On these several occasions I followed the old wife's recipe, and ordered one ounce of nitrate of potassium to be stirred up and thoroughly mixed in a pound of molasses: a teaspoonful—which would thus contain about three grains of the salt—to be taken three times a day after meals.

Now we know that potassium is present in all vegetable products, just as chloride of sodium is contained in all animal juices; and that the former is therefore taken into our bodies along with uncooked vegetables and fruit. It is ingested in the form of *organic,* not chemical salts; and in sufficient, though minute, quantities to supply the needs

of the blood; but simultaneously, with the vital principle present in these articles in their natural ripe condition. They have been sufficiently cooked by the sun. But there are other important vegetable salts present, which are quite as essential to the maintenance of a healthy condition of the blood, as potassium is, viz., those of calcium and magnesium, to which I attach great importance, both as preventive and therapeutic agents when cancer is concerned; and without the presence of which the functional activities of the blood would be sadly handicapped. Of course there are other salts present in our food, such as iron, silica, etc., which also have their part to play in promoting the continuance of a healthy blood stream. Those of calcium and magnesium, however, I look upon when administered in the colloidal form or, if this form is unobtainable, in minute doses, as of great importance in the treatment of cancer, but always in conjunction with a carefully regulated diet, and in this method of dosage I heartily agree with Dr. Robinson.

There is one point, and this relates to a chemical problem, to which he calls my attention, and which I fail to comprehend. He states that when KNO_3 enters the blood, and when it comes in contact with NaCl. their separate formula becomes altered into $NaNO_3$ and KCl, while circulating in the blood. Now these are two basic salts, both having an equal affinity for their acids. How then does the transference take place?

Again, I suppose when Dr. Robinson employs the term osmosis he means endosmosis.

My friend Dr. John Round has recently succeeded in bringing about a complete cure in a case of sarcoma of the kidney, the patient having been discharged from one of our hospitals as incurable. Dr. Round simply restricted her diet to uncooked vegetables and fruit.

In conclusion, I fervently trust Dr. Robinson will not, for a moment, suppose I do not gladly give him credit for the good work he is doing; and for the satisfactory work he has accomplished, and the gratifying results he has obtained. We are all working for the same beneficent cause, but of course we are at liberty to exchange, in an amicable way, our views with each other.

ROBERT BELL, M. D.

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Progress of Medical Science.

Boston Medical and Surgical Journal.

October 28, 1920, clxxxiii, 18.

1. The Use of Water in Diseases of Childhood. Fritz B. Talbot.
2. Cause and Prevention of Overstimulation of the Modern American Child. Erik St. J. Johnson.
3. The Significance of Meningeal Symptoms. A. C. Eastman.
4. Parental Responsibility. Henry I. Bowditch.

1. The Use of Water in Diseases of Childhood.—Fritz B. Talbot states that young infants usually take from 140 to 150 grams of water per kilogram (about 1 1/3 ounces per pound), while adults take about 35 grams of water per kilogram of body weight (½ ounce per pound). The amount required per unit of body weight, therefore, diminishes with increasing age. Experience has also shown that the artificially fed infant usually requires more water than the breast fed infant. These figures should be considered as the minimum. The writer's experience has shown that healthy infants require one-half to one-third more total liquid, and older children approximately one-fourth more liquid than the figures would indicate. Conditions due to too little water in the body arise at various times. The earliest instance is found in newborn infants, and has been called "inanition fever." Another is found in communities where artificially fed infants are given a concentrated food without the addition of water. Summer heat, summer diarrhea, fever, pneumonia, and intestinal intoxication, associated with acidosis, are briefly discussed. The methods of introducing water into the body depend upon the symptoms of the case under consideration. Even when there is no vomiting and during the early stages of febrile diseases, a record of the amount of liquid ingested should always be recorded and added up at the end of each twenty-four hours. In this way only is it possible to know how much fluid the child is receiving. If this is taken into consideration early enough and if the child is given the amount of liquid which would normally be ingested during health, plus the estimated amount lost as a result of the disease, fewer untoward symptoms will appear. Sometimes it is necessary to force water when the child is not receiving enough. Water may be introduced by the rectum. Very little success can be expected from this method when employed during diarrhea when there is excessive peristalsis, but it should always be tried. In other conditions without diarrhea, water may be introduced once in four hours very slowly, taking half an hour to introduce three to eight ounces, according to the age of the child, or it may be administered by the Murphy drip, four to five drops per minute, for periods of three hours. This should be alternated with rest periods of three hours in order to prevent the irritation of the rectum and the starting up of peristalsis. Water may be introduced subcutaneously, intravenously or intraperitoneally. The water thus given should be absolutely sterile and should be isotonic with the blood, that is, a normal saline solution. From three to sixteen ounces may be introduced at one time into dessicated children.

New York Medical Journal.

October 30, 1920, cxii, 18.

1. A Series of Foreign Bodies in the Bronchi and Esophagus. Henry Lowndes Lynah.
2. Acute Infections of the Hand and Their Surgical Treatment. William T. Coughlin.
3. The *X*-ray as an Essential Guide for Producing Artificial Pneumothorax in Advanced Cases of Pulmonary Tuberculosis. David Dudley Krupp.
4. The Knife Cautery in Surgery of the Thorax. John F. Van Paing.
5. Carcinoma of the Middle Ear. John Guttman.
6. Frequent Types of Nasal Obstruction and Their Treatment. M. S. Ittelson.
7. Congenital Underdevelopment of the Right Side in an Infant Three Months Old. B. K. Rachford.
8. The Recent Increase in Venereal Diseases. Thomas E. Satterthwaite.
9. Instrument for Simplifying Tonsillectomy by Snare. Isidor F. Shapiro.

1. A Series of Foreign Bodies in the Bronchi and Esophagus.—Henry Lowndes Lynah calls attention to the difficulties often encountered in the removal of foreign bodies from the food and air passages, and also the comparative ease with which many of the uncomplicated foreign bodies may be removed. He reports, with illustrations, twenty cases of foreign bodies in the air passages and seventeen in the esophagus. Out of this series of foreign body extractions there has been one failure to remove the foreign body at the first trial, and there were three deaths. The failure was an attempted extraction of a deeply-located shawl pin in the dorsal branch of the right lower lobe bronchus, the point having penetrated through the bronchial wall of the opposite side. Of the three deaths, two occurred shortly after bronchoscopy. One was moribund on admission and would have died shortly with or without examination, and the other, an infant, had pulmonary edema at the time of the bronchoscopic examination, which continued up to the time of death. The third death was due to the retention of a piece of peanut kernel, which caused septic bronchitis and pulmonary abscess, death ensuing six weeks later. General anesthesia was not used for any of the extractions. Cocaine, ten per cent., was used for the bronchoscopic examina-

tions in adults, and no anesthesia for the esophagoscopic examinations in children.

3. The *X*-Ray as an Essential Guide for Producing Artificial Pneumothorax in Advanced Cases of Pulmonary Tuberculosis.—David Dudley Krupp advocates the consideration of the following points before producing pneumothorax: 1. The extent of the pathology, especially as to cavities. 2. Will the opposite lung be able to furnish sufficient pulmonary tissue after the affected lung has been collapsed without throwing additional risk to the patient? 3. Pleurisy and adhesions. Of 453 *x*-ray examinations made in the last three months, forty-six were bedside examinations. The hand fluoroscope was also used. The remaining cases were examined stereoscopically. With this large number of cases to choose from for the production of artificial pneumothorax, the writer found the problem less difficult. Three selected cases which he followed by a series study of *x*-ray plates, are reported and illustrated. In compressing the affected lung, the walls of the cavities are put in apposition and become fixed together, and the desired results—giving the patient the feeling of wellbeing and comfort—are obtained. Since the symptoms are lessened and comfort increased, artificial pneumothorax is an excellent adjunct, in Krupp's opinion, to the other treatments of pulmonary tuber culosis in advanced cases, in association with röntgenologist, who gives the clinician the guide to the successive steps taken for collapsing the lungs. One must not forget the possibility of acceleration of the tuberculous process of the opposite lung, when one lung is collapsed and a burden put upon that lung to functionate and take care of the toxemia from the affected lung.

Journal of the American Medical Association.

October 30, 1920, lxxv, 18.

1. The Etiology of Dengue Fever. Charles F. Craig.
2. Adenoma of the Mucous Glands of Mouth, and Macrocheilia. Edward H. Hatton.
3. Treatment of Comminuted Fractures of the Mandible. H. A. Potts.
4. Epithelial Inlays Versus Skin or Mucous Membrane Flaps for Replacing Lost Mucous Membrane in the Mouth. George M. Dorrance.
5. Progress in Nephrectomy: A Study Based on a Series of Two Hundred and Seven Cases. Edwin Beer and Abraham Hyman.
6. Yellow Fever Control in Ecuador: Final Report. M. E. Connor.
7. Destruction and Repair in Pulmonary Tuberculosis Bertram H. Waters.
8. Papillomatous Epithelioma of the Kidney Pelvis. P. E. McCown.
9. Fracture of the Tip of the Distal Phalanx: Report of Twenty-seven Cases. Russell F. Maddren.
10. Removal of the Astragalus in Paralytic Feet: Results in Two Hundred and Seventeen Cases. James Warren Sever.
11. Phenol and Indican Execretion in a Case of Tetany of Intestinal Origin. George Eric Simpson.
12. The Blood Alkali Reserve with Experimental Infections: Preliminary Report. Edwin F. Hirsch.
13. Benzyl Alcohol for Toothache. David I. Macht.

1. The Etiology of Dengue Fever.—Charles F. Craig, in view of the recent discovery by Noguchi of the probable cause of yellow fever, and of the reported prevalence of the disease in epidemic form in Alabama, summarizes present knowledge regarding its etiology. He believes that dengue fever is caused by a parasite very closely related to that causing yellow fever. As it is practically proved that the latter disease is caused by a spirochete, *Leptospira icteroides*, the search for a similar organism in the blood of dengue patients, using cultural and animal experimentation methods followed by Noguchi in his demonstration of *Leptospira icteroides*, is believed to offer the most promising chance of demonstrating the causative parasite of dengue. As long ago as 1906, Ashburn and the writer believed this disease might be caused by a spirochete, and in their work they used every method at that time available in their endeavors to find such an organism in the blood of dengue patients, but without success. The anaerobic culture methods devised by Noguchi, so successful in cultivating spirochetes, together with improved methods relating to animal experimentation, are powerful aids to the investigation of disease; and it is believed that if properly applied in the study of the etiology of dengue fever it will be only a question of time before the causative parasite is discovered.

5. Progress in Nephrectomy.—Edwin Beer and Abraham Hyman base this communication on a series of 207 nephrectomies, the majority of which have been performed since the reorganization of the surgical service of Mt. Sinai Hospital in 1914. Of the 207 nephrectomies in this series, 189 were primary, 18 secondary; 199 were lumbar extirpations, 8 transperitoneal. Subscapular nephrectomy was performed twelve times. Two of the eight deaths occurred after secondary nephrectomy. The causes of death were hemorrhage (2 cases), renal sufficiency, pyelonephritis, sepsis, shock (suprarenal), general debility, tetanus, (1 each). The technique of nephrectomy is described and the eight fatal cases briefly recorded.

7. Destruction and Repair in Pulmonary Tuberculosis.—Bertram H. Waters reports four illustrated cases and emphasizes the following points: 1. Variations in the clinical behavior of patients ill with active pulmonary tuberculosis are frequently indicative of their diminished resistance and the progression of their lesions. 2. Such variations, though slight and apparently negligible, may be as important indications of progression of the disease as are similar variations of its conception. 3. Such variations should suggest the importance of careful reexaminations which frequently disclose retrogression of the lesion before the advent of more marked symptoms, and make possible helpful modifications of the management of the patient. 4. Roentgen findings, and especially stereoscopic studies, should be employed in addition to physical examination.

12. The Blood Alkali Reserve with Experimental Infections.—Edwin F. Hirsch, in a brief preliminary report, states that the blood alkali reserve of animals injected with bacteria is lowered coincidentally with the initial leucopenia, and during the subsequent increase of the leucocytes rises to or exceeds the level determined originally for the animal. These changes occur within relatively short timed intervals. Graphs of these reactions resemble in contour those generally known for immune body production.

The Lancet.

October 9, 1920, cxcix, 15.

1. Medical Research and Education. Swale Vincent.
2. Science and the Art of Medicine. George Adami.
3. The Value and Interpretation of Some Physical Measurements. C. B. Heald and B. Thomson.
4. The Induction of Premature Labour: Its Scope and Present Results. Sir John Phillips.
5. The Duration of Ventricular Systole. John Cowan and W. T. Ritchie.
6. A Case of Cardiac Ball-thrombus. G. D. Mathewson and Andrew Rutherford.
7. Orbital Cellulitis. A. Lewis McMillan.
8. The Place of Industrial Medicine in Medical Science. Frank Shufflebotham.

3. The Value and Interpretation of Some Physical Measurements.—Heald and Thomson call attention to the fact that of recent years two particular methods of measurement, devised to assist in the assessment of physical condition, have been developed by medical physiologists: (1) the comparison of the vital capacity with the dimensions of the body (Dreyer); (2) the measurements of expiratory force and breath-holding (Flack). The data obtained by the two tests were not always in accord, and it therefore seemed to the writers to be desirable to carry out investigations with the object of finding some method by which the tests could be brought into agreement, as both sets of measurements were considered to give information of great value as to the physical condition of the respiratory organs. The results of these investigations are given. These results, as the writers point out, are at present applicable only to male adults ranging between the ages of 18 and 28, and with the weights of 47 to 85 kilogrammes. It is not unreasonable to suppose, however, that the principle developed for combining measurements of physical proportion and of respiratory condition or tone is capable of extension to other ages, to the female sex, and to the other systems of man.

4. The Induction of Premature Labor.—Sir John Phillips collated all the cases occurring in his private practice in which he has performed the operation of induction, and has watched the case during the whole of the month. He also includes the cases which he has seen in consultation, and has carried out the actual in-

duction. They total 161. In these 161 cases of induction of labor there were 7 maternal deaths (4.3 per cent.) and 24 fetal deaths in 164 children (14 per cent.). The causes of maternal death were acute bronchitis, multiple fibroid with twins; contracted pelvis and acute yellow atrophy; ventrofixation and bilobing of uterus; placenta previa; acute albuminuria and eclampsia. In cases where rapid delivery in a primagravida was necessary, such as in puerperal convulsions and complete placenta previa, it would, perhaps, be preferable to perform cesarean section, but should the case be that of a multipara digital dilatation and a de Ribe's bag would be the best course to pursue. If there is no urgency and the case can be taken deliberately, bougies, followed by digital dilatation or a de Ribe's bag, is the preferable course.

British Medical Journal.

October 9, 1920, ii, 3119.

1. The Treatment of Uterine Fibroids. (Sections of Obstetrics and Gynæcology, and Electro-Therapeutics, British Medical Association.) Treatment by Radiation. Robert Knox.
2. Advantages and Disadvantages of *X*-Ray Treatment. Herbert Williamson.
3. The Treatment of Thirty-seven Cases of Uterine Fibromyomata by Intensive *X*-Ray Therapy. Louisa Martindale.
4. Radiology in Gynæcological Practice. Cuthbert Lockyer.
5. Clinical Manifestations of the Mobile Proximal Colon. John Morley.
6. Remarks on a Case of Hepatic Cirrhosis Allied to Hanot's Disease. Sir Humphrey Rollenston and Stanley Wyard.
7. The Influence of Overcooking Vegetables in Causing Scurvy among Children. Harriette Chick and Elsie J. Dalyell.
8. Two Cases of Carcinoma Alive Eight Years After Radium Treatment. Echlin S. Molyneux.
9. Sodium Biborate in the Treatment of Epilepsy in an Asylum. John McCartney.

5. Clinical Manifestations of the Mobile Proximal Colon.—John Morley, in order to elucidate the question of the clinical importance of abnormal mobility of the cecum and ascending colon, briefly recalls the light thrown upon the subject from the different angles of human embryology and of comparative anatomy. He then discusses manifestations in acute abdominal emergencies (ileocecal volvulus and intussusception) and chronic manifestations. The ideal method of dealing with the mobile proximal colon is to fix it back in the right loin in the position which is the normal one for the orthograde primate. This may be done by the method of Coffey, or by the method recently described by Waugh. A considerable experience with the Coffey method convinced the writer that it is often very difficult through the ordinary right rectus incision to fix the colon in a way that approximates to the normal; and there is the further difficulty that fixation by firm and unyielding scar tissue is a poor substitute for the firm but elastic support afforded by the normal peritoneal fixation of the colon. Accordingly, he adopted the alternative course of reducing the load of the overburdened cecum and ascending colon by the simpler method of plication. After removal of the appendix, a continuous suture of fine thread picks up the anterior and lateral longitudinal teniæ from the base of the appendix, and is carried as far up the ascending colon as the dilatation appears to require. By this method the lumen of the cecum and ascending colon is permanently narrowed without in any way hampering the contraction of the bowel. The clinical results, in Morley's experience, have been satisfactory. Colectomy, either partial or total, should be reserved for cases with the most extreme disability, and should be undertaken only when the procedures devoid of any appreciable danger have failed to give relief.

7. The Influence of Overcooking Vegetables in Causing Scurvy Among Children.—Chick and Dalyell give the following summary of the subject under consideration: 1. An outbreak of scurvy in April, 1919, affected forty children out of sixty-four aged between six and fourteen years under treatment for tuberculosis. 2. From September, 1918, to February, 1919, a good supply of fresh vegetables and milk was available. From the middle of February to the middle of April the daily ration of fresh vegetables was reduced to about 80 grams per head; deprivation was never complete. 3. The eight weeks' period of shortage preceding the outbreak is a much shorter period than the four to six months noted by other observers as necessary for the development of scurvy. 4. It is concluded that though the supply of fresh food was adequate, the diet was nevertheless a scurvy producing one, and that the period of deprivation of antiscorbutic was longer than it appeared to be. 5. An explanation is found in the method for cooking food employed in the hospital which involves a serious destruction of antiscorbutic. Suggestions are made as to means of preventing this. 6. The germination of dry peas, beans, and lentils before cooking is strongly recommended as a means of providing extra antiscorbutic when fresh vegetables and fruit are scarce or absent. 7. It is suggested that abnormally rapid growth may promote the development of scurvy in children.

Bulletin of the Johns Hopkins Hospital

October, 1920, xxxi, 356.

1. The Value of the Wasserman Reaction in Obstetrics, Based Upon the Study of 4,547 Consecutive Cases. J. Whitridge Williams.
2. The Cells of the Arachnoid. Lewis H. Weed.
3. A Note Upon the Occurrence of Congenital Atrio-Ventricular Dissociation. Report of a Case of Congenital Complete Heart Block. Edward Perkins Carter and John Howland.
4. One Factor in the Mechanism of Hemolysis in Hemolytic Anemia. Hallie M. Clark and Frank A. Evans.
5. The Coagulation Time of Citrated Plasma on Recalcination. H. C. Gram.
6. The Origin of Hæmangiectases. T. S. Moise.
7. Chemical Structure and Physiological Action. H. H. Dale.

1. The Value of the Wassermann Reaction in Obstetrics, Based Upon the Study of 4,547 Consecutive Cases.—J. Whitridge Williams, continuing his studies along this line previously reported, bases this communication upon the study of four thousand women and their children who were delivered in the service at Johns Hopkins Hospital, out of 4.547 admissions, between April, 1916, and December 31, 1919. There were 1,839 whites and 2,161 blacks. He discusses, incidentally, the part played by syphilis in the causation of fetal death, considers more fully the significance of the maternal and fetal Wassermann, deals briefly with the value of the microscopic examination of the placenta in the detection of syphilis, and finally says a few words concerning the status of Colles' law.

2. The Cells of the Arachnoid.—Lewis H. Weed discusses the general morphology of the cells lining the subarachnoid space; changes in the cells under physiological activity; changes in arachnoid cells conditioned by age, and ultimate changes in the arachnoid cell-clusters. From his studies he concludes that the arachnoid mesothelial cells are normally of a low flat type, but their morphology depends upon the particular physiological state of the cells at the time of examination. Under the stimulus of particulate matter and in acute infections, the cells increase in size, become phagocytic and at times form free-moving macrophages. Other changes in the growth of the arachnoid cells lead to the almost invariable formation, in the older animals, of cell-clusters, slowy progressive overgrowths, at times undergoing calcification and less frequently seemingly related to the formation of endotheliomata. Hence, the morphology of the cells of the arachnoid may be said to depend not only upon the location of cells (as on the membrane or in an intradural cell-column) and upon the physiological state of the cells (as under the stimulus of particulate matter and infection), but upon the age-condition of the animal (as in the arachnoid cell-cluster).

4. One Factor in the Mechanism of Hemolysis in Hemolytic Anemia.—Clark and Evans, from the results of tests made of the protective power of horse serum against hemolysis of guinea-pig cells by sodium oleate, formulated the following conclusions: 1. The protective power of the serum of normal persons and of patients suffering from a wide range of diseases without anemia is remarkably constant in degree. 2. In anemias of varioue types the protective power of the serum is diminished. 3. This diminution is most marked in anemias which are hemolytic in character and in conditions in which the spleen is involved in the disease process. 4. In pernicious anemia the diminution of protective power of the serum is very striking,

both in degree and the regularity with which it is found. 5. The protective power of the serum in cases of pernicious anemia varies, but seems to parallel more closely the general condition of the patient than the blood picture at the time the titration is done.

Long Island Medical Journal.

October, 1920, xiv, 10.

1. Echinococcus Cyst of the Liver, Case Report. Walter A. Sherwood
2. Abnormalities of the Gastrointestinal Tract in Persistent Constipation in Children and the Application of Roentgenograms in Their Recognition. Murray B. Gordon.
3. Blood Transfusion. Roger Durham.
4. Rationale of the Septum Operation. Charles L. Stone.
5. Dental Stigmata in the Diagnosis of Obscure Congenital Lues. William Henry Donnelly.
6. Intraabdominal Cyst of Traumatic Origin. Harold K. Bell.
7. Fetal and New-Born Mortality. L. J. J. Commiskey.
8. What's in a Nem? Why Is a Nem? Louis C. Ager.
9. Broncial Asthma. Delmer D. Durgin.
10. New York State's Radium. Harvey R. Gaylord.

2. Abnormalities of the Gastrointestinal Tract in Persistent Constipation in Children and the Application of Roentgenograms in Their Recognition.—Murray B. Gordon considers the *x*-ray a valuable aid in the discovery and diagnosis of any abnormality of the larger intestine which may be responsible for the persistent constipation. Three illustrative cases are reported.

5. Dental Stigmata in the Diagnosis of Obscure Congenital Lues.—William Henry Donnelly calls attention to the difficulties encountered in making a diagnosis of congenital lues in children of the school age, or from six years to puberty. Many children of this age come to the pediatric or nutrition clinic presenting vague obscure symptoms which are hard to account for. In these typical or obscure conditions any available aid in the diagnosis should be made the most of, and it would seem that certain dental abnormalities or stigmata have not been given the attention they deserve as diagnostic points. The classical Hutchinson tooth is comparatively rarely seen even in clinics with a large attendance, and if this particular form of tooth is to be looked upon as the only characteristic one in congenital lues, then many cases will be overlooked or, at any rate, much valuable time will be lost in treatment. The routine performance of the Wassermann test will not invariably settle the diagnosis, as many cases which are clinically luetic give a persistently negative blood test, while, on the other hand, cases which are clinically cured remain "Wassermann fast." Even in the face of a negative Wassermann reaction certain dental stigmata may put the clinician on the right track and turn the tide in favor of the patient. In addition to the Hutchinson tooth many dental abnormalities have been described as associated with congenital lues. Horizontal grooves on the teeth, dental infantilism, cup-shaped erosions on the deciduous molars, and cuspal atrophy of the first permanent molars are signs of diagnostic importance. Abnormal spacing of the upper central incisors of the second set, the incisors being long and somewhat cylindrical, mamillary eminence or accessory cusp on the lingual side of the first upper permanent molar, more recently have been added to the list of signs of luetic heredity. The writer, after careful observation in a large number of cases, believes that the accessory cusp is of more diagnostic importance than the separation of the incisors, although the latter sign is also valuable, and the two conditions often coexist in the same patient. While it is true that these stigmata are sometimes met with in children who are apparently in perfect health, nevertheless, in every instance, their presence is presumptive evidence of congenital lues.

La Presse Médicale.

September 8, 1920, xxviii, 64.

Treatment of Typhus by Injections of Spinal Punctate.—Zielinski of Warsaw briefly outlines this resource, which is not actually new, for it goes back to 1917. He is moved to contribute his article because the treatment has recently been advocated as new by Segal of the Rothschild Hospital, Jerusalem. The author three years ago, in desperate cases of typhus, made a spinal puncture and injected the punctate hypodermically, or intravenously. The first twenty cases thus managed were at once reported and the article was reproduced in several of the leading Teutonic journals. The author persisted in his work and still in the course of the year 1917 was able to report a series of forty-eight cases. None of the reported cases ended fatally. His material climbed to 232 cases during 1918, and his death rate fell to 5 per cent. of those treated. This form of autotherapy has also been tested with more or less favorable results in erysipelas, cerebrospinal meningitis, recurrent fever, scarlatina and abdominal typhus. Another Polish practitioner, Biernacki of Lublin, has not lost a case of typhus since he began to use this method. The author, as stated, uses his method only in the graver cases; thus his 232 patients were selected from a total of 1630 treated in Warsaw hospitals during 1917-8.

Brazil-Medico.

August 28, 1920, xxxiv, 35.

Two Cases of Hodgkin's Syndrome in Bahia.—Torres relates these in much detail. The first was in a man of 38, native white Bahian, who appeared with enlarged lymphnodes in the "subclavian" region of slow evolution. There is evidently a misprint involved, as the later history locates the mass in the supraclavicular triangle as an isolated tumefaction, apparently confined to the left side. It seemed evident that the enlarged nodes were continuous with others in the anterior mediastinum. This diagnosis was verified with the *x*-ray. The general condition was poor. The blood count showed marked changes, but no diagnosis was made from it. A puncture fluid was negative to cultural efforts and animal inoculation. Syphilis and tuberculosis were both readily excluded. The growths were extremely hard and the pain was so marked as to require morphine. A cachectic state developed rapidly and this with compression of the bronchi terminated the patient's existence. The second patient was a duplicate of the first in most respects, of the same age and activity, with lesions in the same region, but with a tendency to involve the superficial adjacent territory as high as the occiput. The accompanying illustration shows that the left side alone was involved. It does not appear that the mediastinal glands were involved and this patient had clearly had syphilis. A guinea pig inoculated with puncture fluid died of a pasteurellosis. Tubercle could be excluded. Intensive antisyphilitic measures with use of *x*-rays may have arrested the progress of the tumors, but did nothing further. The blood picture was of the type of the first case. The diagnosis was evidently made by exclusion of actinomycosis, tuberculosis, etc., but in an older case of the same diagnosis (lympadenia) autopsy revealed tuberculosis.

Revue médicale de la Suisse romande.

September, 1920, xl, 9.

Eye Symptoms of Mesencephalitis Epidemica, Narcoleptic Form.—Verrey-Westphal has devised one more name for lethargic encephalitis. He reports but two cases, each of which showed the same unusual expressions of ocular disturbances. The first presented an atypical homonymous and vertical diplopia. Examination showed pupils reacting normally and beginning atrophy of the optic nerves. The latter seems to have been a coincidence as this condition was known to exist as a familial affection. Later there was seen to be paralysis of convergence and accommodation. The second patient exhibited accommodative paralysis with homonymous diplopia. A study of literature shows that the following ocular symptoms occur in the disease: paralysis of convergence, paralyses of divergence, paralyses of pupillary reactions to light and to convergence, paralyses of looking up and down, and ptosis. The author asks if most of the ptosis is not purely functional? It is nearly always double although if organic there should be more unilateral cases. Closure of the lids to insure the act of sleep is purely physiological. If the eye muscles are paralyzed through nuclear lesions it is still possible for the pareses to be functional and careful tests seem to exclude in certain cases the existence of organic paralyses.

Book Reviews.

PLASTIC SURGERY: ITS PRINCIPLES AND PRACTICE. By JOHN STAIGE DAVIS, Ph.B., M.D., F.A.C.S. Instructor in Clinical Surgery, Johns Hopkins University; Assistant Visiting Surgeon, Johns Hopkins Hospital; Visiting Surgeon and Plastic Surgeon to the Union Protestant Infirmary, the Hospital for the Women of Maryland, and the Children's Hospital School, Baltimore, Md.; Fellow of the American Surgical Association, the Southern Surgical Association, etc. Octavo of 770 pages with 864 illustrations containing 1637 figures. Philadelphia: P. Blakiston's Son & Co.

FOR a number of years the author has been devoting special attention to plastic surgery, hence is peculiarly qualified to cover this subject *in extenso*. As he says in his preface, few general surgeons do plastic surgery as it should be done; and we might also add that but relatively few ever will do really first-class plastic surgery, for it requires not only technical skill in the use of knife and needle, but also innate powers of imagination, and mental visualization of the effects of possible steps in plastic repair such as is possessed by but few. It has been said that true musicians are born, not made; and the same might almost as well be said of the plastic surgeon.

In most operative surgery textbooks but scant attention is given to plastic surgery, and in none that we have seen is the subject covered in anything like the completeness which we find here. After preliminary chapters giving an historical review and covering general considerations and prosthesis, Davis devotes approximately 100 pages to an excellent discussion of the transplantation of skin and other tissues and the methods of preparing and handling pedunculated flaps.

The chapter on the treatment of wounds, while admirable in many ways, contains much that seems somewhat out of place in a book on plastic surgery; and the same may be said of the chapter on intractable ulcers and varicose veins. With the next chapter, on scars and keloids, the author returns to his proper field and sticks to it throughout the rest of the book. A chapter of about 25 pages is devoted to malformations, and there are additional chapters on exstrophy of the bladder, epispadias, hypospadias and atresia of the vagina. In the chapter on harelip and cleft palate the usual operations are discussed, as well as directions as to when to operate, the proper sequence of operations, pre- and post-operative care, etc. The balance of the book, comprising nearly 400 pages, is devoted to plastic surgery as applied to various regions of the body, special chapters being devoted to the eyelid, ear, nose, jaws, lips, cheek, neck, trunk and extremities. Each section is well covered, there is an extensive bibliography, and the book is replete with illustrations and diagrams. Some of the diagrams seem to the reviewer to be more or less fantastical and impractical, it is true, principally, however, in cases where old methods which should long ago have been thrown into the discard are being perpetuated.

While there are occasions where we differ with the author as to the best method of accomplishing a certain result, these are the exception rather than the rule. The book as a whole is a masterpiece and should be of inestimable value to all who do plastic work, whether much or little; for it appears to us by far the best work extant on this subject.

EXOPHTHALMIC GOITER AND ITS NONSURGICAL TREATMENT. By ISRAEL BRAM, M.D., Instructor in Clinical Medicine, Jefferson Medical College Philadelphia; Physician on Visiting Staff of Philadelphia General Hospital; Member of the Society for Study of Internal Secretions, etc. St. Louis: C. V. Mosby Company, 1920.

THE latter part of this title is what particularly arouses one's interest. There are many books on Graves' disease, and the general facts as to its etiology and symptoms, so far as they are yet known, have been treated of at length in many volumes. But the thought which this title suggests, that the disease can be cured without resort to the knife with its discomfort and even danger is one that inspires the internist with hope. Dr. Bram has no specific to offer, a fact which increases yet more the hope aroused by the title of his book, but presents a well reasoned course of treatment—hygienic, dietetic, medicinal, and local, by means of which he claims to have had signal success in a number of cases.

The book is not, however, confined to the therapeusis of exophthalmic goiter, but the entire ground is well covered, half the book, or over two hundred pages, being devoted to the anatomy and physiology of the thyroid gland, and the etiology, pathology, pathogenesis, symptomatology, etc., of toxic goiter. A very full table of contents and excellent index add no little to the value of this really well worth while book.

OPERATIVE GYNECOLOGY. By HARRY STURGEON CROSSEN, M.D., F.A.C.S., Associate in Gynecology, Washington University Medical School, and Associate Gynecologist to the Barnes Hospital; Gynecologist to St. Luke's Hospital, St. Louis Maternity Hospital, and Bethesda Hospital; Fellow of the American Gynecological Society and of the American Association of Obstetricians and Gynecologists. Second Edition. St. Louis: C. V. Mosby Company, 1920.

As the title indicates, this work has to do solely with gynecological operations, with the surgical treatment of the diseases of women, the discussion of the pathogenics, symptoms, etc., of those diseases having no place in the work. This does not exclude pathology, however, for it is upon this largely that the indications for one or another operation are founded, and the author goes deeply into the operative indications. He warns, indeed, against the practice of one disease one operation. The routine surgical treatment of the diseases of women or of any diseases for which the knife is necessary is as indefinable as is the habit of the careless internist of giving his favorite prescription for stomach ache or for a cough without considering the possible pathology back of the colic or the cough. The sections on the selection of operative measures in the treatment of the various conditions are indeed of equal value to the young practitioner with those dealing with the operative technique.

The illustrations, eight hundred and thirty-four in number, constitute a striking feature of the work. They are all original and are excellently executed, and serve well to elucidate the text which is itself very clear and easily understandable.

HYGIENE, DENTAL AND GENERAL. By CLAIR ELSMERE TURNER. Assistant Professor of Biology and Public Health in the Massachusetts Institute of Technology; Assistant Professor of Hygiene in the Tufts College Medical and Dental Schools. With Chapters on Dental Hygiene and Oral Prophylaxis by WILLIAM RICE, Dean, Tufts College Dental School, St. Louis: C. V. Mosby Company, 1920.

IT is with satisfaction that one sees a book addressed to both the dental and the medical profession and its appearance is additional evidence of the gradual rapprochement of these two. The dental schools have for some time been aware of the necessity of teaching their students medicine in order to make them good dentists, and the physician, although not taught the mechanics of dentistry, has of late learned to recognize his dependence in many cases upon the knowledge and the skill of his dental confrère. Both dentists and medical practitioners must meet on a common ground and each must possess the most definite knowledge available upon the interrelationship between abnormal conditions of the mouth and other regions and various and serious systemic affections.

The work before us deals in very satisfactory fashion with all phases of hygiene—of the mouth, of nutrition, of action, of the central nervous system, of reproductions of the school, and of individual establishments; with the prevention of disease, immunity, oral prophylaxis; public health administration, food and water supply, disposal of waste; ventilation, heating, and lighting. The book is of moderate size but covers the ground with all necessary completeness, and it is safe to predict that it will be found of service by all who seek a general knowledge of hygiene without burdening their memories with details of use only to public health professionals.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held October 21, 1920.

THE PRESIDENT, DR. GEORGE DAVID STEWART, IN THE CHAIR.

The Wesley M. Carpenter Lecture. — Dr. GEORGE DAVID STEWART, in introducing the speaker of the evening, said we had been hearing a great deal lately about internationalism and about what internationalism was going to do for the world. Already the word did not come so triumphantly from the tongue. We began to realize that it came from the brain of socialism, and that a healthy nationalism was a prerequisite to internationalism. We were beginning to recognize that a man must be a citizen of no mean city before he could vauntingly boast of being a citizen of the world. But whether that was true or not, he thought there could be no doubt that the fact that a number of Oxford professors had gotten together and agreed to forget all animosities was one of the most promising signs for the future of science and of humanity. This was a prophecy which augured well for the future and would be one of those factors which went to promote the brotherhood of man. To those who had held the torch high it was a source of satisfaction to know that it had not been thrown to falling hands. We had with us one of whom it might be said that no one had held the torch so high, one who had adorned the literature of the profession wherever he had touched it. He knew of none who excelled him in delicacy and accuracy of technique. Most of those present were familiar with his writings and knew that they were weighty and powerful, and his bodily presence was exactly the same as his writings, in proof of which he took the greatest pleasure in introducing Sir Berkeley Moynihan of Leeds, England.

Gastric Ulcer and Its Treatment.—Sir BERKELEY MOYNIHAN, C.B.M.S., F.R.C.S., of Leeds, England, delivered this lecture, which he prefaced by an apology for having appeared before such an audience without a carefully prepared paper. This, he explained, was due to the fact that he had received the invitation to deliver the Wesley M. Carpenter Lecture only twenty-four hours before sailing for this country, and an exceedingly rough voyage had prevented his writing a paper while en route. However, it was impossible to consider the request of the president of the New York Academy of Medicine as anything but an imperative command; that and his own desire to come before them constituted his reasons for appearing with so little preparation. Coming to the subject of the evening, he said in part, that no doubt gastric ulcer seemed a strange subject to select for presentation before an audience so distinguished as this. Some would wonder whether there was anything new to be said on the subject, or even any new version of an old truth. In going about New York one saw the demolition of old buildings in order that they might be replaced by better and more modern ones. In the same way in dealing with the subject of gastric ulcer they would have to first use the hatchet and crowbar before they could build the real building in which they wished to live. Much paper and much polity had been expended in the attempt to elucidate the subject of gastric ulcer. Intellectually when they approached this subject they should start afresh and try to disregard that immense heritage of paper that had descended to them from their ancestors. Gastric ulcer had been considered a common disease, easily recognized, and comparatively easy and safe in treatment. The truth was gastric ulcer was a rare disease so difficult of diagnosis that no physician by his unaided effort could approach accuracy of diagnosis in more than 50 per cent. of the cases. Gastric ulcer was an ulcer which lay in the stomach. He did not say that because of his Hibernian origin, but because it was the truth, and because many did not yet understand that truth. He was unable to find in the literature or in watching distinguished surgeons operate any recognition of the fact that gastric ulcer was in the stomach. Every kind of ulcer, gastric, pyloric, duodenal, was spoken of and demonstrated as gastric ulcer. Unless one had his anatomy right, he could not have his pathology and his differential diagnosis right, and if these were not right it was incomprehensible that treatment should be correct. All would agree that the pyloric vein divided the pylorus from the stomach, and that the pyloric white line indicated exactly the location of the pylorus. The pyloric white line always, and the pyloric vein in all but 10 per cent. of the cases, indicated exactly the position of the pylorus. Some might object to taking a vein as an anatomical landmark, for nowhere else in the body was a vein taken as a landmark, because the location of the veins was likely to vary in different individuals, but that did not vitiate the fact that anatomical observation justified the choice of the pyloric vein as a landmark in locating the position of the pylorus. If an ulcer was located above the pyloric vein one was justified in calling it a gastric ulcer. There was no defense for the use of the word juxta pyloric, for in no case had they had any doubt as to the exact position of the ulcer. Ulcer of the stomach was twice as frequent in men as in women. Before one accepted the diagnosis of gastric ulcer one must consider the symptoms that were held to indicate the presence of gastric ulcer. Very careful scrutiny and meticulous precision should characterize their approach to any symptoms of gastric ulcer (and he used the word meticulous as indicating a certain timidity, for a certain timidity should characterize one's approach to the symptoms of gastric ulcer). The first symptom was pain. Pain was characterized in a case of gastric ulcer by absolute regularity, order, precision, and method. It appeared with perfect regularity the day before yesterday, yesterday, to-day, to-morrow and had an almost exact relationship to the taking of food. There was always a consistency in the time of the appearance of the pain after taking food. In three-fifths of the cases it had appeared within one and one-half hours after taking food. The nearer the ulcer to the esophagus the greater the pain. All these statements, it should be remembered, were subject to correction. If the ulcer was in the body of the stomach or near the pyloric end the time of the appearance of the pain after the taking of food was altered. It was early if the ulcer was near the esophagus; later if near the pylorus. If near the liver or the pancreas the pain occurred still later, and particularly if the ulcer was near the pancreas. The kind of meal the patient took altered the time of the appearance of pain. If a person took an indigestible meal the pain appeared early. If the ulcer was duodenal the pain appeared later. If the ulcer was small and free from adhesions and if on the lesser curvature of the stomach one would find that the attacks from which the patient suffered were shorter, but were apt to occur more frequently. Very often the inaugural symptom noted at an interval after a meal was a vague feeling of lassitude, weakness, and possibly faintness. If one summed up all his experience it was a sequence of food, comfort, pain, comfort. Vomiting was a rare symptom in true gastric ulcer. The patients obtained a measure of the stomach in a very remarkable way and kept within the limits of their gastric capacity in a way that was very striking indeed. Vomiting, in the speaker's experience, was a very rare symptom in true gastric ulcer, but a very common symptom in phantasmal gastric ulcer, which had too often been described as real gastric ulcer. Hematemesis was comparatively rare; obvious hemorrhage occurred in only 10 per cent. of the cases, while perhaps 25 per cent. had occult blood in the stools or vomitus. It would be better when hematemesis was present to think of something else rather than of gastric ulcer. Some years ago he had ventured to say that hematemesis was not frequent in gastric ulcer and that expression of opinion had aroused opposition. If one made a new statement bearing a new version of truth or a new truth, it was invariably received in doubt and discussed in hostility. If this was not the case it was not true. Jonathan Hutchinson found in the London Hospital that 80 per cent. of the persons who died of hematemesis suffered from appendicitis and nothing else. Other causes of hematemesis were splenic anema, cirrhosis of the liver, and achylia gastrica, or something else than gastric ulcer. But it was just as well to be certain about terms. When a patient died and the pathologist examined the stomach mucosa he found a fissure or a crack that was the cause of the hemorrhage,

but not an ulcer. In gastric ulcer the symptoms had persisted for years and there was a real organic destructive and constructive lesion. There was an effort at defense that gave rise to the indurated base. If we were to arrive at accuracy of diagnosis we must get the clinical history with the most scrupulous care that was possible for us to do, and when we had made up our minds that we were dealing with gastric ulcer we had to admit that in almost 50 per cent. of the cases it was certain our diagnosis would be wrong. How could we reach a correct diagnosis more frequently? The radiographic examination had led to the correct diagnosis in 90 per cent. of cases. The radiograph alone outweighed in value all the symptoms. It seemed almost an impertinence to talk of the value of the radiograph in the diagnosis of gastric ulcer here where Gregory Cole had made good his claim that gastric ulcer could be diagnosed by the methods he described. By following his method, though they had not been able to reach his perfection of 95 per cent. of gastric ulcers correctly diagnosed, they had been able to reach the diagnosis in 90 per cent. In 80 per cent. the diagnosis of gastric and duodenal ulcer had been made by this method. As to examination of the stomach contents, he had submitted patients for many years to examination of the stomach contents, and until they took up the method of Reyfuss the help they derived from such examinations was negligible. They did it to answer criticism and they had reams of invaluable records of gastric analyses in real gastric ulcer. In one-third of the cases there was hyperchlorhydria; in 40 per cent. the stomach contents were examined over and over and over again and the acidity was normal. In about 25 per cent. the acidity was subnormal, or there was no acidity at all. If one examined an ulcer he would find many things. An ulcer was a stiff, hard, red thing, and especially if it was on the lesser curvature of the stomach, there would be much more fat than there ought to be. Again, if one examined a patient who he thought had gallstones and he found no gallstones—that was a dreadful occurrence, but it did take place—he might find the so-called strawberry gallbladder. They had been examining the bile in those cases for the past few years and they found it sterile in 80 per cent. of the cases. They at first drained such gallbladders. Then they began to remove them and to triturate the walls and they found that the walls of these gallbladders contained streptococcus. They finally came to regard fat as a positive indication for cholecystectomy. The infection was not in the bile, but in the wall of the gallbladder. If one examined an infected kidney he would find that it was surrounded by more fat than a normal kidney. All these deposits of fat were an attempt to ward off infection. That was one of the evidences one found in ulcer. When the *x*-ray plates were made and one thought he had found a gastric ulcer he might find that there was a spasm. That spasm the speaker said he had described over twenty years ago as he had observed it at operation. In an unreal gastric ulcer the spasm was not constant, but in a real gastric ulcer it was constant, and the radiologist could tell whether the spasm was constant or only a temporary affair. A patient might have definite symptoms of gastric ulcer in which examination would show not a gastric ulcer, but a deep red blush at the pylorus due to an appendicitis. It was necessary to realize that the symptoms of gastric ulcer were mimicked so accurately that no one could give an opinion unless the radiologist or the surgeon saw the ulcer. One could not walk by faith; he must walk by sight. If the radiologist or the surgeon did not see the ulcer there was no ulcer. It was important to realize this, for all over the world gastroenterostomies were done that were not necessary. Gastric ulcer was said to be present when certain symptoms were present, and when those certain symptoms were present gastroenterostomy was done. Gastroenterostomy had been done for a large variety of conditions, such as carcinoma of the liver, different types of gallbladder disease, the vomiting of pregnancy, dysmenorrhea, tubal disease, for appendicitis, for carcinoma of the colon, and for many other conditions simply because the diagnosis was made on evidence that would not stand examination.

When the examination of real gastric ulcer was made, what was one going to do? Could medical treatment cure gastric ulcer? He thought there was evidence that gastric ulcer of the chronic type could not be cured by medical treatment. He thought so for certain reasons. It was a very rare thing to find the healed scar of a gastric ulcer on the operation table. He examined the stomach of every case he operated upon if time and circumstances permitted and in over 3,071 operations it was excessively rare to find a scar of a healed gastric ulcer. It was likewise exceedingly rare to find the scar of a healed gastric ulcer at the post mortem table. Another point about the medical treatment of gastric ulcer was whether if an ulcer was healed it remained healed. He thought not. If medical treatment was successful it was successful in curing the attack, but the ulcer would recur. It was easy to cure duodenal ulcer, but nothing was so unlikely as that medical treatment would cure a gastric ulcer permanently. If gastric ulcers were cured by medical treatment did not the results produce such a condition that surgical treatment was required. Intellectually his interests were on the medical side. With good technical training it was not such a difficult matter to make a good operator. His heart was with the physicians, but as physicians we must be able to say here was a gastric ulcer as diagnosed by the physician and confirmed by the radiologist and the surgeon. At the end of three years the physician must be able to say the patient was cured, the radiologist must agree that he was cured, the surgeon must agree that he was cured, and the patient himself must say he was cured. He knew of no such case that could be produced. Where was the evidence conclusive and acceptable that gastric ulcer of the chronic type could be cured and remain cured by persistent medical treatment? If the surgeon got a case of gastric ulcer what was he going to do with it? The operation most commonly practised was gastroenterostomy. Gastroenterostomy was first employed in obstructive cases. It had then been applied to cases in which the ulcer lay anywhere in the stomach. He had done it when the ulcer lay far up on the lesser curvature. If one took 100 patients one would find that one-quarter of them did very well. The others did so badly that a second operation would be required, and 10 per cent. of them drifted into malignancy. The malignancy frequently occurred so much later that they knew it could not have been present at the time of operation. Following gastroenterostomy they then had three classes of patients: (1) Those that did well; (2) those that did not do well, and (3) those that developed malignant disease. Twenty-five per cent. of cures in a condition like gastric ulcer was not nearly enough. He was a disbeliever in the theory that there was a physiological value in gastroenterostomy. It was held by some that a gastric ulcer would heal better in an alkaline medium. There was no evidence that he had ever found that justified anybody in saying that an alkaline medium was good for gastric ulcer. The functions of the stomach were all performed naturally in an alkaline medium; the substitution of an alkaline medium was antiphysiological. If the *x*-ray showed that there was a spasm of the pylorus causing a tightening at the pylorus gastroenterostomy might give relief in that kind of a case. These remarks might lead his hearers to believe he had a quarrel with gastroenterostomy. Such was not the case. It had served them well, but not nearly well enough for the surgery of to-day. The next operation they had employed in gastric ulcer was that of cutting out the ulcer. He had tried excision of the ulcer; at first it seemed to succeed and then the patients began to come back. He then decided that he would no longer do this operation. Destruction with the cautery served quite well, and he thought this procedure should be carried out oftener. Balfour's operation was a good one, but for the moment he employed it only under very special circumstances. If one had a large ulcer involving the lesser curvature what was he to do with it? One could not possibly excise an ulcer of that kind. One could not do even a relatively extensive operation under a condition of that kind. His method of handling such a situation was to make an opening into the duodenum and feed the patient through a tube inserted into the duodenum. He had done twelve such operations and every one of these patients was well and had remained well. Sir James Mackenzie had sent him one patient with the biggest ulcer he had ever seen; it was like the mouth of a letter box, so that

one could put his hand through the lesser curvature. For two years that man was fed through the tube. He had gained fifty-seven pounds and was still at work. That was an operation for occasional use in very severe cases. Another operation was gastrectomy, and lately he had been doing a gastrectomy in virtually all ulcers. He had tried the Polya method, the Balfour method, practically all methods, and was now doing a gastrectomy. He incised the jejunum and anastomosed it with the portion of the stomach which remained after he had removed the involved portion of the stomach up to and beyond the ulcer. A few of their results were shown by the following statistics: In a series of 235 gastric ulcers there were 7 deaths, a mortality of 2.9 per cent.; among 9 cases of pyloric ulcer there were no deaths; among 563 cases of duodenal ulcer there were 3 deaths, a mortality of 0.53 per cent. They had performed 80 gastrectomies with 2 deaths, a mortality of 2.5 per cent.; among 674 gastroenterostomies there were 7 deaths, a mortality of 1.1 per cent. Since February 1, 1920, they had had patients of every category and had had no deaths, so these figures were the worst he could show, and he showed them not because they were good figures, but because they indicated that the treatment of gastric ulcer was a much more serious matter than the treatment of duodenal ulcer. The mortality of gastrectomy was less than 2 per cent. The feeling which burned within him was that we had permitted ourselves to be misled on the subject of gastric ulcer. He had accepted things that were not true because they came from authorities, and unless we put our house in order we were likely to cast dishonor on our profession.

The lecture was illustrated by lantern slides and a diagram showing the speaker's method of performing gastrectomy.

Dr. JOHN A. WYETH proposed a rising vote of thanks, appreciation and best wishes for a safe voyage home in honor of Sir Berkeley, not only because he was one of the great surgeons of the world, but because he was their brother from their mother country. (Rising vote.)

AMERICAN ELECTROTHERAPEUTIC ASSOCIATION.

Thirtieth Annual Meeting, Held in Atlantic City, September 14-17, 1920.

THE PRESIDENT, DR. WILLIAM MARTIN OF ATLANTIC CITY, IN THE CHAIR.

Presidential Address.—Dr. WILLIAM MARTIN of Atlantic City delivered this address in which he said, in part, that progress in physiotherapy had been rapid, and that research had proven many of the contentions that were made more or less empirically in the past. Prejudice had been largely overcome by honest effort to demonstrate that science was and had been the groundwork of their work, thus throwing light in the pathway of those who were afraid to tread therein. The time was now past when one felt that apology was due his medical friends for taking up with "strange devices" when advocating the use of electrical currents. The great world war had proven to be one source of enlightenment in that physical measures force themselves more or less prominently and successfully before the professional vision, and though the struggle was somewhat prolonged and at first more or less doubtful, merit at last won out, which augured well for the future. Those who practised along lines of physical therapy must be teachers? That did not necessarily mean that they should hold college positions, but they must realize that they were facing the world and the medical profession in a way totally different from the average medical man in that they were blazing new trails. It was to be remembered primarily that physiotherapists were internists using a special therapy and therefore using the same methods of investigation, laboratory and other, that the profession in general used. It was a crying need that the coming generation of medical men should be given a chance to learn more of this line of therapy, and where now only a few fundamentals were being taught in a few colleges with short courses, time should be given in the curriculum for a full course of lectures, with clinical teaching that would furnish a real foundation upon which the superstructure of a good professional knowledge could be built. In urging the need of further research Dr. Martin said physiotherapy offered opportunities for research work far in advance of the ordinary practice, and it was essential that they keep in the front ranks by aiding and using the laboratory in every way.

Reports of Standing Committees.—Report of Committee on Direct Continuous Current, Including Electrolysis, Electrochemical Surgery, Ionization and All Apparatus Connected Herewith.—Dr. FRANK B. GRANGER of Boston presented this report and stated that during the past year there was worthy of note only the further use of the progressive or selective galvanism of Lapicque, and a new rectifier for which the claim was made that it transformed the alternating current into a smooth nonpulsating direct current. The report urged that cord tips, electrode connectors, and binding posts for galvanic apparatus should be standardized by this society and that manufacturers should be required to equip their machines with such standardized parts. A protest was made against the indiscriminate use of the sinusoidal current in peripheral paralyses. In advanced reaction of degeneration the judicious use of interrupted galvanism followed by the slow sinusoidal, as soon as the muscular response could be obtained, was the treatment of choice. The sharp, sudden, so-called violent contractions of interrupted galvanism did not work harm, but on the contrary, especially in traumatic cases, was an advantage in the prevention of minute adhesions. Muscular spasm not of central origin might be relieved by placing an electrode connected with the positive pole over the muscle or muscles thus affected. Massage, stretching and exercise could better be given if the above procedure were first employed. Similarly a painful ankylosed joint might be better manipulated if radiant heat were first employed and the combined cocaine and sodium chloride ionization. According to the reports of oculists referring such patients floating opacities in the vitreous had apparently been rapidly dissipated by the use of negative galvanism. There were certain types of neuritis which seemed to be unduly stimulated by the positive pole of the galvanic current. If diathermy were employed after such treatment there would be less after-pain and apparently a shortening of the time of disability.

Rhythmic Currents.—Dr. G. BETTON MASSEY of Philadelphia submitted this report in which he called attention to the employment of rhythmically surging waves in neuromuscular excitation as a new thing in electrotherapeutics from the point of view of the older workers, and said that it represented an important advance that should be fully appreciated. Among the points which this report urged on the members of the association were that wave currents employed for therapeutic neuromuscular stimulation, which consists of surges and periods of rest adapted to the natural physiological action of the part should be called rhythmic current, with the name of the particular current rhythmically surged added. A further study of the number of surges of power per minute needed in the various parts of the body to bring therapeutic stimulation into rhythm with the normal muscular impulses of the part should be made. A rhythm proper to a health muscle or group of muscles might not be the proper one in muscles weakened by trophic starvation.

Report on High Frequency Currents.—Dr. FREDERIC DE KRAFT of New York submitted this report showing that when there was too great an obstruction in the "B" circuit (the patient's circuit) then a large amount of current passed through the "A" circuit, with the result of highly ionizing and heating the air contained in the sections of the spark gap. Hot ionized air was a very good conductor of electricity. The report pointed out that there was a want of proper understanding and appreciation in regard to the elevation of the body temperature by diathermy. The heat produced was directly proportioned to the square of the current strength and to the resistance of the conductor. The resulting quantity of heat was directly dependent upon the duration of the passage of current. In addition to these principles the current density must be taken into consideration. This report comprised a detailed description of the technique of diathermy.

Report of Committee on Mechanical Vibration and Exercise Therapy.—Dr. MARY ARNOLD SNOW submitted this report which showed that mechanical vibration although a recognized therapeutic agent did not as yet occupy its merited place in the practitioner's armamentarium. The reasons for this were that its application was not so spectacular as to ascribe to it a psychical effect, that it was simple of action and that it required keen perception as to the relation of cause and effect and actual manual labor to render its application most effectual. In consequence of this its employment could not be delegated to an unskilled helper if results were sought. The late war gave an impetus to the subject but from lack of investigation as to its capabilities and inadequate equipment not half was accomplished with it that might have been. Too often vibratory treatment was given in a desultory manner and with disregard of technique. A vibratory application must be made in accord with physiological laws and pathological conditions presented. The time of application must not be too limited, and the degree of pressure regulated, usually being limited by the patient's tolerance. Mechanical vibration might be successfully used alone or as an auxiliary measure in the after treatment of fractures, fatigue, muscular atrophy, relaxed ligaments, relaxed and atrophied muscles, atrophic and hypertrophic arthritis, paralysis, myositis—acute or chronic—muscular contractures, spasmodic conditions, not of central origin, luxations, periarticular and capsular thickening and induration and edema after fracture and after the breaking up of adhesions as well as of neuritis of a noninfectious character. The above merely gave an idea of the range of the application of mechanical vibration to the muscular system. Spinal localization in the application of mechanical vibration, while yet incompletely developed, gave such results that it offered a fertile field for research work as to selective localizations and therapeutic application. Mechanical vibration, so easy of application, so definitely beneficial in its action, and so capable of accomplishing all and more than massage which could not be effectually standardized owing to the varying capabilities of the personal equation asked, for a more general recognition from the medical profession whose progressive element was ever ready to increase therapeutic efficiency.

Report of Committee on Dietetics.—Dr. VIRGIL C. KINNEY of Wellsville, N. Y., submitted this report which referred briefly to botulism, solanin poisoning and oxalic poisoning, and then proceeded to the discussion of caloric food values. Reference was made to the work of Hart, McCollum, Steenback and Humphry and others and included a brief discussion of diabetic diets.

Report and Apparatus for Hydrotherapy.—Drs. BYRON S. PRICE and H. H. ROBERTS of Lakewood, N. J., submitted this report which was read by the secretary, Byron Sprague Price of New York, and which showed that the application of hot water to the body caused elimination of carbon dioxide, and also increased intermuscular oxidation. This was best secured by the use of low temperatures in baths as had been proven by the treatment of 500 cases. The use of very high temperatures in hydrotherapy had been proven not only to be injurious to the patient but the benefits of the bath were entirely destroyed or greatly impaired. The disastrous results and consequent disrepute of hydrotherapy had been brought about entirely by incompetent operators and pretenders. For this reason baths and other forms of water treatments should not be given as a routine but prescribed by experienced physicians for the invidiual cases. In the treatment of hypotension and hypertension, the primary effect and the secondary benefit was secured by the use of a full bath of 100° F. and the constant use of friction by a competent attendant during the bath. This should be given for twenty minutes. The last five minutes the bath should be reduced to 75° F. In the treatment of a large number of high blood pressure cases, this form of treatment gave the most uniform and satisfactory results. In the application of hydrotherapeutic measures the desired results can only be secured by the proper standardization of apparatus designed by experienced men. The writer had devised such an apparatus.

Standardization of Physiotherapeutic Measures.—Dr. WILLIAM BENHAM SNOW submitted this report which went quite exhaustively into the consideration of muscular spasm or tension including the causes, local condition, and therapeutic management. He showed that the causes of these conditions were very numerous and complex, and stated that a complete consideration of conditions as they arose offered a more complex and intricate study than at first thought presented itself. The report discussed the measures for the relief and control of muscular spasm most energetic and important of which were the static modalities, the static wave current and static sparks, particularly. Less effective were the sinusoidal and other induced currents acting directly upon the muscles. The high frequency modalities which produced heat and so created muscular relaxation of local tension were indicated in the treatment of spasms caused by local infection and arterial spasm. Radiant light and heat by inducing relaxation were remarkably effective also in relieving local muscular spasm, acting coincidently as did the currents which produced heat, in removing foreign sources of irritation from the involved tissues by increasing local metabolism and also by eliminating germs in many cases as well as relaxing the general tissue tension. Mechanical vibration and mechanical massage were also, the report stated, efficient measures for relieving degrees of muscular spasm together with the other measures referred to when the parts so treated were not too sensitive to pressure. In muscular spasm arising from scars or injuries of the cerebral cortex there is very little if anything that can be done with physical measures. When, however, the origin was due to toxic causes, as arising from excessive protein absorption, and interference with intestinal activity, in the early stages, judicious attention to diet with establishment of systematic evacuations from the intestines, with constitutional treatment were effective in abating the condition in most instances. The particular modalities and the method of application in combination with other measures were discussed with reference to the following conditions: Muscular spasm arising from various congestions or inflammatory affections of the spinal cord, such as locomotor ataxia; chorea, when the spasmodic movements arose from either toxic irritation of the meninges of the cord or brain; affections of the peripheral nervous system; very early cases of nontoxic neuritis; chronic brachial neuritis or sciatica; neuritis or secondary neuritis; muscular spasms as occurring with the various types of arthritis; diffuse muscular irritation associated with muscular spasm due to impaired metabolism, myositis, muscular cramps and soreness; muscular spasm or tension in the alimentary tract; in malignant conditions of the stomach and duodenum; spasm of the cardiovascular system; spasms of the sexual apparatus; spasms of the abdominal muscles caused by inflammatory conditions within. All other inflammatory conditions of the abdomen, as peritonitis, inflammation of the ovaries, intussusception, performation or other inflammatory conditions are relieved of pain and spasm by radiant light and heat or thermal penetration with the d'Arsonval current. An accurate diagnosis, however, of the local condition in all intestinal cases, should determine the necessity or not for surgical procedure, but in connection with all surgical operations of the abdminal cavity, radiant light and heat should be employed over the entire abdomen before and after operation, not only for the relief of pain and the local condition, but also for the reflex effect of heat applied at the periphery to overcome or prevent shock and maintain the tone of the deep spinal centers. Special emphasis was laid on the fact that electric modalities were of especial value in correcting and restoring the functions of the liver. The best of all measures for this purpose was the static wave current applied over the lower margin of the liver and epigastrium. Diathermy and sinusoidalization also served valuable purposes in conditions of torpid liver and also for the induction of fecal evacuations from the colon and small intestines.

Report of Committee on Research.—Dr FRANK B. GRANGER of Boston presented this report in which he stated that it was evident that special research could not be carried on in connection with the ordinary hospital laboratory which generally is overworked with the routine demands of a large hospital. Hence the

importance of a special laboratory where time and workers would be available for careful scientific research. For the ensuing year, studies would be made on the anemias, on vasomotor conditions akin to Raynaud's disease which were receiving diathermy; ulcers of the lower extremity, particularly those of the lower extremity which were being treated either with ultra-violet light radiation, diathermy, or the blue pencil brush discharge, or by a combination of these methods. In exophthalmic goiter exhibiting marked toxicity, they hoped by basal metabolism studies to determine whether any of the physical therapy measures would lessen or remove toxicity as well as the surgical procedures, or whether the employment of such physical measures were contraindicated. An effort would be made to confirm or disprove the contentions of Major Turrell of Oxford in regard to ionization.

Clinical Physiology.—Dr. S. St. John Wright of Akron, Ohio, presented this contribution in which he said the progress of physiology was rapid and revolutionary. A few of the facts given by modern physiologists were reviewed, showing, as Noël Paton said, that "The science of life is the science of protoplasm." The phagocyte was cited as an illustration of what protoplasm was—a scavenger attacking, invading and consuming invading pathogenic cells. It was a defender, a guardian, and had to do with all the functions of life. It was, the essayist showed, no longer enough to examine patients for growths or even minor pathological lesions. No physiological process was entirely unmodified by the presence of bacterial toxins or endocrine influences which modified them. Opportunity for the diagnosis of clinical physiology occurred whenever a patient presented himself to a physician for a well defined disorder. Insidious bacterial invasions might exist long before the patient was cognizant of them. While the intelligence of his clients enabled them to co-operate with the general practitioner it was ignorance largely that kept surgeons busy, ignorance on the part of the patient and of the physician. The educative functions of the physician were in relative abeyance. Public health officials and publications and visiting nurses were doing most of what was being done in this field. It was this condition which led Dr. Wright to offer certain suggestions and to point out that means were within the reach of the profession by which many conditions could be recognized in their incipiency and patients restored to a degree of well-being they had never known before. A vibrator might detect trouble; the faradic current might localize areas of anesthesia, or the static spark might render a body aware of tenderness otherwise unknown.

Experiments in Light Penetration.—Dr. Virgil C. Kinney read this paper in which he described the technique of registering the penetraton of the different rays of light through living animal tissues by means of highly sensitized photographic plates. Experiments were made showing the comparison of penetration between tungsten and carbon filaments which disproved the theory generally held that the carbon filament bulbs beng richer in red frequencies naturally would penetrate to a greater depth and so have a greater therapeutic value than the tungsten filaments. In another series of experiments a 100 watt tungsten bulb was taken as a standard and for comparison the different color rays were used, in some cases interposing ray filter screens. Results showed a degree of fogging only slightly less than was produced by the red ray filter while the area of fogging was smaller. It was shown that plain white light had greater penetrating powers than were obtained by use of filter screens; that blue light had somewhat less penetrating power than red, and that natural sunlight had greater penetrating power than any artificial light that was used. It was a surprise to the essayist to find that while the blood in living animal tissues acted as the most complete red ray filter screens to the 10 ampère arc if this blood and red colored muscle fiber were removed and a white meat free from blood substituted, the penetrating power of the 100 watt tungsten white light the arc had four times the penetrating power of the 100 watt tungsten white light and approximately eight times that of the 100 watt tungsten with a red ray screen. These experiments led the writer to advance the theory that color was simply a sensation and had no material existence; it was produced by the vibration rate of the ether waves and varied according to the change in the wave frequencies. It had always been considered that red rays penetrated deeper into living animal tissues than the other rays of the visible solar spectrum because of their greater wave lengths; as we proceeded up the spectrum we knew that the penetration lessened as the wave lengths decreased, until ultra violet rays with wave lengths of only 3,000/10,000,000ths of a millimeter had very little penetrating power. The writer's experiments seemed to show this theory correct up to a certain point, that was, the 100 watt tungsten lamp gave a very good fogging of the sensitized plate in 30 minutes; interposing a red ray filter screen cut down both the area and density of the plate fogging; the blue ray filter with the same light gave only about one-half the fogging obtained by the red ray filter while the 10 ampère arc, rich in ultra-violet, gave many times the fogging obtained by the blue rays. In explanation of these facts the theory is advanced that red rays do not penetrate living animal tissues to a greater extent than the other rays of the visible solar spectrum because of their great wave lengths but the muscle tissues in most cases are reddish in color and they are full of blood and this combination acts as a most powerful red ray filter screen absorbing most of the other frequencies. The writer believes that some time the following theory may be proven and become a law, namely, light rays in penetrating substances increase their penetration as their wave lengths decrease and their frequency of oscillation increases.

Gastric and Duodenal Ulcer and Their Surgical Treatment.—Dr. John J. Gilbride of Philadelphia presented this paper in which he emphasized the importance of early diagnosis in gastric and duodenal ulcer. In reaching a diagnosis a carefully taken history was often a great aid. Too much stress should not be laid on hematemesis and vomiting. Acute ulcer of the stomach was usually a medical disease. The subacute and chronic ulcers became surgical diseases if competent medical help had failed to effect a cure. In the operative treatment the operator must apply the type of operation suitable for the individual patient. The operation of gastroenterostomy for ulcer of the stomach gave the best results when the operation was located at or near the pylorus, or when the emptying of the stomach was interfered with. Excision of the ulcer should be carried out if this was practical from the size and position of the ulcer. A decision must be made as to whether an ulcer was malignant or benign so as not to perform a needless pylorectomy for the removal of a benign lesion. In the presence of a very large ulcer with extensive adhesions to surrounding viscera, the ulcer should be left alone and only a gastroenterostomy performed; in patients with extensive lesions of the stomach an additional gastrojejunostomy might be advisable. Anterogastroenterostomy was performed only in those cases in which it was not possible to do the posterior operation. As gastroenterostomy was not a physiological procedure surgeons were performing operations on the pylorus, employing one of the methods of gastroduodenostomy whenever possible to do so. Crippling adhesions or other complications even in healed ulcers of both the stomach and duodenum which continue to cause symptoms required operation as well as ulcers that had been medically treated and the ulcer had healed but had not remained healed. Surgeons should not enter into competition to see who could get the best results by their respective methods for treating gastric and duodenal ulcers. The best results could be obtained by team work. Cases that could be cured medically were not surgical cases. The mortality following operation for gastric or duodenal ulcer was not more than two or three per cent. while that following perforation of gastric and duodenal ulcers would continue to remain high if the cases were not recognized at once and operated on within the first twelve or twenty-four hours.

Employment of Diathermy and Galvanism in Management of Sequelæ of Occlusion, Partial or Complete, and Rupture of Cerebral Arteries.—Drs. Edward C. Titus and Frederic de Kraft of New York presented this contribution. (To be published in the issue of November 20.)

The Diagnosis of Gastric and Duodenal Ulcer.—Dr.

JOHN H. BURCH of Syracuse, N. Y., contributed this paper in which he stated that it was true that most advanced cases of gastric and duodenal ulcer presented the classical characteristic symptom complex, but it was not equally true that the cases that presented themselves to the clinician in the early stages of this affection presented this stereotyped, so-called pathognomonia symptomatology. In attempting to make an early diagnosis of gastric and duodenal ulcer the essential points to be brought out were periodicity, actual pain, vomiting, methods of securing relief and bleeding. The absence of the textbook pain of one hour for gastric and three hours for duodenal ulcer should not preclude the possibility of peptic ulcer. Neither should the location of the pain be too seriously considered. The methods employed to secure relief from pain, supposed to be due to ulcer, were likewise not of primary importance from the diagnostic standpoint. Gross pain occurs in about 65 per cent. of gastric and duodenal ulcers and the association of hemorrhage with the ulcer symptom complex is said to make a safe diagnosis of ulcer in 95 per cent. of all cases. Analysis of the gastric contents is of value when considered in connection with the patient's history. The value of the *x*-ray in the diagnosis of gastric or duodenal ulcer may be considered as second in importance to careful case history. In the writer's work both the fluoroscopic and direct serial method of roentgen gastrointestinal examination were used. From a roentgenological standpoint four classes of gastric ulcer were considered: 1. Small shallow erosions and follicular ulceration. 2. The penetrating ulcer, more deeply embedded in the gastric wall and showing a well-defined crater. 3. The perforating ulcer showing a continuation of the destructive process in adjacent structures. 4. Carcinomatous ulcer which did not always present distinct roentgenological differentiation from the penetrating and perforating types of ulcer. The roentgenological evidence most to be depended upon was the so-called niche or incisura and the residue in the stomach at the end of six hours. Other manifestations might be more or less corroborative. Another roentgenological sign of considerable importance was gastric hypermotility and hyperperistalsis. It must be remembered that nearly all the roentgen manifestations might be duplicated by gallbladder disease, adhesions about the pylorus and chronic appendicitis so that the roentgen link must always be welded into the entire clinical chain of evidence to be depended upon.

Personal Experiences in the Treatment of Various Gastrointestinal Conditions.—Dr. B. B. VINCENT LYON of Philadelphia contributed this paper, in which he stated that the use of electricity during the past five years had come rapidly to the fore in the treatment of gastrointestinal diseases, and in chronic gastritis, as a supplement to dietetics and lavage, it had proved a valuable addition to our therapeutic armamentarium. The writer emphatically disagreed with those physiologists who tenaciously held the opinion that the glandulature and musculature of the stomach would not respond to the electrical current, and that the beneficial effects observed were due to psychic effects alone. Electrical treatments might be given both intragastrically and by the percutaneous route, but the former was very much the more efficient. It was now quite generally conceded that the faradic current was useful for retoning gastric musculature, with or without atonic ectasia. The galvanic current seemed to act particularly well as a sedative for abnormal disturbances of gastric sensation, and was particularly efficacious in the treatment of gastralgias and hyperesthesias of nervous origin. It was generally conceded to be the current of choice in the treatment of hyperacidity and hypersecretion. In nervous patients, with secretory or motor, rather than sensory defects the faradic current exercised a psychic effect that was often not accomplished by the galvanic current. The essayist reported brilliant results with the use of the Bergonie apparatus modified by the Naegelschmidt, particularly in those individuals for whom voluntary exercise was impossible, such as those suffering from organic insufficiency of the heart, lungs, circulatory system and kidneys, and also for those individuals for whom locomotion was too difficult, either on account of regional obesity or a massive corpulency of too great weight for their legs to support. For years the better element of the medical profession had frowned upon and tabooed all forms of mechanical therapeutics, with perhaps the exception of the orthopedists. It was high time that this ostrich-like mental attitude be discontinued, and that the profession shake off some of its firmly rooted mental astigmatism and become alive to many of the helpful therapeutic measures that could be mechanically applied. Our therapeutic armentatarium should have added to it the rational forms of mechano-electrical procedures.

Sigmoid Impaction—Its Significance, Pathology, and Treatment.—Dr. FRED. H. MORSE of Boston presented this paper, which was illustrated with lantern slides. He stated that the sigmoid flexure, that portion of the pelvic colon which offered little attraction to the surgeon because of the almost certainty of making matters worse, and where the palliative measures of the general practitioner were likewise futile, was a field that urgently demanded relief. The writer was confident that quite a proportion of patients who were treated for cystitis, prostatitis, hemorrhoids, uterine displacements, and so-called catarrhal salpingitis were the direct results of the pelvic colon trying to occupy the place of the above mentioned organs. In many cases unless the sigmoid could be made to functionate normally or approximately so, malignancy must sooner or later result. If the distortions, bends, and almost kinks with which we had to deal in sigmoid impaction and the conditions about the splenic flexure and descending colon were to be treated successfully therapeutic effort must be guided by what was to be accomplished rather than the too often indifferent use of the electrical and mechanical means upon which we had to depend. It meant that direct rectal application must be made to the seat of threatened obstruction, and this could now be done safely and intelligently since the use of the alternating current had been brought under control so that a large amount of muscle stimulation could be used without any possible harm to the inflamed mucous membrane as compared with the interrupted or reversing galvanic current which had been depended upon in times past. The results demonstrated on the screen, the writer declared, were not merely hypothetical theories but legitimate clinical realizations.

Dr. CORA SMITH KING of Washington said she had been using Dr. Morse's apparatus and that the Morse sinusoidal current gave the best results for the colon and sigmoid. In severe cramps either superficial or deep it was very efficient. The use of a very hot Morse electrode, one over the transverse colon and one under the sacrum so as to have as wide a range as possible. Following the use of the sinusoidal current gave a colon irrigation, with the patient in the dorsal decubitus with the hips elevated so as to get the benefit of gravity, which would carry the enema to the transverse colon. The long tube was an unjustifiable violence when gravity would do the work. Following the enema the patient was given galvanism through and through.

Dr. ELNORA C. FOLKMAR of Washington also testified to the value of Dr. Morse's technique. She stated that she found many cases supposed to be gynecological which were but reflexes or extensions of conditions in the sigmoid, and if one took care of the sigmoid many of these other troubles would take care of themselves. Dr. King described her method of treating the sigmoid by passing medication through the sigmoidoscope and by passing the bag and giving pneumatic vibrations.

Dr. G. BETTON MASSEY of Philadelphia emphasized the point that in treating dilatable, hollow organs by the rhythmic current the rhythm must be one of slow waves to allow for separate action from each wave. He believed the alternating current, properly surged, to the sinusoidal current was far preferable to the static wave for this purpose. It was not necessary to apply the current through the rectum in all cases since the sigmoid flexure was immediately beneath the skin and 150 milliamperes applied over the region would do the work.

Dr. CURRAN POPE of Louisville, Ky., called attention to the importance of taking into account the intra-abdominal pressure in dealing with these conditions. He had found light and the static wave very valuable and preferred it for the rectum. He had an electrode which he could pass through the sigmoidoscope into the sigmoid twelve or fifteen inches. He did not make it a

practice to employ enemata at the same time that he was giving the other treatment.

Dr. J. W. TORBETT of Marlin, Texas, said he only used water for cleansing purposes but did not give a constant enema while giving the electrical treatment. He used the galvanic current in many cases that appeared with chronic appendicitis and chronic colitis. He thought there was a habit factor at the bottom of many of these cases of chronic constipation. He had five little rules that he had his patients carry out and continue to practice after they were discharged from treatment. These were: 1. Deep breathing exercises on first waking in the morning, while still in bed. 2. Two or three glasses of water on rising; cold water for hypoacidity and hot water for hyperacidity. 3. Eat coarse food, bran, oatmeal with bran, shredded wheat, something that gave a residue. 4. Regularity in vacuating the bowels, with exercise of the abdominal and sphincteric muscles. 5. Eat fruits and vegetables.

Dr. WILLIAM BENHAM SNOW of New York described an electrode constructed so as to make it possible to introduce it up to the sigmoid. When there was soreness or ulceration of the sigmoid it was better to treat first with the static current, which allayed inflammation and promoted healing. After doing this you could go on and carry out other treatment more effectually.

Dr. ALFRED TENNYSON LIVINGSTON of Jamestown, N. Y., pointed out that many troubles supposed to be stomach disorders were dependent upon pathology in the lower portion of the digestive tract. He had always been opposed to the use of the long tube for the giving of high enema for he thought it had been pretty well demonstrated that it was impossible to pass a long tube through the sigmoid flexure.

Dr. M. L. ARNOLD SNOW of New York spoke of the advantages of using the mechanical vibrator either rectally, abdominally or spinally. In using the vibrator through the rectum as a rule they used it with water, and gave the mechanical vibratory treatment which relaxed any spastic condition that interfered with the introduction of the tube. This treatment was given with the patient in the knee-chest position and was sometimes preceded by an oil enema the night before. In all cases associated with spastic conditions a five minute intrascapular treatment with the ball vibratode affected the bowels and a ten minute mechanical vibration treatment between the first and second and second and third lumbar vertebræ also had a beneficial effect. They had also used the sinusoidal current and the Morse generator to overcome spastic conditions. It might be mentioned that this treatment was contraindicated in the presence of gallstones or acute appendicitis.

Captain C. M. SAMPSON of New York stated that occasionally a case would be found which was intolerant of this treatment. In such cases the bowel should be thoroughly cleansed and diathermy employed together with the sine wave generator.

The Treatment of Scoliosis.—Dr. HARRY EATON STEWART of New Haven presented this contribution, in which he discussed the causes and diagnosis of scoliosis and went rather deeply into the subject of rotation because proper treatment was dependent upon a knowledge of it. In the treatment of scoliosis casts with strong counter pressure from felt pad inserts were necessary in severe cases but they always left the patient rigid and with impaired general health. Removable casts and braces were being increasingly used. L. W. Bacon of New Haven had devised a hinged cast which tended to lever the spine back in place and a manufacturer was now turning out a light hinged brace on the same principle. Exercise was taking first place and gaining favor as our main dependence and should always be used between casts. In any given program there must be included exercises which tended to (a) stretch the concave side, (b) increase flexibility, (c) give bilateral strengthening, (d) correct rotation, (e) re-educate the muscle sense. A program of such exercises was presented. Electrotherapy should also be used. It was good practice to relax spastic muscles by means of the static spark or brush discharge and to employ diathermy for its known effect on nutrition. He felt sure that quicker results would be obtained by using these modalities in conjunction with the treatment by exercises, braces and casts than had been obtained without them. The results obtained by this method of treating scolioses again illustrated how widely electrotherapeutics might be employed in the relief of illness and deformity.

The Spine as an Entity; Its Outgoing Nerves; Its Bony Canal.—Dr. FRANK E. PECKHAM of Providence made this contribution, in which he stated that it was generally conceded that the nerve trunks would transmit impulses. It was a fair statement that such impulses might be started by a faulty working of the physiological machinery either along the nerve trunk somewhere or at its periphery. To him this particular point of transmission was a highly important one because we heard so much about what was called neuritis, which interpreted meant an inflammation of the nerve as an original starting point. Even in an alcoholic neuritis or any other toxic neuritis the point was to cut out the alcohol or eliminate the toxic focus, as the nerve was not to blame. He had seen many shoulder cases treated for so-called neuritis, where there was thickening and adhesions in the soft structures, either due to trauma or to some toxic focus. The treatment was to eliminate the thickening, to slowly stretch out the adhesions, to restore tone to the soft structures and function to the joint structures; thus the so-called neuritis was cured. To think of diseased conditions in the terms of function was an important thing to learn. One must visualize the spine with its many nerve centers, with its outgoing nerves connecting with the various organs, then one could appreciate these impulses being sent over the wire with great accuracy to the exact terminal station selected. It could be done with almost mathematical precision and the results might be counted on with a comparatively high degree of certainty. In arthritis direct vibratory stimulation of the particular nerve center indicated, and which was usually tender on percussion, could be benefited or cured. Many cases of constipation responded to such stimulation applied at the level of the 12th dorsal vertebra and at the tip of the coccyx. The liver could be stimulated by pressure over the 6th, 7th and 8th dorsal vertebræ, as well as by application of the soft brush over the front and back surfaces. The pancreas could be stimulated by vibration at the level of the 9th dorsal vertebra. In arthritis patients the heart was often flabby and dilated. By vibration pressure over the 4th and 5th dorsal vertebræ tone might be restored to this organ so that all symptoms would disappear. The ptoses of the various organs, intestines, stomach, liver, might be overcome by these same methods. That was, tonicity might be restored to the various musculatures and ligaments until position as well as function became normal again. In hay fever and asthma the use of the vibrator over the proper nerve centers could accomplish a great deal. The essayist described the complexities of the spine, composed as it was of a succession of joints, and showed how as time went on thickening and limitation of motion might take place as the result of slowing down of circulation and definite mechanical pressure on vessels and especially on outgoing nerves. Thickened ligaments put tension on the movements of the body and made a direct pull on the nerves. This process when once started might continue until a spine might become pretty well stiffened. The treatment of these cases was to dissipate the thickening, restore flexibility and restore motion and rotation. This could be done by the various physiotherapeutic measures. The subject was one about which not much was written, but it was a very real condition, producing very definite symptoms, and was relievable by proper physical treatment.

Arthritis and Electrotherapy.—Dr. JOSEPH M. BARSKY of Wilmington, Del., read this paper, in which he brought out the advantages of physical over surgical methods of treatment. He stated that it was now generally recognized that a case of chronic arthritis in which there was no destruction of bone around the joint would respond to treatment by physical measures. In cases in which the arthritis was due to periarticular inflammation they doubtless obtained the best results. Ankylosis due to fibrous tissue bands would practically always yield to persistent treatment. When the *x*-ray showed no calcification in an immobilized joint good results were almost always assured. Even though there might be exostoses, if there was no destruction of bone.

a hopeful prognosis might be given. Hygienic measures were essential, proper cleansing of the intestinal tract, supervision of diet, and treatment of the underlying cause must all be included. But the ankylosed joint could be successfully mobilized by measures applied directly to it. The deKraft blue pencil effleuve made an excellent preliminary step, since it accustomed the patient to the apparatus and also relieved pain. The indirect spark and the Morton wave were also brought into play, and diathermy had a place in those cases in which there was no calcium demonstrable. These in combination should constitute the treatment. This might be followed by manipulation and then by the static modalities. As the case progressed intensity of treatment increased until a reaction occurred. Then the treatments were gradually diminished until the reaction subsided. Radiant light and heat was a valuable adjuvant which should not be neglected. This line of treatment must be modified to meet the needs of the individual case. In the treatment of gout electrotherapy had proven its value. Autocondensation to reduce the blood pressure and aid the general metabolism, the static brush discharge over the affected joint and limb for the relief of pain, the Morton wave over the liver—the probable origin of the disorder—diathermy of the affected part, radiant light and heat to the affected part, combined logically, would, even without drug treatment, often effect a cure. Colchicum might be passed directly into the part by ionization. The hygienic treatment was also of importance. The physician must determine himself in a large majority of cases of toxic arthritis whether electrotherapy would help or harm. It might safely be employed in most cases in which the causative lesion was of a low grade character as in those due to an abscess around a tooth root, or it might be employed with great success in those conditions designated by Snow as "rheumatoid arthritis." In traumatic arthritis electrotherapy came into its own. Sprains and luxations always responded to this treatment and the patient would recover more quickly than under any other form of treatment. Illustrative cases were cited.

Dr. WILLIAM BENHAM SNOW of New York stated that there was no treatment for rheumatoid arthritis as effective as the static current. In cases of rheumatoid arthritis of traumatic or infectious origin there was no need for strappings or bandaging of any sort. Nature might fail to reduce swelling and absorb exudate, but the static current was effective, and sometimes achieved the result in one sitting. In all these cases local treatment was accompanied by the use of the static wave current over the liver.

Dr. FREDERIC DEKRAFT of New York emphasized the importance of the use of the static wave current over the liver. He had seen many painful shoulders get well with only the wave treatment over the liver and no treatment whatever applied to the shoulder. The blue brush discharge had not merely a local effect but a constitutional effect.

Diathermy as a Therapeutic Agent, especially in the Treatment of Sprains, Fractures, Adhesions, and Chronic Stiff and Painful Joints.—Dr. ELNORA CUDDEBACK FOLKMAR of Washington, D. C., presented this communication in which she stated that a therapeutic measure for the purposes of this paper was defined as one which aided nature on her own plan to restore physiological function which for some reason nature had not been able to initiate, or did so only in a feeble way. Such an agent was diathermy. Nature's cardinal method of restoration was the production of heat—inflammation locally, fever systemically. No injury, whether traumatic, chemical, thermic, or bacterial could be recovered from except through the agency of heat, whether the heat originated within the system or was induced by external agents. Diathermy increased the temperature of the tissue, dilated the blood vessels by direct influence and increased the blood supply to the area treated; it quickened the chemical processes of metabolism and thus aided nature in making a cure. It relieved pain and tenderness by relieving pressure from exudates, it softened tissues and made them better conductors of low frequency currents and more susceptible to mechanical treatments, such as vibration and massage. The essayist described in detail the technique of diathermy as applied in the treatment of trauma, visceral adhesions, and chronic stiff and painful joints, and said that personally she followed the diathermic treatment with a surging faradic massage, and then gave what she called the "faradic grip," which consisted in slowly moving the secondary coil over the primary until the patient gave an involuntary sound. This was repeated five or six times and was followed by passive and active attempts at motion. In conclusion, the time had passed when it was necessary to suffer pain for days from a sprain or similar trauma, when it was necessary for one to have a fibrous ankylosis of a joint as a sequela of trauma, of rheumatism or of dental infection. Diathermy was destined to become quite as important to the orthopedist as splints and bandages. The odontologist must call on diathermy to assist nature in repair processes as he now called on radiology to confirm his diagnosis. The surgeon must use diathermy in his fracture cases to promote rapid union and to relieve pressure and pain and must take cognizance of diathermy as a valuable agent for the preliminary and subsequent treatment in pelvic and abdominal operations to prevent the formation of adhesions. The layman already demanded an *x*-ray as a confirmatory diagnosis. He would soon demand diathermic treatments.

(To be continued.)

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

GEORGE MILLER STERNBERG (A Biography). By MARTHA L. STERNBERG. 331 pages with illustrations. Published by the American Medical Association, Chicago.

THE SURGICAL CLINICS OF CHICAGO. August, 1920, vol. iv, No. 4, with 80 illustrations. Published by W. B. Saunders Company, Philadelphia.

DIASNOSTIK UND THERAPIE DER KINDERKRANKHEITEN. By Prof. Dr. F. LUST. 471 pages. Published by Urban & Swarzenberg, Berlin.

RETRAINING CANADA'S DISABLED SOLDIERS. By WALTER E. SEGSWORTH, M.E. 193 pages with illustrations. Printed by J. De Labroquerie Tache, Ottawa.

DIAGNOSE DER SIMULATION NERVOSER SYMPTOME. By Prof. Dr. SIEGMUND ERBEN. 254 pages with illustrations. Published by Urban & Schwarzenberg, Berlin.

DIE IMPOTENZ DES MANNES. By Dr. WILHELM STEKEL. 484 pages. Published by Urban & Schwarzenberg, Berlin.

HANDBUCH DER SPEZIELLEN CHIRURGIE DES OHRES UND DER OBEREN LUFTWEGE. By Dr. L. KATZ and Prof. Dr. F. BLUMFELD. Volume II, Number IV and V. Illustrated. Published by Curt Kabitzsch, Leipzig.

PATHOGENIC MICRO-ORGANISMS. By WARD J. MAC NEAL, M.D. 488 pages with 221 illustrations. Published by P. Blakiston's Son & Company, Philadelphia.

MEDIZINISCHE TERMINOLOGIE. By WALTER CUTTMANN, M.D. 1311 pages with illustrations. Published by Urban & Schwarzenberg, Berlin.

OPERATIVE GYNECOLOGY. By HARRY STURGEON CROSSEN, M.D. 717 pages with 834 illustrations. Published by C. V. Mosby Company, St. Louis.

MENTAL SELF-HELP. By EDWIN L. ASH. 119 pages. Published by The Macmillan Company, New York.

DIE BEHANDLUNG DER HAUT UND GESCHLECHTSKRANKHEITEN. By Dr. ERICH HOFFMANN. 167 pages. Published by A. Marcus & E. Webers, Bonn.

LETFADEN DER KINDERHEILKUNDE. By Dr. WALTER BIRK. 338 pages. Published by A. Marcus & E. Webers, Bonn.

DIE PARTIGENGESETZE UND IHRE ALLGEMEINGÜLTIGKEIT. By HANS MUCH. 70 pages. Published by Curt Kabitzsch, Leipsig.

ANNOTATED SUBJECT INDEX AND ORDER LIST OF BOOKS AND PAMPHLETS, Including Government Reports, on Maternity and Child Welfare in England and Scotland. 181 pages.

Miscellany.

The Plight of Petrograd Doctors.—*The British Medical Journal*, quoting from the *Tidsskrift for den Norske Laegeforening* of June 15, depicts a distressing state of affairs among the 800 physicians left of the 4,000 resident in Petrograd before the war. During the recent epidemic of typhus the mortality among the doctors in attendance was between 45 and 50 per cent., whereas the mortality for the whole of the population was only between 8 and 9 per cent. The doctors have been nationalized, are regarded as Government employees, and are disqualified from earning an independent living. Their official monthly wage is, on the average, between 5,000 and 6,000 roubles, plus a double food ration, which includes half a pound of bread a day. They are entitled to one public meal a day, consisting of soup and horse flesh. On this dietary the doctors of Petrograd, during the past two years, have carried out most onerous duties, which have been augmented by epidemics of cholera, dysentery, smallpox, and typhus. Their work is generally done on foot. The trams are so lice-infested that their use entails grave risks of typhus; a horse and vehicle costs about 2,000 roubles an hour, and the few motor cars in existence are not available for doctors.

Polyneuritis in France During the War.—A review of a graduation thesis on this subject appears in the *Journal de médecine et de chirurgie pratiques* for August 10, 1920, xci, 15. The author is Micheleau and the material studied came from the Neurological Center of the XVIII Region. The polyneuritides are divided according to the causation, which may be toxic, toxi-infectious, or autotoxic. Among the simple toxic principles which figure as causes introduced from without are alcohol, lead, arsenic, phosphorus, carbon monoxide, mercury, and bisulphide of carbon. In addition, ergot and the vetches or chick peas which cause lathyrism may be mentioned. Among toxi-infectious causes are typhoid fever, diphtheria, paratyphoid, exanthematic typhus, malaria, etc., among acute diseases; and syphilis, tuberculosis, and leprosy among chronic diseases. Among autointoxications, diabetes, gout, cancer, nephritis, hypertrophic cirrhosis of the liver, and cachexiæ should be mentioned. Beriberi is not included. Polyneuritis is a condition in which the cause is everything, as it is necessary to know this in order to make the diagnosis and treat the subject.

Death of Treub.—This distinguished Dutch gynecologist and obstetrician died recently at the age of 64. He was born in a suburb of Leyden and came from a distinguished family, for one brother was the celebrated botanist in charge of the Botanical Garden at Batavia, while another was the statesman, who was active in the late war. He pursued his studies at Leyden University and was successively a medical clinician and general surgeon before entering his special field. He for a while filled the chair of these branches at Leyden, but accepted the professorship at Amsterdam in 1896. He wrote many articles in Dutch and French. In the latter he published articles on leading obstetrical subjects, apparently reserving Dutch for his gynecological contributions, although his two treatises on gynecology and obstetrics respectively appeared in the mother tongue. These works, both of which went through many editions, made him easily the premier in his native country. The author of the obituary in *Gynécologie et Obstétrique*, 1920 i, 4, states that these volumes became the breviaries of the specialists of Holland. He formed a school of younger people about him, among whom is Mme. Tussenbroeck, one of the best known of her sex to practise these specialties. He was affiliated throughout with France and by his eminence probably kept his chairs at Amsterdam from occupation by some imported German savant. He spoke French like a Frenchman, and among his French masters and friends were Péan, Bouilly, Pozzi, and Richelot. During the great war he was active with both pen and medical service for France, having incidentally founded the Pre-Catalan ambulance. For this he had received special commendation from the Paris Academy of Medicine.

Death of Felix Guyon.—Doubtless many physicians, including the urologists themselves, have believed that this pioneer was no longer living, but he has only recently died at the age of 89, and not from senility but some chronic affection attended with much suffering. He studied at first at Nantes and completed his medical education in Paris, was a hospital surgeon in 1862 and a professor in the Paris faculty a year later. Beginning with general surgery, he was by 1867 one of the best known surgeons in France. Shortly afterwards he had begun to specialize in urology and soon was recognized as the undisputed leader in this province. Most of his successors and colleagues were his pupils. His fame was equal to that of Charcot in neurology, Potain in general medicine, Péan in gynecology, and of other famous contemporaries. The Necker Hospital was the great urological center of France and Guyon was equally eminent as lecturer, clinician, operator, and practitioner. In appearance and bearing he was most distinguished. "Wherever he chanced to enter the world raised its hat," said Segond, one of his most eminent pupils.—*Gazette des Hôpitaux.*

Death by Accident of a French Medical Nonagenarian.—Mature American physicians addicted to reading will doubtless recall the name of Bucquoy, which was once a familiar one in medical literature. He was the dean of Paris hospital physicians and was in the midst of a green old age when stricken down by accidental death, of which no particulars are given. He was remarkable for the number of distinguished medical blood relatives. A descendant of Baron Boyer, he was nearly related to Danyau, Chauffard, and Guillain. Born in 1829, he had in his internate in 1852, as fellow internes, Zambaco Pacha and several others who later achieved distinction. His hospitals were the Cochin, the Enfantes-Malades, and the Hôtel-Dieu. He was made a professor agrégé in the Faculty at Paris in 1863, and on the same occasion Jaccoud and Fournier received a like honor. He became a member of the Academie de Médecine in 1882. Retired since 1895 by age limit from hospital activities, he had continued to devote all his efforts to medical assistance and Academy activities. His best known work was in the provinces of cardiac disease and duodenal ulcer.—*Gazette des Hôpitaux.*

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GASTRIC HEMORRHAGE.*

BY J. RUSSELL VERBRYCKE, JR., M.D., F.A.C.P.

WASHINGTON, D. C.

THERE is no symptom so terrifying to the patient or so apt to drive him to at once seek medical advice as the sight of blood and I think it may be safely said that even the calm of the physician himself is apt to be disturbed by the occurrence of a large hemorrhage.

Gastric hemorrhage may manifest itself either in the vomiting of blood or in its passage in the stool in large amounts.

Occult bleeding will not be here considered, but only vomiting, or passage by stool, of appreciable amounts of blood which have a profound effect on the condition of the patient.

There are many causes for the appearance of blood, as trauma, ulcers and erosions, diseases of the cardiovascular system, diseases of the liver and spleen, various constitutional diseases, some acute infections, and others. The two main causes for the vomiting of large quantities of blood at a time are gastric and duodenal ulcer and disease of the spleen and liver. In determining the cause of bleeding one must consider the age of the patient, the character of the blood, the past history of the case and the present associated symptoms, as well as the results of physical examination.

It has been stated by some that cirrhosis of the liver is a more frequent cause of a profuse hemorrhage than is peptic ulcer. I think this may be true if the observation is based on hospital practice of the poorer classes but in private practice certainly ulcer takes by far the first place.

My experience has been that there is little difference in the frequency of hemorrhage in gastric or duodenal ulcer and that duodenal ulcer is as apt to cause vomiting of blood as is gastric ulcer, and that gastric ulcer is as apt to cause melena as is duodenal ulcer.

As a rule periodic attacks of indigestion culminating in profuse hemorrhage indicate ulcer. It is perfectly possible, however, for an ulcer to exist for years without symptoms and then to announce itself by a hemorrhage without previous warning. I have been told of three brothers having gastric ulcer, the first intimation of which occurred in each, at the middle of life, in the same way with a hemorrhage. A tender point, front or back, may be found but much pressure should not be made in the search for it. Often it is not present and the physical examination is negative. If there is doubt concerning a diagnosis it can be cleared up by laboratory tests and the *x*-ray after danger from further bleeding is past. When there has been periodic dyspepsia for years without hemorrhage and the patient is beyond mid-life the occurrence of bleeding may indicate carcinomatous degeneration of a preexisting ulcer. Generally, however, the bleeding of cancer is not so sudden or profuse but is more continuous. Physical examination may reveal a mass or, if not a well defined mass, a sense of resistance suggestive of a mass.

When sudden profuse bleeding occurs at or beyond midlife in one who has not had previous dyspepsia, the first thought should be of cirrhosis of the liver, especially if there is an alcoholic history, and the second presumption should be the possibility of some sort of splenomegaly. In cirrhosis there should be no difficulty in making out change in the liver and there may be evident signs of portal obstruction. So also in splenic enlargement it should be possible to recognize this condition by physical examination. However, the Mayo Clinic states that after their experience in the removal of 65 spleens they are convinced that it is not possible to gauge accurately the size of the spleen from physical examination; and the method of filling the peritoneal cavity with oxygen and then examining with the Roëntgen ray, which method shows plainly the solid organs, has convinced me that a spleen may be enlarged to at least twice its normal size without being palpable.

Two rarer causes of profuse hemorrhage may be mentioned, namely, acute ulcer of Dieulafoy, or exulceratio simplex, and purpura. Acute superficial ulcer is characterized by sudden terrifying vomiting of blood without previous or subsequent gastric symptoms, and it is not usually followed by any recurrence. There may not be such a clinical entity but I believe that there is, although quite rare. I have made two such diagnoses, one of which proved to be an error.

Abdominal purpura should not lead to confusion in diagnosis as there will be other signs of the disease, such as petechiæ or bleeding from the gums or other part.

Other conditions cause the loss of blood usually in much smaller quantities. Violent retching from any cause may finally bring up a little blood and if there be present any congestion of the gastric mucosa the amount will be somewhat larger. The most usual causes for such congestion are alcoholic or other intense gastritis and passive congestion from heart disease.

*Read before Montgomery County Medical Society, Rockville, Md.

It has been stated that swallowed blood from pulmonary hemorrhage or other part of the respiratory or upper digestive tract may be confusing. Such error should not occur in hemorrhage of any amount although it is not uncommon for a patient to be unable to state whether a small bit of blood has come from the stomach, throat, or respiratory tract.

I will now give a synopsis of a few illustrative histories of hemorrhage from the stomach.

CASE I.—Miss M. M., age 38, was seen with Dr. Hurtt Jan. 26, 1920.

Past history: Had slight indigestion periodically for some years, calling it acid stomach. Dr. Sprigg had told her the year before that she had symptoms of gastric ulcer.

Present attack: Has had indigestion and acid stomach for the last three weeks. Coming home on the car last night she became nauseated and when she got home vomited a basin nearly full of blood.

Examination: Very pale, ill-looking, slight woman. Examination negative except slight tenderness in the region of the pylorus. Pulse 120. Hemoglobin 50 per cent; red count 2,530,000.

Discussion: In a young woman who has had previous attacks of mild dyspepsia for some years, with a diagnosis of gastric ulcer made the year before and with a negative physical examination, except for slight localized tenderness, there can be but one probable diagnosis, namely, gastric ulcer. Duodenal ulcer is comparatively rare in women. Cancerous degeneration is a possibility, but such a sudden profuse hemorrhage would be most unusual.

Outcome: Treated in bed for ulcer. March 17, 1920, *x*-ray still shows constant deformity of pylorus so that the ulcer is perhaps not yet healed although there is no occult blood and the hemoglobin has risen to 70 per cent.

Diagnosis: Pyloric ulcer.

CASE II.—H. V. D., aged about 50, seen with Dr. Ernest Mitchell.

Past history: Some stomach trouble of rather indefinite type for some years. Has been a rather heavy drinker in sprees and has been on one for the past week.

Present attack: Started suddenly yesterday, vomiting blood in considerable amounts every few minutes.

Examination: Large well built man, pale. Pulse 140, small and almost imperceptible. Otherwise negative.

Discussion: There are here three possibilities. Hematemesis in a man of middle age who has been a pretty hard drinker would first suggest cirrhosis of the liver of alcoholic gastritis. There was no evidence that the liver was diseased in any way and so cirrhosis can probably be eliminated. Alcoholic gastritis he undoubtedly had, but is that sufficient to account for the severity of the symptoms? I think not, as I have never seen a patient anyway near exsanguinated by bleeding from gastritis. Peptic ulcer is suggested by long continued mild dyspeptic symptoms culminating in the profuse hemorrhage and better fits than any other diagnosis.

Outcome: Patient continued to vomit every time the stomach filled with blood and died several hours later.

Diagnosis: Alcoholic gastritis, Peptic ulcer.

CASE III.—Dr. W. A. Mc., age 50, called me May 10, 1917.

Past history: Always healthy. No trouble with digestion. Has been a very heavy drinker.

Present attack: Has been drinking heavily for a week. Three hours ago he suddenly vomited a large amount of blood. This was repeated 6 or 7 times so that the whole amount has approximated 2 quarts.

Examination: Large heavy man. Acne rosacea and congested face in spite of loss of blood, with small weak pulse of 106. Examination otherwise negative except for blood pressure of 168 and liver enlarged to three fingers below costal margin and quite firm.

Discussion: Sudden severe hemorrhage in a man of 50 with alcoholic history and without other symptoms means, in the presence of enlarged liver, cirrhosis.

Outcome: Relieved by treatment; *x*-ray made one week later showed no abnormality of the stomach. Discharged from hospital May 19, 1917.

Diagnosis: Cirrhosis of the liver. Ruptured esophageal varix.

CASE V.—Mrs. W. L. B., aged 37, seen with Dr. W. P. Carr, June 19, 1919.

Past history: Good health until 5 years ago when she began to have periodic stomach trouble with pain one hour after meals. One year ago had serious hemorrhage. Dr. Carr later operated removing the ulcer. Relieved for two months only.

Present attack: Having the same pain as of old. For several days has been passing large black stools. Dizzy and faint.

Examination: Tender point in epigastrium. Pulse 120, hemoglobin 30 per cent. *X*-ray shows spasmodic hourglass of stomach with ulcer on the lesser curvature.

Outcome: Apparently cured to date of the ulcer after bed treatment for 6 weeks but has never regained all her strength.

Diagnosis: Gastric ulcer with bleeding by bowel.

CASE VI.—K. N., age 16, seen with Dr. Russell several years ago.

Past history: Healthy all life. Never knew he had a stomach.

Present attack: Four days ago was suddenly seized with dizziness and faint feeling and threw up a large amount of blood. There were several repeated hemorrhages so that he was nearly exsanguinated.

Examination: Negative except for pallor, hemic murmur, and feeble pulse of 110.

Discussion: The suddenness of the onset and the alarming size of the hemorrhage without gastric symptoms previously and without any other evidence of disease might suggest cirrhosis if in an older patient with an alcoholic history; however we are able to exclude this malady and there remains only peptic ulcer or acute ulcer of Dieulafoy, the latter of which seems much the most likely.

Outcome: Treated as if for ulcer. A month later his hemoglobin had risen to 65 per cent. He was recovering strength and was discharged without symptoms. Many months after he had had no recurrence.

Diagnosis: Acute ulcer of Dieulafoy.

CASE VII.—Mr. H. A. O., age 29, referred to me by Dr. Henry Fry, Jan. 15, 1915.

Past history: Except for measles and mumps had never been ill in his life. Fine digestion.

Present illness: Five weeks ago he was suddenly seized without warning with three hemorrhages, vomiting over a quart of blood. He was in bed in Chicago and has had no trouble since.

Examination: Negative in every way. Liver and spleen were apparently of normal size. There was no occult blood.

Discussion: Like the preceding case I could explain the sudden hemorrhage without other symptoms in no other way than by the diagnosis of acute ulcer of Dieulafoy.

Outcome: The diagnosis was explained to him and he was told that there was slight chance of any recurrence but to satisfy his mind that something was being done to prevent it I gave him a soft diet and told him to take silver nitrate for the first three days of each month. This he did for 11 months. The next month, March 5, 1916, while in St. Louis he had sudden nausea and faintness and passed large dark stools. At this time his temperature was 100°, pulse 116; hemoglobin 93 per cent., red cells 5,000,000, and white cells 14,000. An *x*-ray study by Dr. Mills at this time was negative. As soon as he could travel he came to me, March 20, 1916. A thread test showed a well localized blood mark on the lesser curvature, about one cm. long. Repeated the next night it was the same. An *x*-ray by Dr. Christie, March 24, 1916, showed the stomach to be hypertonic with irregular peristalsis and an entire lack of peristalsis about the middle of the lesser curvature corresponding to the mark on the thread. Diagnosis was made of gastric ulcer of the lesser curvature with inflammatory induration. He then had ulcer treatment in bed for 3 weeks. After getting about again the *x*-ray was normal but repeated in a few days showed the same absence of peristalsis in a spot about one inch across on the lesser curvature as in the first examina-

tion. Occult blood tests were made at intervals until October, 1917, and were negative. I saw him Oct. 29, 1917, and assured him that he was all right but did not examine him. He then went to New York and the next day passed large black stools and went to the New York Polyclinic under Dr. Bassler. At this time the spleen was 4 times normal size and at least twice normal when he left the hospital. Even after the hemorrhage red cells numbered 5,500,000. Dr. Bassler thought it was Banti's disease. Dr. Soper then treated him in St. Louis with *x*-ray applications to the spleen but he had another hemorrhage Dec. 5, 1917, while taking the treatments. Dr. Soper then thought it was a gastric erosion and treated him again as if for ulcer. Jan. 7, 1918, he had another smaller hemorrhage. He then took a long course of *x*-rays which reduced the spleen somewhat. In November, 1918, he had 5 days of fever and the spleen enlarged again. January, 1919, he took a course of benzol. He has been examined every 60 days and the spleen can still be felt. No cause has ever been discovered, not syphilis, Banti's, tumor, leukemia, or malaria.

Diagnosis: Splenomegaly of unknown origin. Possible ulcer of the lesser curvature in addition.

CASE VIII.—B. E. T., age 38, seen with Dr. George Wood, March 5, 1920.

Past history: Occasional dyspepsia. Otherwise negative.

Present attack: Some gastric distress 6 days ago relieved by vomiting. Three nights ago his wife found him lying on the bathroom floor surrounded with blood. He soon recovered consciousness. Is weak and his head pounds.

Examination: Negative except for pallor, systolic murmur over the whole heart, and pulse of 104.

Discussion: Indefinite, long continued dyspepsia culminating in profuse hemorrhage, without other physical findings warrants a diagnosis of peptic ulcer. Whether gastric or duodenal it is not possible to say.

Outcome: Treated for 3 weeks in bed. No return of hemorrhage and occult bleeding ceased. On getting about an *x*-ray examination showed constant deformity of the duodenal cap. This would seem to indicate that the ulcer is not yet healed, but since repeated occult blood tests are negative it may be that the deformity is due to scar formation.

CASE IX.—H. C., age 33, consulted me Oct. 12, 1918.

Past history: He had been referred to me in 1915 by Dr. Kavenny for indigestion off and on for 2 years. Had pain through the stomach 2 to 3 hours after meals relieved by eating again. The physical examination was negative. He had occult blood, high gastric acidity, and hemoglobin of 45 per cent. He was treated and gradually and steadily improved. Diagnosis was gastric ulcer.

Present illness: For past 2 months, after being well three years, he has been having the same indigestion and has been getting pale and weak.

Examination: Pale, ill looking man. Pulse 120. Left rectus more resistant than the right and there is an indefinite sensation like a slight mass in the region of the splenic flexure. Considerable tenderness across the whole epigastrium. Blood pressure 100 mm. Hemoglobin 50 per cent. Stool mostly changed blood and much blood removed from the stomach by the tube.

Discussion: In view of the past history and the clear-cut former diagnosis the natural conclusion would be that there was a recurrence of his gastric ulcer with hemorrhages passed by bowel. Such a diagnosis was made and operation advised.

Outcome: Dr. Jack at operation found a large mass involving the posterior wall of the stomach and the pancreas. Few enlarged glands. The man died a few hours later from exhaustion.

Note: This case is interesting because of the age of the patient, 33, and the fact that such a large carcinoma should develop without any change in the old symptoms caused by the ulcer itself. The long duration of the freedom from symptoms, however, and the rather continuous bleeding are very suggestive of malignancy.

CASE X.—Mr. G. O. C., age 43, consulted me Sept. 18, 1918.

Past history: Always well until 6 years ago when he had an attack of cramps and soreness about the navel for 2 days. Three years ago consulted me for first time and diagnosis was made of duodenal ulcer. An alkaline powder and soft diet so relieved him that he never came back until the present time. He has had no trouble during these three years.

Present illness: A week ago while on a trip he noticed that he had a large black movement. He felt all right until three days ago, when, after cranking his car violently, he became pale and his head began to pound. Dr. Braden saw him and immediately brought him to me.

Examination: Negative except for intense pallor. Pulse 110, hemoglobin 30 per cent.; the stool was practically pure clotted blood.

Discussion: In view of the past history the diagnosis of duodenal ulcer with hemorrhage is justified. The case is interesting in showing how large an amount of blood can be lost without the patient becoming aware of it if it passes by bowel instead of being vomited.

Outcome: Transfused and treated medically for 5 weeks. After recovery of strength, an *x*-ray examination showed deformity of the cap and also a large filling defect of the greater curvature of the stomach of unknown etiology. the Wassermann test was negative. A few months later he was operated on by Dr. Mitchell who found duodenal ulcer and a growth in the stomach of unknown character and for which nothing was done. Patient is alive and well to-day.

CASE XI.—Mr. B., age 47, seen with Dr. Lindsay.

Past history: Luetic infection at 18. No evidence of any trouble from it until Dr. Lindsay found absent pupillary and knee reflexes last year. Wassermann was positive and tabes diagnosed. For many years he has had a stomach complaint for which he takes great quantities of soda, and without which he states he could not live.

Present attack: Yesterday had salvarsan. At 2 A.M., he vomited first food, then dark coffee ground material, and finally bright blood.

Examination: Pupils irregular and do not react to light. Knee jerks absent. Right kidney ptosed. Cylindrical mass running across epigastrium feeling like transverse colon, spastically contracted, tender. An *x*-ray examination by Dr. Merrit showed constant deformity of the cap with suspicion of a pocket as if of chronic perforation.

Discussion: We know the patient has had lues and that he has tabes. The question is, do these factors enter into the present trouble? We decided not and diagnosed peptic duodenal ulcer.

Outcome: He refused operation and so was treated medically with slight hope of curing the ulcer. All symptoms of his former dyspepsia have, however, been relieved and he has gained 20 pounds in weight.

Diagnosis: Peptic duodenal ulcer with tabes.

CASE XII.—Mrs. J. D. G., age 36, was seen with Dr. Frank Leech, Jan. 9, 1914.

Past history: Has had stomach trouble for 12 years with attacks of pain and gnawing immediately after meals. Positive Wassermann has been obtained at some former time.

Present illness: Three weeks ago she began having worse trouble with her stomach and last night began vomiting blood. She has lost over a quart.

Examination: Very ill, pale woman. Pulse small and running. Physical examination negative.

Discussion: Is this a peptic ulcer or a luetic ulcer? I know of no way of proving the condition except by the *x*-ray. It is an academic point, as the treatment for the hemorrhage must be carried out and this would involve an ulcer treatment. Then any patient who has a positive Wassermann needs specific treatment any way.

Outcome: Improved under treatment. Reported July 2, 1917, that in June, 1914, she had an abortion. Was careful of her diet for 2 years. She thinks that she has twice had small hemorrhages from the bowel. In January, 1917, she had pain and Dr. Leech kept her in bed for the greater part of 5 months.

Diagnosis: Lues, Gastric ulcer (specific?)

CASE XIII.—Miss B. T., age 25, was referred to me by Dr. Kaveney April 1, 1915.

Past history: Always healthy. Never had a doctor.

Present illness: Ten days ago noticed a reddish eruption on her legs which became purplish. This was

followed in 3 days by pains in the limbs and next day in the stomach. For the last 5 days she had vomited everything taken. At first the vomitus was green but lately fresh and clotted blood in considerable amounts. Vomiting is now occurring every few minutes and is preceded by very painful cramps.

Examination: Well built girl. Dependent skin shows marked petechial eruption. There is marked tenderness over the whole abdomen. Leucocytes 52,200; hemoglobin 80 per cent. Five days later she had lost considerable blood and vomiting had continued. Leucocytes were then 18,200, with 80 per cent. polys. The urine contained albumin and casts.

Discussion: The loss of blood by stomach accompanied by cramps and the attendant eruption of characteristic petechiæ can mean only purpura abdominalis. The high leucocyte count would make it appear as if the disease were initiated as an acute infection.

Outcome: April 7 she was given horse serum and all symptoms stopped in a couple of hours as if by magic. The eruption slowly cleared up and her strength was rather slow in returning, but she made a complete recovery and has never had any illness since.

CASE XIV.—Mr. H. T. S., age 41, consulted me Feb. 25, 1920.

Family history: Father had cirrhosis of the liver. Mother supposed to be a bleeder. Sister had cirrhosis of liver at 5 with ascites.

Past history: When 5 years old had dropsy. Has always been considered a bleeder. Nearly bled to death a number of times when growing, especially from nose bleed. Had a period of some years after he was first married of freedom from trouble and was pretty well. Six years ago had large hemorrhage by the bowel. This was followed by ascites. He has had many of these hemorrhages and attacks of ascites since, his hemoglobin falling to 30 per cent. or under. *X*-ray treatments to the liver seemed to help him.

Present attack: Had hemorrhages starting 3 days ago and is very weak. Still passing changed blood.

Examination: Thin pale man with a decided lemon tint to the skin. Pulse 116, hemoglobin 35 per cent., red count 1,536,000. The right hypochondrium is occupied by a large mass which seems to be an enlarged and movable liver. Spleen not felt. The liver dullness extends at least a hand's breadth below the costal margin. Stomach tube shows the stomach filled with blood and the stools are tarry with it. Oxygen *x*-ray shows the liver serrated and enlarged nearly to the crest of the ileum. The spleen is three times normal size with a band of adhesions running from the lower pole to the pelvis.

Discussion: It is evident that the gastric hemorrhage is secondary to disease of the liver and spleen. The exact disease I am unable to name as yet and am still studying the patient. Certainly it is not ordinary cirrhosis, Banti's disease, or splenic anemia. At present I am leaning toward the diagnosis of congenital family jaundice.

Outcome: Will be presented in a more detailed study at some future time.

Prognosis.—There is little chance for the patient to lose his life from the hemorrhage itself if proper treatment is given; and by proper treatment, as will be seen later, is meant largely the avoidance of too much treatment.

If surgery is attempted during or immediately after severe bleeding, the opposite may be true and there is a great chance of the patient succumbing. But one of my patients treated by medical means has died from hemorrhage.

The prognosis for ultimate cure naturally depends upon the etiologic factor and the treatment. I think we are safe in saying that hemorrhage in peptic ulcer, instead of militating against the chances for cure, may have an opposite effect, and an ulcer which has caused hemorrhage may yield to treatment better than a more indolent one.

Treatment.—The great therapeutic trinity is rest, morphine, and ice locally. The first and prime consideration in the treatment of severe hemorrhage is rest in every sense of the word. When this is secured bleeding will usually stop when the blood pressure drops to a certain point. The patient should not move or be moved in the least.

Morphine should be administered hypodermically to marked physiologic effect and that effect should be maintained until the crisis is past. This serves the purpose of quieting peristalsis, helping to maintain the general bodily quiet, and allaying the restlessness and mental worry.

The continuous use of the ice cap is also of importance. How it acts we do not know. Certainly the cold does not penetrate more than ¼ inch into the skin. It may be that in time to come we shall be laughed at for its use, as we in our enlightenment smile at the use of lead and opium wash locally which was so general a few years ago. However, I should not like to do without the ice application in a case of bleeding.

I do not advocate the use of horse serum or other aids to coagulation unless it is shown that the patient's coagulation time is increased. If the blood clots perfectly in normal time I doubt whether we can cause the blood to clot sooner than it otherwise would, that is when the circulation reaches a low ebb.

On the other hand, coagulen or coagulose is most valuable in cases of hemorrhagic diathesis, and should certainly then be used, perhaps thereby swinging the pendulum from death to life.

I might mention a few of the things which are often used in cases of profuse hemorrhage and which I would heartily condemn. Do not give strychnine or other heart stimulant. Death does not result from heart failure in these cases. The lowered oxygenation of the body is a sufficient stimulant to whip up the heart. Far from doing good, such stimulants may be the means of causing the dislodgement of a clot which may have formed.

The same objection can also be raised to the administration of any drug which raises blood pressure on the one hand or dilates the peripheral blood vessels of the digestive blood lake on the other hand. It is best, therefore, to give no drug in severe bleeding but morphine.

So also under ordinary conditions I would not advocate the use of salt solution. While it will stimulate for the time being it will surely raise blood pressure and theoretically I think it not improbable that it might, by diluting the blood, tend even in the least bit to interfere with normal coagulation.

In hemorrhage from a large vessel the giving of gelatin solution, adrenalin, or anything else into the stomach will do more harm than good. They will have no effect in stopping the flow but on the other hand will cause peristalsis which is what we wish most to avoid. The same may be said to be true of washing the stomach with ice water.

These considerations do not apply when the hemorrhage is small and continuous as in steady oozing. In these instances the ice water lavage or local administration of gelatin or adrenalin will be very efficaceous.

Mention has been made above of the necessity of avoiding surgery after profuse hemorrhage. Those of little experience may rush in where sur-

geons fear to tread, but I believe that the best surgeons will not advise operation for serious gastric hemorrhage. In an experience with a number of nearly exsanguinated patients I have lost but one and yet I know had early surgery been practised the mortality would have been very high. After the patient has recovered from the shock of the loss of blood and perhaps built up a bit, surgery can well be utilized in the cure of the lesion and the prevention of further bleeding.

I have not yet mentioned transfusion. We know that to counteract the effect of hemorrhage it is without an equal. The prime question is, when should it be done. I believe each case should be considered as laying down its own rules. It is possible that the donor's blood may contribute some factor which will hasten the formation of a clot, but I am inclined, in case of a large hemorrhage, to wait for its use until the bleeding has stopped, and then to urge its use in building the patient up. In long continued small hemorrhages when the patient's blood has been much reduced it should be used quickly and repeatedly.

THE ROCHAMBEAU.

NOTES ON ADRENAL ACTION.

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A CONSIDERATION of the action of the adrenal glands based upon various disorders affecting them and also upon the pharmacological study of the action of adrenaline suggests in a remarkable way the delicacy and the complexity of the mechanism by means of which the human organism adapts itself to its environment. In my article on The Moon and Insanity (MEDICAL RECORD for August 23, 1919) I outlined in a general way the effect which *climate* may have had in bringing about the peculiar characters of the various races of mankind—a hot climate producing a black, sluggish race; a temperate climate, a yellow race of moderate vigor; and a cold climate, a white, vigorous race; with various intermediate types. Now it seems to me that there is reason to believe that the actual mechanism through which climate acts on the human organism to produce these various modifications consists, in large part at least, of the adrenal glands and the allied chromaffin tissues.

The adrenal glands contain two distinct kinds of tissue—the *cortex*, an epithelial structure whose function is not clearly understood but which is supposed to furnish an hormonic internal secretion which influences sexual development and activity; and the *medullary* portion whose principal active constituents seem to be certain large polymorphous cells which in chromic acid solution take on a brownish pigmentation and are spoken of as chromaffin cells. Similar chromaffin cells are found elsewhere, in the ganglia of the abdominal sympathetic system and in certain structures (the paraganglia) situated along the course of the aorta; also in the carotid glands and perhaps in the coccygeal gland, the parovarium, and the epididymis. Collectively these structures are spoken of as the "chromaffin system"; and the specific function of the chromaffin system and of the medullary portion of the adrenal glands is to furnish an internal secretion known as epinephrin or adrenaline (Osler). Now if we consider the pharmacological action of adrenaline (as described, for instance, by Cushny in his "Pharmacology and Therapeutics") and also the symptoms of Addison's disease and of other disorders of the adrenal glands (as described, for instance, by Sir William Osler in the last edition of his "Principles and Practice of Medicine"), it seems to me a fair inference that the function of these tissues is, in the broadest sense, to adapt the organism to life in a cold climate.

There are two factors by virtue of which climate influences environment. There is, first, the factor of the direct heat and light from the sun, which vary in intensity from the tropics to the poles and also with the altitude and conditions of wind and proximity to water. This factor of heat and light from the sun influences the human organism directly: pigmentation of the skin and eyes is developed to protect the organism from the direct rays of the sun in a tropical climate; and in addition a number of other adaptations are required to fit the organism for life in a hot climate, but we need not consider them here because, since man probably originated by evolution in a hot climate and many of the adaptations necessary to such a climate were handed down unchanged from his animal ancestors in whom they had been developed as an adaptation to environment, we can consider man as adapted to a hot climate as the original type and merely refer to the modifications which were required to adapt him to a cooler climate as he migrated toward the poles. Thus the original human type would be pigmented to withstand a hot climate, but as members of the race migrated to cooler climates pigmentation of the skin and eyes would be less and less necessary; but the air would be drier and colder and modifications in the shape, etc., of the nose and face would be necessary to warm and moisten it on its way to the lungs; and since man is a warm-blooded animal (homothermous), in a cold climate it would be necessary to produce more heat by muscular activity and this would require more vigorous heart action with a higher blood-pressure, and thus the skeletal muscles and the muscular and elastic coats of the circulatory system would be more strongly developed.

The second factor through which climate influences environment consists in the modifications which it produces on the surface of the land, varying from tropical and temperate vegetation to barrenness and eternal snow and ice. These modifications lead to variations in the quantity and forms of animal life of all kinds, thus modifying man's environment still further and introducing new factors in the struggle for survival. Thus the factor of protective coloration is introduced, enabling man to hunt for his food or escape from his enemies with less danger of detection. And it seems a remarkable coincidence that the same pigmentation of the skin that protected man in the tropics from the heat of the sun should serve also to protect him from his enemies by making him invisible in the dark depths of the tropical vegetation; and the same absence of pigment with which he could safely face the sun in a cold climate should constitute a factor of safety and survival by making him also less conspicuous amid the snows of the north. It seems a strange coincidence, and yet not so strange when we consider that these two factors of heat from the sun and the darkness of the jungle exist together in en-

vironment, since the latter is a result of the former, as well as the factors of absence of heat and the whiteness of snow; also moderate heat with a more or less yellow or brown earth-covering in a temperate climate. Since these factors are associated in environment, it is but an example of the wonderful manner in which the organism adapts itself that a single device, pigmentation or its absence, should serve both purposes. Then, too, while in a tropical climate man could readily find an abundance of food but must be constantly on guard against enemies of all kinds, in a cold climate he had to get out and hustle for his food and had to wage constant warfare against the elements. Thus in a cold climate the same physical energy and activity that was required to keep him warm served to provide him with food and to arm him against the rugged forces of nature—another remarkable coincidence.

The point is, then, that man originated in a warm or hot climate as a pigmented and sluggish animal, and as members of the race migrated to colder climates adaptations of form and function were necessary; and that many of these adaptations were brought about by an increased activity of the adrenaline-forming tissues. According to this assumption, cold must act as a stimulus to increase the formation of adrenaline, and heat to decrease it. Now let us consider the evidence and see whether it justifies such a conclusion. It would be difficult to determine directly whether cold increases and heat diminishes the formation of adrenaline in the human organism; but we can infer the amount of adrenaline formed from the degree to which the organism responds to its characteristic action. And if the effect of cold upon the organism is identical with the effect of adrenaline, it is a fair inference that the cold acts by stimulating the formation of adrenaline. Whereas on the other hand, if heat affects the organism in the same way as a hyposecretion of adrenaline, we can infer that the heat acts by depressing the secretion of adrenaline. Let us then compare the effects upon the human organism of cold and adrenaline, on the one hand, and of heat and absence of adrenaline on the other.

Cold causes contraction of the blood-vessels of the skin; increased heart action and increased blood-pressure; increased activity of the skeletal muscles, either shivering or voluntary and more or less purposeful, accompanied by increased combustion of carbohydrates; increased respiration; it has a tendency to produce sluggishness of the alimentary tract—i.e. of bowel movement; it increases the flow of urine; and if long-continued (a cold climate) it tends to diminish the pigmentation of the skin. Now if we turn to Cushny and read his account of the action of adrenaline, we find that it produces identically the same effects. It is true that he does not mention any effect on pigmentation—this could hardly develop during a brief, pharmacological experiment—but since in Addison's disease a greater or less reduction in the formation of adrenaline leads to a greater or less degree of pigmentation, it is a fair inference that adrenaline acts to prevent or reduce pigmentation of the skin. Otherwise, the effects of cold and of adrenaline are exactly parallel; and to read Cushny's account of the action of adrenaline with this point of view in mind is to realize that here we have no ordinary drug producing a multitude of accidental and purposeless effects on the various tissues and organs of the body, but an agent which the organism has developed for the purpose of accomplishing a specific object—viz., to enable it to adapt itself to cold. It constricts some blood-vessels, dilates others; stimulates some organs, depresses others; corresponds in its general action to the effect of stimulation of the sympathetic nerve fibers, and yet takes care not to stimulate the sweat glands (which, indeed, would defeat its purpose), but on the other hand goes out of its way to stimulate the hydrolysis of glycogen in the liver, thus filling the blood with sugar; and while it constricts so many blood-vessels, it takes care to leave those supplying the skeletal muscles well dilated. In addition it causes dilatation of the pupil with retraction of the eye-lids and protrusion of the eyeball which, while it did not occur to me to mention it, is a characteristic effect of cold. This absolutely identical action of cold and of adrenaline can hardly be an accidental coincidence; it must mean that cold acts to stimulate the secretion of adrenaline. And what a clear light this action of adrenaline throws upon the wonderfully delicate and complicated mechanism of the human body! It is so constituted that a comparatively simple substance like adrenaline can produce all these diverse and complicated reactions, which yet all work together to a common purpose. It might be compared to a musician pulling out certain stops on an organ and pushing in others to get a desired effect.

And the identity of the effects of heat and of diminished adrenaline secretion is no less absolute. When an individual of the white race removes to a hot climate he suffers from general languor and debility; he constantly feels tired and is unable to concentrate his attention and carry on his ordinary occupation with the accustomed vigor; his muscles lose their tone and his heart action is not so strong and regular and his blood-pressure is lower than normal; he is apt to have feelings of dizziness and faintness, and headache; he loses his appetite, his stomach is easily upset, and attacks of diarrhea may come on frequently and without obvious cause; and his skin gradually becomes pigmented. In fact, some of these symptoms to a greater or less degree —especially the "tired feeling"—are a common experience with most of us as the cold of winter changes more or less suddenly to the warm weather of spring and the heat of summer. Now, when we compare these effects of heat with the effects of diminished adrenaline secretion as it occurs in Addison's disease, we find them absolutely identical, except that in Addison's disease the symptoms are more marked and progressive as the destruction of the adrenaline-forming tissues becomes more complete. This is noticeably the case with the pigmentation of the skin, which in Addison's disease may vary in grade from a light yellow to a deep brown or black. In other words, the absence of pigmentation of the skin in the white race is due, directly or indirectly, to a high degree of adrenal activity; and the vigor and enterprise of the white race is due to the same cause—both, of course, being the result of ages of adaptation to environment and being associated with a multitude of other characteristics physical and mental more or less dependent upon them. Conversely, the black race owes its pig-

mented skin and its sluggishness to a low degree of adrenal activity; and the yellow race its yellow skin and only moderate enterprise to an intermediate degree of adrenal activity; the brown races being intermediate between the yellow and black, and the brunettes of the white race showing less adrenal activity than the blonds. It might seem strange that a single agent—adrenaline—should control so many characteristics, ranging from pigmentation of the skin to muscular activity and enterprise; but since the conditions of environment to which these characters are adapted are associated in nature it is a natural result that these characters should be associated in the organism, although remarkable that they should depend upon a single controlling agent. The color of the hair seems to be less easily influenced by environment than that of the skin; thus even the yellow races and the brunette members of the white race retain the black hair of their original tropical ancestors; the development of adrenal activity, however much it may have diminished the pigmentation of the skin, having had no effect in changing the color of their hair, although other causes seem to have modified its character. It is only in the blond members of the white race that the color of the hair is greatly modified, and this may be because it was only among the snows of the northern regions that black hair became conspicuous enough to make it an important factor in the survival of the individual.

This hypothesis might throw some light on arteriosclerosis. Sir William Osler used to say that some individuals have poorer rubber in their arteries than others, and we might expect that brunettes and members of the darker races would have less powerful elastic coats in the walls of their arteries than blonds, as a result of having developed in warmer climates where lower blood pressure and less muscular activity would prevail. Thus, if an individual of a brunette or black race indigenous in a warm or hot climate, and consequently inheriting arteries adapted to only a relatively low blood-pressure, should remove to a cold climate where the adrenal glands would be stimulated to increased activity, it might be expected that the elastic coats of the arteries could not withstand the higher blood-pressure resulting and would give way and degenerate, leading to arteriosclerosis. I do not know of any statistics of arteriosclerosis showing its relative frequency in blonds and brunettes, but they might be worth collecting. (In fact, it might prove of value to record the degree of coloration of the patient in all medical histories.) It is stated in Osler's "Practice of Medicine" that *aneurysm* is more common among the negroes than among the white population in the southern part of the United States; whereas in India it is rare among the natives, probably on account of their low blood-pressure. And apoplexy and paralysis are more common among negroes than among whites. It would seem that members of dark races are safe enough so long as they remain in their natural hot climate, but when they remove to a colder climate the increased adrenaline formation raises their blood-pressure to a degree higher than their arteries are built to withstand and the elastic coats give way, resulting in arteriosclerosis with aneurysm and apoplexy if exciting causes supervene. And the same thing might be true in less degree of brunettes. In animals arteriosclerosis can be produced experimentally by the intravenous injection of adrenaline. Possibly the wearing of very light clothing in cold weather may stimulate the formation of adrenaline to an excessive degree and favor the development of arteriosclerosis.

On the other hand, when an individual accustomed to a cold climate removes to a hot one, the condition of debility resulting from depressed adernal activity may predispose to acute infectious diseases, tuberculosis, etc. And since the high bodily temperature of fever has the same effect on the organism as external heat, it probably depresses the activity of the adrenal glands, and thus produces the debility and prostration and low blood-pressure, and also the pigmentation of the skin which occurs in protracted fevers. Cold bathing in fevers seems to have a beneficial effect even when it does not lower the temperature appreciably, and may probably act by stimulating the formation of adrenaline, thus raising the blood-pressure and promoting the flow of urine with elimination of toxins, and raising the tone of the system generally, especially the nervous system. (But if the heart is greatly weakened in fevers, this cold bathing may by increasing the blood-pressure cause cardiac failure.) The wet-pack, so highly recommended by Osler in neurasthenia, may act in a similar manner; the lack of tone, especially in the blood vessels, and the general debility in nervous prostration, etc., being perhaps due, in part at least, to hyposecretion of adrenaline. We find extreme examples of the depressing effects of heat in cases of heat exhaustion and sunstroke or thermic fever, which are especially liable to attack members of the white race living in a hot climate. And the symptoms of these disorders point almost conclusively to their being the result of depressed adrenaline formation. Thus, in heat exhaustion, the physical depression, giddiness, faintness, pallor, small pulse, weak heart action, unconsciousness, coma and death suggest an acute attack of Addison's disease; *minus*, of course, the pigmentation, which does not have time to develop. There may also be gastrointestinal disturbances, which in all these cases of deficiency of adrenaline are no doubt due to congestion of the abdominal viscera resulting from vasodilatation of the splanchnic vessels; just as the sluggishness of the bowels in a cold climate results from constriction of these vessels by adrenaline, with ischemia of the abdominal viscera, in addition to the contraction of the pyloric, ileo-colic, and internal anal sphincters produced directly by the adrenaline (Cushny). Sunstroke appears to be a still more striking example of acute failure of adrenaline secretion due to depression by excessive and prolonged high external temperature; it is the *heat* and not necessarily the direct rays of the sun that cause it, as shown by the frequency of its occurrence at night, especially in overcrowded barracks and on shipboard. Anxiety, fatigue, deficiencies in the diet, and bad hygienic surrounding also predispose to sunstroke. The victim may be struck down within an hour with symptoms of heart-failure, dyspnea and coma. (It is to be noted that adrenaline is destroyed in the tissues as rapidly as it is secreted into the blood, and thus there is no reserve

supply and sudden and severe depression of the secretion by heat may deprive the organism of it completely.) More usually there is headache, dizziness, a feeling of oppression, sometimes nausea and vomiting and diarrhea; then insensibility and coma, with complete relaxation of the muscles, or there may be convulsions followed by marked mental disturbance. These symptoms, although more acute, exactly parallel those of Addison's disease (except the pigmentation) where also we may have convulsions and a noisy delirium preceding death, with urgent dyspnea. Even when recovery from sunstroke appears to be complete, there may remain a permanent inability to bear high temperatures due probably to the adrenal glands, etc., being permanently impaired by the great depressing effect of the high temperature and hence more susceptible to repeated depression by heat. Also, loss of the power of mental concentration and failure of memory are frequent sequelae, and there may be marked mental disturbance. The most successful treatment of sunstroke—applying cold to the body by an ice bath, etc., or employing enemata of ice-water—is just what we should expect would be, according to this hypothesis, the best means of stimulating adrenal action. It might be worth while to try the injection of adrenaline intravenously in severe cases of sunstroke, especially after venesection, when it might be administered well diluted in salt solution. Alcohol predisposes to heat exhaustion and sunstroke, and may act by interfering directly or indirectly with the action of adrenaline, as is suggested by its dilating the vessels of the skin and lowering the blood-pressure and general tone of the system. It is interesting to note that in the United States negroes are often attacked by sunstroke, though seldom in their natural tropical climate. This may be because their adrenaline-forming tissues are imperfectly adapted to a cool climate and working, perhaps, beyond their capacity, are more susceptible to sudden failure when subjected to the depressing influence of an unusually high temperature. In cases of ordinary *sunburn* of moderate severity, involving only the face, neck, arms and legs, apart from the discomfort caused by the tenderness of the skin, there is an element of more or less marked prostration entirely out of proportion to the degree of actual injury to the skin. Probably this is caused by depression of adrenal activity by the heat, as is also the feeling of giddiness and faintness and perhaps slight nausea; also the pigmentation of the skin which remains after healing is no doubt a result of diminished adrenaline formation. It would seem that mere diminution of adrenaline secretion does not of itself necessarily cause pigmentation of the skin, although a necessary factor in pigmentation. As a rule, it seems necessary also that the sun should act directly on the skin to cause it to become pigmented. It may be that the sun acts merely as an irritant, because in Addison's disease, while pigmentation may finally become diffuse, it may for a long time be limited to exposed parts, and is always deeper there and also wherever the skin is compressed or irritated, as by the waistband. This is true also of other conditions where pigmentation occurs, and its association with trophic neuritis in localized scleroderma and other disorders suggests that there is also a trophic nervous element which may be influenced by irritation. Thus in these conditions of depressed adrenal action we might conclude that pigmentation of the skin results from the action of the sun or other irritants upon the skin in the more or less complete absence of adrenaline.

Furthermore, this hypothesis leads us to a new conception of the nature of *pellagra*. It would suggest that pellagra is a type of Addison's disease resulting from functional disturbance of the adrenal glands and chromaffin tissues due to the depressing effects of heat, occurring in individuals who are not adapted by race to the climate in which they live, and resulting in a hyposecretion of adrenaline. This disturbance is most marked in the spring of the year when the change from cold to warm weather normally exercises a depressing influence on these tissues; but due to the lack of adaptation to the climate, this reduction in the formation of adrenaline is excessive and abnormal. Exacerbations occur also in the fall, when the change from warm to cold weather makes an extra demand upon these tissues, which in their disturbed and weakened condition they are not prepared to meet. And in pellagra this functional disturbance of the adrenaline-forming tissues may tend to become chronic and progressive, so that each exacerbation in the spring and fall is followed by further deterioration and loss of function. Let us compare the features of pellagra with those of Addison's disease as stated by Osler. In both diseases the majority of cases occur between the twentieth and the fortieth years. Pellagra sets in with symptoms of weakness, headache and depression; disturbances of the alimentary tract—sensations of heat in the mouth, congestion of the mucous membrane, anorexia, nausea, vomiting, dyspeptic symptoms, and diarrhea are common. These symptoms are similar to those of Addison's disease, and in both cases the gastrointestinal disturbances are no doubt due to congestion of the splanchnic area resulting from absence of the normal vaso-constricting influence of adrenaline. Then there is the pigmentation of the skin. In Addison's disease, where exposure to heat or directly to the sun is not an exciting cause, the pigmentation is gradual and progressive, although occurring first and being deeper on exposed parts; whereas, in pellagra the effects of the heat and sun produce a condition more closely resembling an ordinary sunburn erythema with puffy swelling, affecting especially the exposed parts. The skin becomes darker and desquamates, after which some pigmentation remains. (This puffy swelling, which occurs also in ordinary sunburn, is out of all proportion to the degree of inflammation and suggests an edema resulting from lowered blood-pressure due to lack of adrenaline.) With repeated attacks of pellagra the skin may become dark in color and erythema may occur on protected parts also, thus more closely resembling Addison's disease. Sometimes in pellagra trophic disturbances of the skin may occur—vesicles and bullae containing serum or pus, which gradually dry with the production of fissures; and with repeated attacks the skin may become indurated and thickened, and later atrophied and thinned. These symptoms appear to have no counterpart in Addison's disease, which

may be due to its more rapid course; but they suggest somewhat the trophic disturbances in diffuse scleroderma and may be due to a toxemia resulting from the hormonic disturbance of other internal secretions (e.g. the thyroid) or may be of nervous origin. The nervous symptoms in pellagra—spastic paralyses, disturbances of sensation, loss of reflexes in the legs—are due to degenerations in the spinal cord; and the paralysis of the sphincters may be due to these also, but adrenaline normally stimulates the sphincters and the lack of it may favor their relaxation; and the mental impairment and dementia in pellagra are associated with atrophy of the brain. All these lesions in the central nervous system may be due to a toxemia resulting from disturbance of the other internal secretions, or they may be largely due to impaired nutrition resulting from circulatory disturbances due to lack of adrenaline. The headache, vertigo, confusion, dullness, lassitude, depression, etc., characteristic of pellagra all have their counterparts in Addison's disease where also mental symptoms, noisy delirium, may develop if the disease is sufficiently prolonged. Probably Addison's disease is not protracted enough for the degenerations in the spinal cord and cerebral atrophy to develop. The acute form of pellagra shows a still more striking resemblance to the acute form of Addison's disease—marked prostration, severe diarrhea, delirium or stupor with death, occurring in a few weeks from the onset. But acute pellagra is distinguished from acute Addison's disease by the presence of fever and more marked delirium, and this is to be expected as a result of the exciting cause in pellagra—exposure to heat—and in this it resembles an attack of sunstroke or thermic fever which is practically identical with an acute attack of pellagra. In the chronic form of pellagra the attacks are milder, but tend to recur each year, and each attack may leave the patient (and the adrenaline-forming tissues) in a worse condition. Death in pellagra occurs from exhaustion or cachexia or some intercurrent disease precisely as it does in Addison's disease. But on the other hand succeeding attacks of pellagra may not be more severe than previous ones—it is simply a case of adrenal activity being abnormally depressed each spring, with no permanent damage to the adrenal glands and chromaffin tissues. (Compare the usual increased susceptibility to repeated attacks of pellagra with the increased susceptibility to the effects of heat following sunstroke—in both cases the adrenaline forming tissues are more or less permanently damaged by the depressing effects of heat and rendered more susceptible to further depression with a repetition of the exposure.) Finally, *arsenic* seems to be of special value in the treatment of both pellagra and Addison's disease. Thus there would seem to be an almost exact parallel between these diseases, and there seems every reason to consider pellagra as a disease resulting from functional adrenal insufficiency.

As regards the theory that pellagra is due to a defect in the diet, the evidence in favor of this view is very suggestive but hardly convincing. Pellagra does not result from a deficient diet, nor does recovery from pellagra follow upon improvement in the diet, with sufficient promptness and uniformity to make it seem probable that the diet alone is at fault. And if pellagra is due to deficiency in the diet, why should it occur in the spring and fall of the year, both in its onset and in its recurrences or exacerbations? And yet the relationship of deficient diet to pellagra seems indisputable. Now this hypothesis of hyposecretion of adrenaline being the fundamental feature of the disease will explain both its occurrence in the spring and also its relation to diet. Diet may be a predisposing cause of pellagra by lowering the vitality and resistance of the entire organism and thus lessening its power of adaptation to changes in environment. And, far more important, it may be a contributing cause second only to the depressing effect of heat in the following way: Adrenaline is rapidly destroyed in the tissues and must be continuously formed and secreted into the blood; it is a *nitrogenous* compound (an amine) and hence can be formed only from nitrogenous food; hence the adrenaline-forming tissues must require a continuous supply of nitrogenous food to produce adrenaline. Now if the diet is deficient in nitrogenous food and at the same time the adrenaline-forming tissues are depressed by heat, and while in this depressed condition have to compete with all the other tissues of the body for their supply of this food when there is not enough to go around, it seems likely that they may fail to get their share and the result would be a further lessening in the amount of adrenaline formed.

According to this view of pellagra it might be expected that the disease would affect principally members of the white race, and especially blonds, living in climates where the heat is great during the spring and summer but the winters comparatively cold; and members of the black race living in a cool climate with spells or seasons of very hot weather, because in these conditions the adrenaline-forming tissues would be overworked during the cold weather of winter and hence especially liable to break down from the depressing influence of heat in the spring. The latter seems to be the case with negroes living in the United States, where they seem more susceptible to the disease than whites. As for members of the white race, pellagra has long been prevalent in parts of southern Europe, particularly in Italy and Roumania; also in Spain, Portugal and France, and in Egypt. In the southern part of the United States it has occurred only since the Civil War and has been prevalent only during recent years; and here its attacks are not confined, as in Europe, almost entirely to laborers of the poorer classes and the disease takes a more serious form. Now I believe these facts can be accounted for on the basis of my hypothesis. It is a matter of history that members of the northern blond races—Lombards, Goths, Vandals and Normans—invaded southern Europe centuries ago and settled there and mingled their blood with that of the brunette races they found there. This introduced an extensive strain of blond blood into these countries of southern Europe, and many of the present inhabitants of these countries are predominantly blond, while all have more or less of a blond strain. Now, through the course of these centuries this blond strain has been adapting itself to a climate which presents an extreme degree of heat in the spring and summer. These blonds

originally possessed very active adrenal tissues inherited from long ages of adaptation to cold northern climes, and probably for many generations the more susceptible blonds (especially if they did not happen to be persons of wealth and leisure who could take their ease and command all the comforts and luxuries that serve to temper the extremes of heat and cold) suffered from heat exhaustion and sunstroke and the many intercurrent affections that attack those whose vitality is lowered in a hot climate by the depressing effect of heat on adrenaline secretion. But as a result of adaptation and natural selection over a period of many generations, and largely as a result of the admixture of brunette blood, the descendants of these blond races gradually developed a tolerance of the climate and instead of acute attacks of heat exhaustion and sunstroke following the heat of spring, they developed sub-acute or chronic attacks of sunstroke—i.e., pellagra; at first perhaps acute pellagra, then the milder chronic form, and finally the form in which subsequent attacks are no more severe than preceding ones, leaving no permanent damage, and amounting to little more than an exaggerated form of "spring fever." Thus in Italy in recent years the mortality has been as low as four per cent., and the disease has been practically confined to peasants who perform hard manual labor with poor food and exposed to the full effects of the climate. Now in the United States the members of the white race who settled our southern states had until the Civil War slaves to do their manual work, and thus largely escaped the full effects of the climate, and for all practical purposes could surround themselves with an artificial cool climate. But since the Civil War they have been more exposed to the effects of the climate and many of them being of the blond type they were liable to heat exhaustion and sunstroke and have only recently reached the stage of pellagra (subacute or chronic sunstroke) and have not yet acquired the immunity to it of the Italians. Hence, as Osler stated, "in the United States the outlook in pellagra is regarded as serious, if not as regards death, certainly as regards ultimate recovery," and he stated further that the disease has spread with extraordinary rapidity in the United States in the last few years. It is a difficult disease to treat. Good food and change to a cooler climate and rest with symptomatic and supporting treatment, arsenic and strychnine, and perhaps cold bathing or sponging and the wet pack seem to be indicated. Adrenal gland therapy has not proved of much value in Addison's disease, and probably would not here. It is interesting to note that in *beriberi*, where a deficiency of nitrogenous food seems to be the principal factor, excessive heat is an important exciting cause and it may be that depression of the adrenalin-forming tissues plays a part here also; some authorities consider that the diet theory alone is not an adequate explanation of the disease. Overcrowding and lack of proper and regular food predispose to beriberi just as they do sunstroke, and the premonitory symptoms of beriberi—languor, depression, tired feeling—suggest deficiency of adrenalin; also it is significant that peripheral neuritis may be a sequel of sunstroke. Beriberi occurs principally in the darker races in their natural climate and pigmentation is not noticeable as a symptom. Their degree of adrenal action is already low and beriberi may represent their peculiar way of reacting to a further depression of this secretion.

Increased pigmentation of the skin occurs in a number of other disorders besides pellagra and Addison's disease, and some of these are associated with or dependent upon disturbance of thyroid secretion as exophthalmic goiter and diffuse scleroderma which may be mistaken for Addison's disease. In exophthalmic goiter, which is supposed to be due to overactivity of the thyroid gland, the disturbed heart action, combined with the vasomotor dilatation, and the vomiting and diarrhea, weakness of the muscles especially of the legs, depression and other mental symptoms—and especially the symptoms in acute cases with intense vomiting and diarrhea, rapid action of the heart, and great throbbing of the arteries—suggest the symptoms of Addison's disease, plus exophthalmos and tremor. It may be that the thyroid secretion, when in excess, neutralizes adrenalin or counteracts its effects on the organism. There may be hormonic relations between adrenalin and the secretions of the thyroid and other ductless glands and disturbance of the function of one of them may disturb more or less the action of the others as well as of the various tissues and organs of the body. Thus the skin lesions in long standing cases of pellagra suggest those in certain cases of scleroderma, as do the spots of leucoderma in Addison's disease. Note also the persistence of the thymus gland in certain cases of Addison's disease. Note also the extreme sensitiveness to cold in scleroderma and in cretinism and myxedema, which conditions are probably all due to disturbance of thyroid secretion. The pigmentation and also the feelings of faintness, nausea, and vomiting ("morning-sickness") of *pregnancy* may be due to deficiency of adrenalin. The pigmentation of the skin in arthritis deformans may be due to disturbance of the internal secretions, as is suggested by the fact that extracts of the thyroid and thymus glands are beneficial in some cases; and the frequent occurrence of arthritis deformans in women about the menopause suggests that this form of it may be due to a toxemia resulting from disturbance of the internal secretions. Pigmentation occurring in advanced cases of *arteriosclerosis* and in *osteitis deformans* may be due to decreased adrenalin-formation resulting from sclerotic changes in the adrenal glands. Pigmentation may result from chronic poisoning by *arsenic*, and it is a curious fact that the symptoms of arsenical poisoning suggest a deficiency of adrenalin—the congestion of the alimentary tract cannot be explained as resulting from the corrosive action of the arsenic. Arsenic may destroy adrenalin directly or it may counteract the effects of adrenalin at its point of action. And yet small doses of arsenic are beneficial in Addison's disease and in pellagra. Then there are certain other disorders in which pigmentation of the skin occurs, such as *hemochromatosis*, *ochronosis*, and certain forms of diabetes; also in melanotic tumors and locally in various trophic nervous disorders. In these cases it is probably due to a disturbance of the hormonic interactions

of the various internal secretions, whose actions and interactions are but little understood and probably very complicated. Glycosuria may be produced in animals by the injection of adrenalin; and it may be that in a member of the white race acclimated to a tropical climate the adrenalin may set free in the blood more sugar than the muscles can use in the limited amount of activity compatible with the hot climate, and this excess of sugar in the blood may lead to glycosuria.

NORTH STREET AND WARD'S LANE.

EMPLOYMENT OF DIATHERMY AND GALVANISM IN THE MANAGEMENT OF SEQUELÆ OF OCCLUSION, PARTIAL OR COMPLETE, AND OF RUPTURE OF THE CEREBRAL ARTERIES.*

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AND

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NEW YORK.

SOME time ago in an article read before this society and published in its official journal as well as the *International Journal of Surgery*, we reported on the use of diathermy as an adjunct in the treatment of chronic syphilis. In this preliminary report we showed that in these cases there was induced a marked heating of all the tissues, followed by active hyperemia, stimulation of metabolic processes and increased elimination, as evidenced by a greater amount of CO_2 in the expired air by local and general profuse diaphoresis, and augmented secretion of urine, both as to fluid and solids. Therefore the conditions produced in the tissues by this means are conducive to absorption of inflammatory deposits irrespective of their character.

As our later results proved equally satisfactory in various syphilitic manifestations, involving the brain and nervous system, the thought occurred to us whether diathermy could not be utilized to advantage in the treatment of cerebral conditions of non-syphilitic character.

Diathermy, by inducing an active and prolonged hyperemia in the tissues, increases the penetration of medicinal remedies to the affected structures, even to those in which the circulation has been impaired.

Our extensive experiments with galvanism have shown that it improves the nutrition of the coats of blood vessels as well as of the surrounding tissue, and beneficially modifies vascular tone. It will be thus seen that by the combined use of diathermy and galvanism effects are obtained which cannot be derived from the application of either of the currents individually.

During the past four or five years we have employed this combined method in many cases of cerebral disturbance, such as often precedes apoplectic seizures as well as for the purpose of removing as far as possible the results of cerebral hemorrhage or embolism, that is to say, both in the pre- and post-apoplectic stage.

*Read at the thirtieth annual meeting of the American Electrotherapeutic Association, Atlantic City, N. J., September 14, 1920.

Excellent results have been obtained by us in those cases of senile changes in the brain which often cause marked impairment of mental faculties, even though not always terminating in apoplexy.

There is a condition of the brain met with in subjects of advancing years which has variously been described as cerebral endarteritis, nervous breakdown, and cerebral neurasthenia, due to impaired nutrition of the brain because of deficient circulation.

This reduced blood supply is claimed to be the result of vascular changes, *i.e.* roughening of the vessel wall and narrowing of their caliber, with consequent deterioration of nerve elements. The same process may lead to thinning of the vessel walls with the production of miliary aneurysms. In these cases there is often a toxic factor, commonly of intestinal origin, although it may be due to impaired function of liver or kidneys.

Through accumulation of waste products a toxic irritability may cause vascular spasm, resulting in either anemia or hyperemia of portions of the brain, followed by venous engorgement of the area so affected.

This may lead to temporary paresis of one or more groups of muscles, chronic headache of variable character and location; to vertigo, double vision, tinnitus aurium, insomnia, loss of memory for recent events, changes in character and disposition. It is in just these cases that diathermy followed at the same sitting by prolonged use of the mild continuous or galvanic current applied to the head, together with appropriate medicinal and corrective hygienic measures, has shown the best results.

In post apoplectic conditions, whether produced by hemorrhage, thrombus, or embolism with their usual pathological changes, we cannot hope to improve the paralysis following the cerebral damage until attempt is made to repair the central lesion.

Diathermy followed by the mild continuous current to the brain, as will be described by my collaborator, Dr. de Kraft, is the best means we have found for this purpose. In the first place they will improve the general nutrition, increase elimination and give the patient a better outlook and hold on life. Secondly, by improving the local circulation they will aid nature in causing the absorption of extravasated blood and inflammatory exudate and will help to prevent the formation of cicatricial tissue or promote its absorption.

The writer has not deemed it necessary to give detailed histories of cases, but has left the clinical features to the members of this association who have had extensive experience, either with galvanism or diathermy.

Our sole aim has been to bring to your attention the advantage of combining both methods in the treatment of those cases which represent the subject of this paper.

Experiments conducted by Nagelschmidt on a head severed from a cadaver have shown that it is quite easy to heat the brain by means of diathermy. A thermometer was introduced through the occipital foramen in such manner, that the bulb rested in the middle line of a diameter drawn

through the temporal region. The application of a strong diathermic current, applied sideways through the temples, resulted in an elevation of 5° C. (approximately 10° Fah.) in five minutes.

That it is possible to activate the nerve, its cellular elements, would seem to be proven by another experiment conducted by Nagelschmidt on a living dog. A salivary fistula was made. The upper portion of the spinal cord was then subjected to the heat effect of a high frequency current (diathermy). A moderate current was employed for 10 minutes. As soon as a sufficient elevation of temperature had occurred, it was noticed that the saliva began to come in thick drops from the fistula. The production of saliva by the parotid, so acted upon, appeared to be greatly increased. It was also noted that the heat effect extended to the respiratory center. The animal executed the deep and rapid respiratory excursions characteristic of stimulation of the respiratory center.

Experiments on yeast cells have shown that the chemistry of the cell is increased by warmth. This may amount to an increase of 25 per cent beyond the normal functional activity.

When we apply diathermy to the brain in a living person, the effect is a complex one. We have, first, the influence of the diathermic heat direct on the brain cells. And, secondly, there is the effect on the blood coursing through the cerebral blood vessels, the adnexa of the brain and the bony covering, and the overlying skin, muscles, and fascia.

Whenever we apply a diathermic current to the brain or any other structure, we elevate the temperature by adding heat from without. This is accomplished without any expenditure of the subject's reserve material, without the wasting of any nerve force. As the result of this application of heat from without, the chemical interchanges within the cell are greatly facilitated and there results an improvement in normal function.

It is not at all necessary to use very strong currents in every case in order to obtain notable therapeutic effects. Frequently, a very slight elevation of the temperature of the part is all that is needed. Too great an elevation of temperature within the cranial cavity must be carefully avoided. For we might thereby easily impair, if not permanently damage, the delicate cells of the brain. Hence, our aim should always be to effect only a slight elevation of temperature. For through this we secure a secondary arterial hyperemia, augmented lymphatic flow, stimulation of cell chemistry, a tonic effect, improved vitality, and functional activity.

Personal experience with diathermy of the brain, dates back to 1907. Many times in the cases of backward children and in children suffering from epilepsy, there was a notable general improvement. This improvement manifested itself in brighter and more intelligent facial expression; in better personal conduct; in willingness to perform tasks given to them, or to study their lessons, as well as a gain in bodily growth.

It is quite possible that diathermy, in moderate dosage, has some stimulating, perhaps nutritional, effect on the hypophysis cerebri—the pituitary gland. It is true we have not as yet any very definite idea of the function of the pituitary body. We know that it may be linked with gigantism or dwarfism, with dystrophia adiposa genitalis. We know that the pituitary has much to do with gonad function. There is a strange relationship between the various glands of internal secretion; between the pituitary and thyroid and the sex organs. Derangement of one of these is likely to affect the other. It is not at all unlikely that improvement in function of the pituitary results from the vivifying action of high frequency currents applied in proper dosage to the brain. This explains the resulting general betterment of bodily function.

Diathermy of the brain is a new field to many. It is hoped that the foregoing remarks show the utility of using diathermy of the brain and cranial cavity in the conditions described. The technique found most suitable is as follows:—Have the patient recumbent, with the head carefully propped up on suitable pillows. Take a pair of electrodes of even size, 2½ x 3 inches. One of these electrodes is applied over the forehead, in the middle, just over the eyebrows, taking great care that the electrode is not too near the eyes. As the current follows the path of least resistance, proximity to the eyeballs would send the major part of the current through them. This must be avoided. The other electrode is placed just below the occiput over the cervical spine.

It is essential that a diathermic apparatus of a strength sufficient to assure a smooth current be used, and it must give no other sensation than that of heat. It would be most unsuitable to employ a current which gives even the semblance of the very slightest faradic effect when resistance, such as the cranium offers, is encountered. It is very necessary to direct attention to proper balance of the patient's circuit and that from the inside of the condensers and the spark gap. Remember, too, that no organ is so deeply seated that it cannot be reached by the vivifying warmth of high frequency currents. Proper attention to detail in their application will result in stimulation of cell function and of all glandular secretion. A careless technique without proper understanding of the activity we wish to establish will not give the results desired.

The current strength employed in the described method is from 200 to 450 milliamperes. The duration of the treatment varies with the degree of heat suitable to the case at hand and with the current strength employed. The aim should be to obtain a true physiological response and no more. Too much current, too long an application may be dangerous; or, if not, may nullify our efforts. Carefully watch the temporal blood vessels and the skin of the head and face. A slight swelling of the former and a slight flush of the skin indicates a physiological response. This is satisfactory. Carried beyond this point, vertigo, nausea, and faintness may be induced. The temperature of the surrounding air has much to do with the rapidity with which results are obtained. On a cold day, when the patient is chilled, it will take longer than on a hot, humid day.

As a general rule, it is best to employ the lower

current strength with a very moderate spark-gap, about 2 to 3 gaps on the de Kraft spark gap, for 20 minutes. Sometimes only a single gap is tolerable. Also, much depends on the size of the gap, and whether the spark gap is constructed of silver or tungsten disks. The thickness of the mica between sections of the de Kraft spark gap determines largely the voltage employed. In other words, it determines the length of the spark in the "A" circuit, and of the length of the oscillations in the "B" circuit—that is the patient's circuit. The silver disks give a slightly higher voltage than those of tungsten.

As we approach the subject of the application of galvanisation of the brain, we find that a good deal of work has been done in this line. Loewenfeld (*Centralblatt der medicinischen Wissenschaft*, 1881, page 132) reports some experiments on rabbits. After laying bare the membranes of the brain by trephining, he applied the galvanic current to the brain. He found that when the cathode was placed over the forehead and the anode over the neck, there occurred regularly a dilatation of the arteries of the meninges. When the arrangement of the electrodes was reversed, there occurred usually a constriction of the arteries. This observation tends to confirm the clinical observation made by many when treating purely functional conditions, such as neurasthenia and traumatic neurosis.

There was a period when much controversy arose as to the feasibility of causing the continuous current to overcome the resistance of the bony covering of the brain. As a matter of fact, it is quite easy to pass the current through the bones of the skull. If proof of this were needed, Leduc's experiments when a periodically interrupted galvanic current was passed through the brain of animals should remove all doubt. He succeeded in suppressing all cerebral functions in animals and in man by means of the above current. Dr. Louise Robinowitch gave a demonstration of Leduc's method before this society about 12 years ago.

It is hardly necessary to refer to the experiments of Fritsch and Hitzig. They showed that different convolutions of the brain are centers for the production of voluntary movements of muscles in different parts of the body. They removed the upper portion of the skull of a dog and found that, when certain portions of the anterior convolutions were stimulated by a weak galvanic current, movements were executed in certain groups of muscles on the opposite side of the body. These experiments show that there exist certain definite centers in the brain which regulate the movements of certain groups of muscles throughout the body.

If we pass a continuous current through the brain, laterally, from temple to temple, for instance, we find that even a very feeble current will produce dizziness, and there is a marked tendency to lean toward the positive pole. This dizziness varies with the current strength. When, however, we place one electrode in the median line over the forehead and the other over the occiput; or one over the top of the head, in the middle line, and the other over the epigastrium and then carefully and gradually turn on the galvanic current, no such effect is produced. This is of importance in our therapeutic applications.

Bartholow was among the first to suggest the utility of the continuous current in the conditions of the brain described. R. Remak, Erb, Bendict von Ziemssen, and others have shown that it is possible to obtain notable therapeutic results from cerebral galvanisation. Beard and Rockwell described a method which they called central galvanisation and found notable nutritional effects to follow its use.

The method, to be recommended as the one best suited for the treatment of the cerebral conditions herein described, is as follows:—An electrode, size 2 x 4 in., or 2¼ x 4½ in., is carefully moulded to conform to the contour of the forehead. Under this electrode, in direct contact with the forehead, are placed 30 layers of surgical gauze, saturated in salt solution. The gauze pad must be slightly larger than the metal electrode, so that none of the bare metal touches the skin. The electrode is then securely fastened over the gauze by means of a roller bandage; or, if this is not done, provision must be made to have the patient hold it securely in position. The patient lies on a suitable table while the current is administered. A second electrode, similar in size and construction to the one just described, is placed over the neck just below the line of the hair of the head. This electrode is held securely in position by a pillow suitably placed. Great care must be taken that the conducting wires are securely fastened to the electrodes and to the wall-plate or battery.

A word now as to the source of the current. A current obtained from a battery has proven the safest and most suitable for galvanisation of the brain. A well constructed wall-plate may also be used. This should have a voltmeter as well as a milliamperemeter; a means of regulating both voltage and amperage.

It is always advisable to begin with a very mild current; about 1 to 3 milliamperes and 5 volts. The reason for this is shown. At the beginning of the séance, uncomfortable sensations, even syncope, are likely to occur if the current is turned on too quickly. If the application is made with the patient in an upright position, an alarming faintness may ensue. Therefore, if the patient must sit up during the treatment, have him seated on a chair whose back can be quickly lowered, like the static treatment chair. As the treatment progresses and the current gradually finds its way more deeply, the current strength may be gradually increased to 10, then 20, and even 30 milliamperes.

As a general thing, the positive electrode is placed over the neck and the negative over the forehead. The usual time consumed for a thorough application is 30 minutes. When we wish to stop the treatment, it is *very* necessary to turn off the current very slowly and with great care. A sudden stoppage might cause unnecessary discomfort.

After such treatment, the patient's head should feel lighter. A few repetitions should result in a sense of general well-being, increased muscular

strength and improved mental processes. The results are better and more rapid, if this galvanisation is preceded by diathermisation of the brain, which seems to prepare the way for the galvanic current by reason of the improvement in the circulation. The better, more even, distribution of arterial and venous blood, as well as improvement in lymphatic flow favors a more even distribution of the galvanic current.

If a recent hemorrhage has occurred anywhere within the central nervous system, it would be manifestly unwise to begin the use of diathermy or of the galvanic current at once. Time should be allowed for the resulting acute process to subside. Paralyzed extremities frequently show disturbance of the circulation, such as edema, lowered temperature and cyanosis. They also show an imbalance of the musculature. This results from the fact that while certain muscle groups are paralyzed, their antagonists retain their normal function.

It has been found that the methods here advocated are sufficient, as a rule, to remove these after effects when combined with exercises of a re-educative nature. Under this heading may be classed such measures as static sparks, sinusoidal currents, etc.

Some recent experiments conducted by R. Ogden, and L. Franz (*Physiology* Vol. 1, No. 1) seem to show these results:

1. Animals in whom hemiplegia is artificially produced do not recover motor control if left to their own devices.

2. Recovery is rapid when treatment by muscle stimulation and nerve vibration is directed to the parts involved; and when special exercises to provoke the animal to move the paralyzed parts are given. When efforts are directed to the special nerves and muscles, and when the sound side of the animal is restrained so that climbing and feeding movements must be made by the use of paralyzed segments, improvement is rapid and recovery practically complete.

The conditions which we have earlier described have quite a different etiological base. The removal, as far as possible, of the central lesion, prepares the way for carrying out the suggestions contained in these animal experiments.

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HYPOTHYROIDISM, INFILTRATION, AND HYPERTENSION.

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THE functional aspects of high blood pressure are being given increasing attention in current medical literature, and it is very clear that many members of the profession are coming to the conclusion that there is a fundamental underlying cause of the usual syndrome associated with high blood pressure that is not connected with hardened arteries, impermeable kidneys, or changes in the heart itself.

Quite recently a prominent Dutch internist lends emphasis to this particular subject in the following words: "We have no grounds for the assumption that high blood pressure is always secondary to heart, kidney, or vascular disease. It has no more significance than the discovery of a murmur or hardening of a normally soft organ. Because we can measure the blood pressure we have paid too much attention to it and hidden our ignorance behind the term 'essential hypertension.' The rise in blood pressure is merely one element of a morbid series which has to be regarded as a whole."[1]

Another recent interesting communication on the subject was made by Dr. L. F. Barker of Johns Hopkins at the last meeting of the Ohio State Medical Association.[2] He calls attention to the fact that high blood pressure appears to depend chiefly upon a narrowing of the lumina of the arterioles in the precapillary areas. It is believed to be, at first, functional and caused by hypertonus of the arterial musculature, but later on it assumes a partly organic character, the result of changes in the arterial walls. Barker believes that the different types of chronic arterial hypertension probably represent different stages in the development of the same fundamental process which may advance with variable rapidity and with variable associated involvement of cardiovascular, renal, cerebral, and other structures in different cases. This author then goes on to call attention to the general changes which are fundamentally responsible for the condition of high blood pressure, and he states that in order to prevent the development of this pathologic process underlying high blood pressure "one should first get himself well-born without constitutional inferiorities" and then should avoid intoxications and infections and live a well-balanced life, so ordering his activities that he can satisfy his physical, economic, social, educational, esthetic, and ethical desires in a well-balanced manner.

For many years it has been considered fundamental that toxemias favored high blood pressure and that they did so first by causing an over-activity of the circulatory system resulting in changes in the heart and blood vessels. Also that the toxemia irritated the actual glomerular tissue of the kidneys and, therefore, made changes which tended toward what the French have called "renal impermeability." Later our ideas have veered a little, and it is now considered possible and probable that irritation of the blood pressure raising mechanism of the adrenal glands, by means of the poisons produced in the alimentary canal and elsewhere, results in an increased activity of this pressor mechanism and in this manner produces a functional high blood pressure.

Be this as it may, there is no doubt that high blood pressure is merely a single manifestation of a serious comprehensive underlying change in the chemistry of the body, and it is proposed in this short paper to direct attention to one factor which has not been given the attention that its importance deserves and to connect it with the etiology as well as the treatment of functional or essential hypertension.

There have been a number of papers in the literature of the last five years calling attention to clinical experiences with the use of thyroid extract and other organ extracts as a means of reducing high blood pressure. A number of reports, includ-

ing that of Cummings of Los Angeles[3] and Bandler of New York,[4] speak highly of thyroid therapy as a means of modifying an excessive arterial tension. As far back as twenty years ago, before sphygmomanometry was developed, Eugene Hertoghe of Antwerp[5] called attention to the changes wrought upon the pulse rate and tension by the toxemia and disturbed metabolism of thyroid insufficiency, as well as from the opposite manifestation, or thyrotoxicosis. This intelligent pioneer student of thyroid function has emphasized the importance of the condition known as *infiltration* which accompanies various forms of thyroid insufficiency. Hertoghe's so-called "myxédème fruste"—a minor form of real myxedema — is always associated with changes in the nature of cellular infiltration. Hertoghe believes that the thyroid never can be functionally inefficient without there ensuing immediately an intoxication due to the deficient function in the cells themselves which is maintained by the hormonic "setting in motion" of the cellular chemical processes. They are unable to oxidize their foods and wastes and there follows an accumulation of poisonous substances which causes serious difficulty. In this connection it may be mentioned that Slosse of Brussels[6] credits the thyroid hormones with a "deaminizing" influence and he states that the deaminizing hormone of the thyroid is responsible for the oxidization of the precursors of the nitrogenous wastes of the body and there is good evidence to prove this physiologically and clinically.

At all events, this accumulation of cellular wastes brings about the condition which Hertoghe has called "thyroid infiltration" on well-known physical principles. We will presume that a given cell located in any part of the body—for the thyroid influence extends to every corner of the human organism—is not maintaining its normal chemical activities, that it is suffering with the condition which I have named "chemasthenia." The cellular activities are lessened and, as a result of this, the wastes of that cell are not prepared for elimination and remain behind. As a result of this there ensues an actual swelling of the cell due to the effort on the part of the body to maintain a normal osmotic tension. In other words, this increased osmotic tension in the cell draws fluids from other parts of the body, including the blood, lymph, and tissue juices, which evens up this tension and, therefore, extends the confines of the cell wall. We are in the habit of expecting an infiltration of the skin in myxedema, the very name of this condition indicates that there is an edema of the skin, and this edema or process of swelling or infiltration, as it is preferably called, is not limited by any means to the superficial tissues of the body.

It will be recalled that in Barker's paper,[2] from which a quotation already has been made, he believes that high blood pressure appears to depend chiefly on a narrowing of the lumina of the arterioles *in the precapillary areas*. What is the chief reason for the narrowing of these lumina? May it not be that the infiltrated cells which surround these prearteriolar canals or vessels are pressing upon the channels through which the blood usually flows, thereby reducing the circulation and also increasing the activity of the heart muscle which is necessary to force the blood through these finest capillary meshes? In this connection we recall very well that another of the commonest symptoms of hypothyroidism is a tendency to cold hands and feet. The circulation of the remoter parts of the body is very much below par, and this I believe to be due to exactly the same cause as the infiltration that already has been mentioned.

I think that we have reasoned out a relation between the infiltration of thyroid insufficiency and a decreasing of the size of the precapillary vessels and this I believe to be an important mechanical factor in the cause of hypertension. It is granted that the other toxic influences which would naturally accompany so serious a change in the general cellular chemistry must exert their influence also, and it is presumed that they do so through their effects upon the adrenal mechanism and its control of the circulatory muscular tone, including that of the heart itself. If we are successful in our thyroid therapy of the minor forms of hypothyroidism we will notice quite a change in this infiltration and its results. Many symptoms of a semimechanical nature are reduced. The cells are enabled to throw off a good deal of the effete material and there is a consequent increased chemistry as indicated by the urinary findings and a loss in weight due to the removal of much of the infiltrated effete material. This being the case there is a change in the nutrition of these infiltrated areas, and the skin (and other tissues) assumes a more healthy appearance; the work of the various organs, which heretofore have been puffy, soggy, and infiltrated, is more nearly normal; the circulation is increased and this mechanical factor, which I contend is a part of the cause of the high blood pressure, automatically is reduced.

In other words, thyroid therapy in cases of hypothyroidism with high blood pressure not merely removes a part of the accumulated toxema but at the same time favors a change in this mechanical obstruction to the circulation in these so-called "precapillary areas."

Many remarkable clinical experiences with both thyroid therapy and various pluriglandular formulas in the control of functional high blood pressure[7] has emphasized in my own mind a very important series of therapeutic possibilities in the treatment of this condition. It is first necessary to establish the fact that hypothyroidism is present and prominent as, for example, with my thyroid function test,[8] and then we have a most rational and scientific means of treating this particular condition; and if in conjunction with other benefits there is a change for the better in the high blood pressure then we are pleased. It may be said in this instance that another useful means of modifying functional high blood pressure due to toxemic irritation of the adrenals is the use of the antagonistic function of the pancreas which is known to balance adrenal medullary activity. We have had a good deal of experience in the use of combinations of thyroid with pancreas substance (not pancreatin) and many times the sphygmomanometer shows encouraging changes in the systolic pressure.

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THE CLINICAL SIGNIFICANCE AND THERAPEUTIC INDICATIONS OF ABNORMAL BLOOD PRESSURE.*

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THERE is no problem with which the practitioner is confronted that is more perplexing from the standpoint of both diagnosis and treatment than abnormal blood pressure.

Abnormal blood pressure occurs in a great many diseases and conditions—various infections, surgical conditions, etc., as well as in cardiovascular and renal disease. But it is manifestly impossible to discuss the entire problem in a short paper. Nor is the blood pressure the vital problem in these conditions. It is in patients who come to the physician suffering from numerous complaints such as headache, indefinite pains, sleeplessness, gastric symptoms, etc., none of which suggest the possible etiology of the symptoms, and the discovery of an abnormally high or an abnormally low blood pressure as the most striking, indeed often the only, objective finding, that the abnormal blood pressure presents itself as the vital problem. The persistence of this blood pressure in conjunction with the rather indefinite symptoms presents problems in diagnosis, prognosis, and treatment to the conscientious physician which are, to say the least, most puzzling. The patient, on the other hand, now suddenly become aware of the abnormal blood pressure, unconsciously calls to his mental aid the accumulated medical gossip of his friends and the abandoned lore of the profession in a vain attempt to obtain a prognosis as to his health and even as to life. He now looks to his physician with keen anxiety for a favorable answer to the many queries that he has conjured before him and for means to a rapid return to a normal sphygmomanometric status.

I shall therefore discuss the clinical significance of abnormal blood pressure only when it occurs as the important objective phenomenon in the light of the problems it presents to the physician and to the patient. To the physician the problems to be solved are: First, what is the significance of the abnormal blood pressure; secondly, how does it influence the prognosis as to health and life; and, thirdly, how can it be affected therapeutically? In the first place, before we can answer these questions, what may be considered the average blood pressure? For the normal varies within fairly broad limits. The blood pressure varies with the sex and age of the individual, the weight and height, the time of day, the posture, the emotional state, and probably also with numerous other factors. However, we may regard as normal a blood pressure of 120 systolic for an individual of about the age of 21 with an increase of 1 mm. of mercury for every two years increase in age. The diastolic pressure is normally about three-fourths of the systolic pressure, while the pulse pressure is usually one-fourth of the systolic pressure. This pressure is considered normal for an individual of average height, usually about 5 to 5½ feet. Variations according to height often amount to as much as 20 mm. of mercury for a minimum adult height of 3½ feet. A similar variation for the weight occurs with an increase of about 20 mm. of mercury for every 100 pounds of weight for the size and age of the individual. Emotional conditions, spastic states of various organs, posture, and other factors all play a rôle in determining the blood pressure, but these factors affect principally the systolic pressure, and the mean variations are usually anywhere from 10 to 15 mm. of mercury. However, it is not unusual in practice to see temporary variations amounting to as much as 40 mm. of mercury which do not indicate any pathology and which subsequently disappear. I have seen this condition frequently in definite endocrine syndromes. The diastolic pressure is more or less constant and not so subject to evanescent variations. Consequently it is of much greater clinical significance than the systolic pressure. We may therefore consider the blood pressure abnormal when there is a persistent increase or decrease of more than 15 mm. of mercury for the age, height, and weight of the individual.

The abnormal blood pressure is manifested by being either persistently high or persistently low. High blood pressure is much more common than low blood pressure. We must bear in mind that the high blood pressure is not a disease but merely a symptom. And its value as a symptom is dependent upon the primary or associated cause, of which the blood pressure is the important objective manifestation. Practically, the significance of high blood pressure in any patient is dependent upon three factors: (1) Whether there is evidence of renal disease; (2) whether there is evidence of arterial disease, and (3) whether the high blood pressure is the essential objective phenomenon. I do not believe it is always possible to differentiate or determine the associated or primary factors. Frequently the clinical picture is a composite one in which the essential or important factor is the objective hypertension in the course of which the associated phenomena occur. I am not including in this discussion the blood pressure changes in frank valvular heart lesions and in the course of infections, for in these conditions the primary lesion is so evident and the blood pressure changes are merely temporary indications of the functional capacity of the circulation or of the temporary reaction to a toxin, bacterial or otherwise, and it is these primary conditions that are the real problems.

Hypertension in Nephritis.—The persistence of high blood pressure readings with evidence in the

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urine of renal changes is one of the most frequent occurrences and presents many questions of diagnostic and prognostic import. The presence of albumin and casts in the urine in addition to the high blood pressure does not necessarily indicate a renal lesion. But when these findings occur in addition to the clinical syndrome of chronic nephritis with failure to concentrate the urine in the early morning specimens and evidence of functional disability as indicated by a low phenolphthalein output, and deficient elimination as shown by the Mosenthal test-diet and possibly by nitrogen retention in the blood, we then have definite evidence of renal disease with poorly functionating kidneys. But what relation does the high blood pressure in these cases bear to the definite renal picture? What is its rôle in the cause of the disease? What relation does it bear to the disturbed function of the kidney? And, lastly, what bearing has it upon the prognosis, and what guide does it offer in treatment? These are the perplexing questions that confront the physician. In attempting to solve these problems in specific carefully studied cases one is able to develop tenable hypotheses and very useful facts. In regard to the relation of the high blood pressure to the renal lesion, it is, of course, very difficult to determine which is the cause and which the effect. In many cases no definite etiological factor can be determined in the history; and even where such a definite factor exists it requires careful study to establish it as the cause of the renal lesion. However, the more we study cases of chronic nephritis very carefully the more do we come to feel that hypertension plays more of a rôle in the cause of the lesion than we had hitherto supposed. The work of Sir Clifford Allbutt and others has focused our attention more and more on the so-called essential hypertension or hyperpiesia. If many of these cases of so-called hypertension are watched carefully for a number of years it is found that they gradually develop vascular and often definite renal lesions with definite functional disability. Moreover, when a definite chronic nephritis is present, I believe the essential factor in the determination of functional disturbances of the kidney is rather the state of the renal-vascular system and the degree of hypertension. Careful study of cases of chronic nephritis with the aid of our modern functional tests and blood chemistry seems to show that there is rather a definite relationship between the degree of blood and pulse pressure and the functional ability of the kidney as indicated by the functional tests and the nitrogen retention in the blood. The higher the blood pressure and the lower the pulse pressure the greater is the functional disability of the kidney and the greater is the nitrogen retention. Furthermore, some of the highest figures of nitrogen retention and the greatest degree of functional disability may be seen in passive congestion of the kidneys in the course of a myocardial insufficiency which clears up with improvement of the primary cardiac lesion. Consequently, it is becoming more and more apparent that the evidence of the functional disability of the kidney, as shown by the functional tests and blood chemistry tests, indicates not so much the functional ability of the kidney, but rather a disturbance in the integrity of the renal-vascular system. On the other hand, the comparatively normal function of the kidney in cases of chronic nephrosis or so-called parenchymatous nephritis where the blood pressure is not increased certainly helps to corroborate this view. For in these cases the injury to the kidney is certainly extensive but the vascular system of the kidney is comparatively uninjured, and functionally such kidneys do very well. I have under observation now a young man of 28 who has had edema of the lower extremities and urine loaded with albumin for over two years. He passes enormous quantities of urine. His blood pressure is normal. All the functional tests of the kidneys show no evidence of disturbance, nor do repeated blood examinations show any nitrogen retention nor any change in the relation of the blood proteins. A careful physical examination on numerous occasions gave no evidence of arteriosclerosis. In spite of the fact that the cause of albuminuria in nephritis is unknown, we do know at least that it indicates a renal lesion. Here is a young man then in whom there is evidence of severe injury to the kidneys but who has a comparatively normal vascular system. He shows no functional disability of the kidneys whatever. Now if there is a relationship between the high blood pressure and the functional disability of the kidney it seems to me the persistent hypertension is of considerable ominous prognostic import in chronic nephritis; and consequently the high blood pressure ranks equally in importance with our modern measurable functional tests.

Since hypertension plays such an important rôle in chronic nephritis, the reduction of the blood pressure should and does produce a favorable therapeutic effect in chronic nephritis when the blood pressure is amenable to treatment. However, there is a wide gap between the problem itself and its solution, for the cause of hypertension in chronic nephritis has not been definitely established. While it is possible to modify the blood pressure experimentally by modifying the vascular tree, it is not so easy to do this in practical therapeutics. Personally I have not seen very great benefit from the use of vasodilators such as the nitrites, because spasm of the arterioles is certainly not the cause of hypertension in nephritis. The causative factors are probably definite chemical persistent pressor substances. I have obtained the best results by the use of digitalis and saline purgatives and the limitation of the fluid intake. Although benzyl benzoate has been strongly advocated recently for the lowering of blood pressure the results prove to be delightfully misleading. There is no question that in a number of cases in which we tried it the blood pressure was appreciably reduced, the urinary output was increased, and the nitrogen retention was diminished, and we became highly enthusiastic over the benzyl benzoate. While the cases were benefited sphygmomanometrically to an extent commensurate with normal variations accompanied by physical improvement, this was due to the postural changes more than to anything else; as all the symptoms and the high blood pressure began to return when the patient was allowed to be up.

High Blood Pressure and Arteriosclerosis.—The fact that the increase in peripheral resistance as the result of spasm of the arterioles causes a rise in blood pressure is responsible for the erroneous idea

that arteriosclerosis is invariably associated with high blood pressure. As a rule arteriosclerosis does not cause high blood pressure. The recognition of arteriosclerotic changes is dependent upon finding actual thickness of the palpable vessels and the resultant tortuous appearance of the visible ones rather than by the reading of the sphygmomanometer. We have no way of recognizing the thickness of the cerebral or visceral vessels. This we can only surmise by the evidence of cerebral and other visceral symptoms occurring when definite sclerosis of the visible and palpable vessels is present.

Clinically we can recognize two types of arteriosclerosis; namely, arteriosclerosis with hypertension and arteriosclerosis without hypertension. When hypertension is associated with arteriosclerosis it is important to determine which is the primary condition. Clinically we can differentiate two types of hypertension in arteriosclerosis. First, hypertension which is persistent and precedes the arterial changes. In all probability this is the case in the majority of instances that come under observation after the vascular changes have already occurred. We can only recognize these cases if they have been observed for years, but practically we seldom have such an opportunity. The arterial thickening in these cases is merely the compensatory effort to protect the vascular system against the strain of hypertension. The sclerosis of the vessels is soon followed by changes in the kidneys and other viscera. We therefore lay more stress upon the renal changes because they are readily recognized and measurable. Secondly, the cases in which hypertension occurs in the course of a vascular sclerosis. Here the associated clinical phenomena may indicate one of two conditions. In the first place hypertension may occur in association with vascular and cerebral crises, such as temporary aphasia, paresis of an arm or fingers, numbness, neuralgic pains, etc. The frequency, the extent, and even the occurrence of these crises determine the prognosis much more than the hypertension itself, since the crises are the danger signals of impending serious vascular calamities. On the other hand the hypertension may be persistent and be associated with albuminuria and casts. This is merely the indication of an early renal involvement. A high blood pressure is especially of great prognostic value in arteriosclerosis. The cases in which the hypertension is associated with vascular crises offer the most unfavorable prognosis, and the severity, frequency, and extent of these crises are always of serious omen. In the cases associated with renal changes the prognosis is determined by the severity of the renal changes and the functional ability of the kidney. Of the two types the arteriosclerosis with crises lends itself more readily to treatment. It is in these cases that the nitrites and other vasodilators produce the best results unless the atheromatous changes in the vessels are too extensive.

Essential Hypertension.—We are indebted to Sir Clifford Allbutt for focusing the attention of the profession on hypertension associated only with hypertrophy of the left heart but without vascular and renal changes. This type he called hyperpiesia or essential hypertension. The patients are comparatively young individuals and suffer from numerous rather indefinite symptoms which may be condensed into the colloquialism, "lack of pep," frequently associated with the usual gamut of neurasthenic symptoms. Indeed, many of these patients are mistaken for neurasthenics, and the older literature is crowded with remarks on the high blood pressure of neurasthenia, but careful study of this so-called neurasthenic high blood pressure proves that it belongs to Allbutt's group of hyperpiesia. Although Allbutt set them apart from the group of cases of arterial and vascular disease, subsequent and prolonged observation of these individuals over a period of years seems to indicate that this is merely the early stage of a definite vascular syndrome, the latest manifestations of which are the sclerosis of the vessels and finally definite renal changes. The condition occurs particularly in young men who take life seriously and work intensively. The sudden recognition of the high blood pressure is a sinister warning that they are traveling the path lined by vascular difficulties unless early aid is instituted and a rational modification of the individual's life begun.

Treatment, consisting principally of limitation of activities, of limitation and regulation of the diet, particularly the elimination of large quantities of food, and the occasional administration of vasodilators, usually produces good results. But we must be guarded in our prognosis as this depends largely upon the time when the patient comes under observation. It is unfavorable when more or less extensive cardiac and vascular changes have already developed.

Climacteric Hypertension.—I wish also to call attention to the group of cases of hypertension which is being more recognized in recent years. This is the form of hypertension occurring in women at the time of the menopause who come to the physician complaining of the numerous symptoms which are prevalent at this time. These patients usually complain of gastric and nervous symptoms, headache, palpitation of the heart, dyspnea, weakness, vertigo, etc. Careful physical examination reveals as the outstanding objective symptom a high blood pressure running as high as 200, 250, and even 300 systolic. At times there is found a slight enlargement of the heart, but in the majority of instances this is absent. These women are usually stout and of rather large stature. The discovery of the hypertension is a source of distress and worry to them and they imagine that they are in immediate danger of all the fatalities usually associated with hypertension and vascular disease. It is quite a problem even to the physician to explain the phenomena and to offer a prognosis. The fact that hypertension occurs coincident with the onset of the menopause indicates that the same factors are probably responsible for the high blood pressure and for the menopause itself. In other words the high blood pressure is merely the result of deficiency of the gonadal hormones. I shall not delve into endocrine phantasies to explain the condition, but it is apparently a symptom which evidently results from the effort on the part of the endocrine system to adjust itself to the new state of affairs incident to the menopause, and when the adjustment is complete the pressure is again lowered. The prognosis in the majority of these cases is good and they respond readily to treatment consisting of endocrine substances such as corpus luteum or ovarian ex-

tract, and particularly to the assurance that this hypertension does not indicate the expected vascular fatalities. However, careful and repeated physical examinations must be carried out to separate this type from hypertension with associated vascular or renal disease. The following is an illustrative case:

Mrs. H. D. consulted me about five months ago on account of severe pain on top of the head, pains in the back of the neck and a feeling of general depression following the onset of the menopause about five months before that. Examination revealed only a very large woman in whom the most important objective symptom was a systolic blood pressure of 205 and a diastolic pressure of 100. Repeated urinary examinations were absolutely negative and careful functional tests of the kidney were negative. Careful chemical examination of the blood showed no evidence of nitrogen retention. Repeated examinations during this time revealed only the same finding, namely hypertension without evidence of vascular changes. Consequently I concluded that the patient was suffering from climacteric hypertension. She responded, after assurance that the hypertension was not a bad omen, to regulation of the diet, limitation of the quantity of food, and the administration of corpus luteum for six or seven weeks. At the last observation her blood pressure was systolic 155, and diastolic 110.

The important problem in hypertension is of course always the etiology and I shall not discuss the infections, toxins, etc., that I believe probably do play a rôle in its causation. In each individual case it is very difficult to find these factors and, secondly, to establish their causative rôle. What is characteristic, however, is that the majority of individuals suffering from high blood pressure belong to a more or less characteristic type, although they do not all belong to the same type. They are usually serious individuals, intensive workers, tremendously energetic, and living well but not wisely, and usually attaining success at the expense of their vascular system. They are inclined to be obese, usually of rather tall stature, and take life seriously indeed; in other words living a life of tension which produces hypertension. When vascular changes are not too extensive, the gradual relaxation of the tension is rewarded by continued improvement in health and a relative reduction in the blood pressure.

Hypotension.—Abnormally low blood pressure is a comparatively rare condition as an entity. Of course low blood pressures occur in myocardial insufficiency, in anemia, tuberculosis, hemorrhage, acute infections, etc., but in these conditions it is a symptom of a well-defined and easily recognized cause. But I am considering hypotension as an entity with the absence of other definite etiological factors. Clinically several types may be recognized: (1) Hypotension in individuals who have always had relatively low systolic and relatively low diastolic pressure. Careful study of many of these patients reveals that they show characteristic endocrine stigmata, especially pituitary markings and acromegalic characteristics or characteristics which usually go with Froehlich's syndrome. The condition is probably some complex endocrine manifestation. (2) Cases suffering from fatiguability, headache, dizziness, with evidence of Sergent's white line; in other words, probably a condition of adrenal insufficiency. (3) A group of cases occurring in women in which the hypotension occurs suddenly, or gradually ushering in the menopause in which the low blood pressure is an associated phenomenon.

Low blood pressure as a rule is not of sinister prognostic import. Therapeutic results are difficult to obtain although numerous methods of treatment are tried. The most rational method consists in increasing the fluid intake and administering pituitary extract, thyroid extract, or ergotoxin. Usually, however, not any great benefit is obtained from any form of treatment. But one need not be discouraged by this, as few symptoms result from hypotension, and besides, hypotension in the majority of these cases is merely a long-standing stigma which is part of the individual and does not affect his health, his life, and his pursuit of happiness.

Conclusion.—I have endeavored in this brief paper to indicate the significance of abnormal blood pressure. When the blood pressure varies from the average, it is the hypertension that is mostly of clinical importance. I have attempted to emphasize its importance in those conditions in which the blood pressure itself is the dominating objective feature. Under those conditions its importance lies principally in its vital prognostic value in association with definite evidence of injury to the vascular system or to the kidneys. Without this associated evidence it is merely the pressure gauge of a life of tension except in those instances in which it records the effort on the part of the endocrine system to adjust itself to temporary discord. When not associated with vascular or renal phenomena and occurring in young individuals it is probable that the manifestation of hyperpiesia or of hypertension is largely produced by intensive living which in the majority of instances is followed by vascular and visceral changes, the most measurable of which are in the kidney.

Hypotension is merely an individual marking of an endocrine disturbance and may be regarded as an endocrine stigma.

Hypertension is amenable to treatment only in the absence of vascular or renal changes, and the best results are obtained by relaxation in everything, in work, diet, pleasures, etc. Medicinal substances are notoriously of limited value, but this does not mean that the condition is not amenable to treatment, for physical means, mental relaxation, outdoor exercise and regulation of the habits and diet afford more therapeutic aid than chemical substances except in cases of temporary vascular crises where the vasodilators are beneficial.

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ERYTHEMA NODOSUM: ITS TREATMENT BY STREPTOCOCCUS VACCINE.

REPORT OF A CASE.

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Erythema Nodosum, as a clinical entity, has been but meagrely described in our standard textbooks on medicine and therapeutics. Osler mentions it only in connection with cerebrospinal fever and chorea. Forchheimer speaks of it passingly as occurring at times in association with gonococcemia. Jackson, in his "Diseases of the Skin," does make mention of it, referring to rheumatism, syphilis, systemic poisoning by infectious disease or autoinfection, as showing some causal relation to its

etiology, but without advancing anything very definite.

As far back as 1904 Abt[1] showed that a more frequent complication than rheumatism is endocarditis in association with erythema nodosum. The heart lesions, he says, may be considered infectious in nature, depending on the same cause which produced the erythema nodosum. He also states that Finger, who made a special investigation of the disease, came to the conclusion that it was the expression of a septic process. He found from histological studies that, aside from localized edema, round cell infiltration occurred in the centers and streptococci were present in the inflammatory tissue.

Hildebrandt,[2] in 1907, regarded it as quite possible, if not indeed proven, that one of the commonest forms of erythema nodosum, and, as he regarded it, indistinguishable from any other form, may be caused by the tubercle bacillus, yet an erythema nodosum need not necessarily be associated with tuberculosis.

The etiology of erythema nodosum has been brought forcibly to our notice by the work of Rosenow.[3] He definitely describes the pathology of the condition, with proof of having actually isolated from the nodules, a polymorphous diphtheroid closely resembling, in some stages, the streptococcus group, which organism he regards as the causative agent. Since then Stokes[4] has given an excellent description of the appearance of the lesions and a classification according to etiology of this rather uncommon condition.

According to Stokes, erythema nodosum belongs to the class of purpuræ. He divides erythema nodosum into two groups according to their etiology: (1) those due to tuberculosis; (2) those due to a streptococcus infection. Each of these has a characteristic appearance permitting ready differentiation.

The streptococcal nodes are larger, more edematous and brawny, more tense and hemorrhaghic, and may reach the size of a small palm. The tubercular nodes are smaller with a less marked peripheral reaction, the hemorrhaghic changes are less marked. In their place may be a purplish lividity, but usually only a well-developed erythema.

In the streptococcus type there is greater involvement of superficial tissues, the distribution is more apt to be over the front of the lower extremities, especially below the knees and over the front of the thigh, also around the large joints. The tubercular nodules are more circumscribed and deeper, they may appear on either front or back of the leg, but tend to localize posteriorly. They may appear in smaller numbers or in crops or groups, or one or two on the upper extremities or sometimes on the feet.

The streptococcus nodes show more marked color changes. The brown element is especially marked. They behave typically like a bruise. The tubercular node is pale at the onset, progresses from pink to livid purple or bluish tinge. If it persists, it remains bluish, softens, and may show a bullous surface or may undergo necrotic sloughing. The nodule may present only a mild erythema which subsides, leaving no color changes, or only a faint yellow stain, or there may be colorless ones among the erythematous nodes, suggesting Wende's nodular tuberculosis of the hypoderm.

A case came under my observation about nine months ago which probably belongs to the streptococcus group.

Case History.—The patient, Miss J., 23 years of age, bookkeeper, gave a negative family history. Previous to her present illness she had always been well except for various dental troubles. She had suffered some years previously from an apical abscess on one of her incisor teeth. This had been treated, after a great deal of procrastination, very conservatively, an attempt being made to cure the abscess without extracting the tooth. The crown was finally amputated, a porcelain crown being inserted by means of a pivot, the original root being left *in situ*. Many other caries were present, but all had received the attention of a dentist, most of the teeth being filled. She also had been subject to frequent attacks of rhinitis, probably accounted for by a deviated septum.

Several years previous to coming under my observation, Miss J. developed nodules under the skin over both tibiæ, and around both knee joints. These nodules came on rather suddenly without any referable cause. They varied in size from a ten-cent piece to an area 2½ x 5 inches in diameter. They were extremely tender and painful, red, hot, indurated and brawny, and produced an edema of the surrounding tissues which was tender and pitted on pressure. She went to her physician, who treated the lesions locally with what was evidently some form of ichthyol ointment and internally with salicylates. This afforded her very little relief, but after several months the lesions for the most part disappeared, and in disappearing, left black and blue discolorations, behaving exactly like so many bruises. Since then, until a few months ago, she would develop, on and off, the same nodules, which would alternately become worse and then improve, but never entirely disappear.

About nine months ago this patient came to me with her right leg swollen from knee to ankle. This swelling was due to the confluence of several of these large nodules with surrounding edema. Several small nodules also were present around the left knee. This was the worst attack she had ever had and she now experienced difficulty in walking because of the pain, and could not wear high shoes.

In consultation with Dr. Louis G. Shapiro of Paterson, N. J., it was decided that she was suffering from erythema nodosum, from its appearance probably of streptococcic origin. Physical examination was otherwise entirely negative. There was no evidence of tuberculosis. The tonsils and sinuses were negative, and aside from the teeth, all possible foci of infection were excluded. The patient had just had a lot of dental work completed, and although dental radiographs were advised, they were not taken.

Treatment.—In view of the failure of the customary drug treatment, it was decided to put the patient on vaccine treatment. For this, an ordinary stock vaccine containing 800 million streptococci and 400 million pneumococci in each cubic centimeter was used. On November 1, 1919, I began with an injection of .2 c.c. of this vaccine. The next day Miss J. developed a swelling of her arm at the point of injection, but no other symptoms. The swelling and pain in her arm became more marked during the next few days and then gradually disappeared. No effect was demonstrable on the leg lesions. November 15, 1919, another injection of .3 c.c. was given in the other arm. The local reaction was now much more pronounced, and following this, the nodules on her right leg became more discrete and the edge of the tibia could be felt superficially between the nodules, whereas previously, this entire area had been edematous. November 30. 1919, another injection of .3 c.c. was given. The results were about the same, the nodules showing but very slight improvement. December 15, 1919, .5 c.c. were injected. The next day Miss J.'s arm became very much swollen, very red and painful. The reaction was so intense that I thought I had produced a suppurative process by the injection. The leg lesions also became very much aggravated. No systemic symptoms were present, but the arm was

sufficiently painful to keep Miss J. from her work and to require wet dressings.

It was more than five weeks before the effects of this injection disappeared. At the end of that time, at the point of injection, a nodule exactly similar to those over the tibia was present, with some black and blue discoloration in the overlying skin. The leg lesions had quieted down somewhat and were now in just about the same condition as they had been previous to the .5 c.c. injection.

It was decided to begin the injections again, but this time I started on February 1, 1920, with an initial dose of .2 c.c. This resulted in slight soreness of the arm with the production of a nodule at the point of injection, but with marked improvement of the leg lesions, the nodules becoming smaller and less painful. February 15, 1920, .2 c.c. of vaccine were injected. Another nodule was produced at the point of injection, but all pain in the leg now disappeared and only two or three small discrete nodules remained, not tender except on deep pressure. March 1 and March 15, two more injections were given, each time, .2 c.c. Each injection produced a typical nodule at the point of injection, which, in time, disappeared.

The improvement after this was steady and continuous. The leg lesions have entirely disappeared, not a semblance of a nodule remaining. This is the first time in four years, *i.e.* since the onset of her illness, that she has been entirely free from these nodules. During the last four months she has received no injections and has shown no signs of recurrence. It is now over three months since the last nodule disappeared.

Comment.—Erythema nodosum is a chronic, low-grade infection secondary to a primary focus elsewhere. The primary focus is not always readily demonstrable. As a matter of fact, it may have disappeared at the time the patient appears for treatment. It is generally accepted that all possible foci of infection should be removed, but this is frequently a difficult task and necessitates the removal of teeth, tonsils, etc., without always accomplishing the desired result, much to the chagrin of the physician.

Consequently streptococcus vaccine was used with the hope for an efficacious action because of the chronicity and low grade of the infection.

The local hyper-reaction resulting from the treatment, and the production of nodules at the site of the injections, resembling the nodes over the tibiæ, suggest the specificity of the streptococcus for this lesion.

The vaccine treatment of erythema nodosum gave a gratifying result in this instance. It is recorded with the hope that it will be tried by others.

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Hemophilia in Women.—The existence of hemophilia in the females of bleeder families has always been denied. Bucure, to test the matter, collected notes of all the alleged female bleeders in literature, 202 in number. Of this number not one stood a careful investigation. Incoercible hemorrhage is not hemophilia, nor is the latter a mere synonym of the "hemorrhagic diathesis." In general, gynecological hemorrhages in women are of constitutional, local, or ovarian origin.—*Schweizerische medizinische Wochenschrift.*

Medicolegal Notes.

Insufficient Proof of Loss of Vision.—In a proceeding for workmen's compensation, where one report by physicians and specialists gave the loss of vision of the workman as 50 per cent. and another at 90 per cent., and there was no report as to whether the vision could be corrected by the use of glasses, an award for total loss was set aside and the matter remitted to the Industrial Commission for further consideration on account of the unsatisfactory state of the record.—Cortina v. Lathrop & Shea Co., 180 N. Y. Supp. 855.

Practice of Medicine Without License Not a Joint Offense.—The Springfield Court of Appeals, Missouri, in a proceeding against two defendants charged in the information with practising medicine without a license, held the information bad for the reason that the practice of medicine is not in and of itself a crime, and that it becomes a crime in Missouri only through a personal default of the defendant who does not secure a license from the state board of health. It is a strictly personal offense, and not one that could be a joint offense.—State v. Mitchell, (Mo.) 219 S. W. 977.

Reading Medical Text-Books on Cross-Examination.—In a personal injury action it was held that the trial court did not err in allowing the plaintiff's counsel to read extracts from a medical text-book in framing his questions on cross-examination of a physician, who had stated that the author was an eminent authority. The reason for permitting such reading on cross-examination is to test the learning of a witness who testifies as an expert. This could not be done if the questions were required to be such as to conceal the fact that they were based on such approved text-books. The fact that the jury always knows that counsel is reading from the text-book in asking his questions is held immaterial.—Ganz v. Metropolitan St. Ry. Co., Missouri Supreme Court, 220 S. W. 490.

Negligence in Setting Fracture Not Established.—In an action by a laborer against his employer, a lumber company, for alleged malpractice of a physician employed by the defendant company in treating the plaintiff's right leg, which was broken between the knee and the thigh, resulting in shortening it by 2½ inches, the plaintiff testified that the physician tied a straight board to the outside of the leg, tying it with string and bandages and that no weights were used. He was corroborated by four witnesses. Five physicians testified for the plaintiff that it was their opinion, as experts, according to the testimony they had heard, that the treatment accorded was unusual and inefficient; that a complete anesthetic, such as chloroform or ether, should have been used, and that the hypo injection of one-half grain of morphine and one-hundredth grain of hyocine administered was insufficient.

The physician denied the statements of these witnesses as to his treatment of the case. He testified that he had used the Linton splint of three boards. He was corroborated by the employer's carpenter, who made the splint for him. This witness testified that the physician drew the plan of the apparatus; that the witness constructed it in half an hour and that he assisted the doctor in adjusting it to the plaintiff's leg. Three physicians testified for the defendant that a complete anesthetic was not always necessary in treating a broken femur, that it largely depended on the patient's condition, and that the physician in attendance was the best judge of whether relaxation of the muscles had taken place or not. They were of the opinion that the administration of morphine and hyocine was sufficient in some cases. They also testified that the use of the Linton splint was general throughout the hospitals in connection with a broken femur, and that it was used without weights. The plaintiff's leg was measured, and, instead of being 2½ inches shorter than the left leg, it was found to be practically one inch shorter; and it further appeared from the evidence that with the most skillful treatment the shortening of an inch, or an inch and a half, might occur. It could not therefore be held that the shortening was due to the fault, neglect, or lack of skill of the physician in defendant's employment, and judgment for the defendant was affirmed.—Ayala v. King-Ryder Lumber Co., Louisiana Supreme Court, 83 So. 799.

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THE KIDNEY IN PULMONARY TUBERCULOSIS.

THE kidney is normal in the majority of cases of pulmonary tuberculosis, but the principal lesions that this organ may present are amyloid degeneration, chronic nephritis and acute morbid processes. During the evolution of pulmonary phthisis amyloid degeneration will first develop in the liver, spleen and suprarenal capsules before attacking the kidney, and it is not uncommon to find a massive amylosis of these viscera while only a few glomeruli and some arteriolæ of the pyramids will offer an amyloid infiltration. At this phase of the process, excepting in cases where some chronic renal lesion preexists, there usually is no clinical symptom of nephritis and only an albuminuria or a polyuria will occasionally direct the physician's attention to the kidney.

In these cases, a study of the urinary secretion will reveal a most peculiar syndrome; on the one hand there is a considerable drop in Ambard's coefficient, and on the other, in spite of a sufficient chloruria, the percentage of the chlorides of the serum is below the level of normal secretion. It is consequently to be supposed that these signs indicate an exaggeration of the renal power of concentration—a kind of hypersecretion. When a histological examination can be made in good conditions, a peculiar hypertrophy of the cells of the tubuli will be found, which seems to be the histologic evidence of hypersecretion.

From the practical standpoint, this urologic syndrome in a tuberculous subject should lead to the diagnosis of amyloid degeneration of the kidneys before the advent of extensive edema, massive albuminuria and incoercible diarrhea.

An ordinary Bright's disease may be met with in pulmonary tuberculosis and usually the inoculation of the urine or a bit of the renal tissue will remain negative, but a positive result is not in itself sufficient to regard a vulgar nephritis as due to the bacillus of tuberculosis. A syndrome of nephritis may depend upon certain tuberculous infiltrations of the kidney—real follicular nephritides. Finally, Koch's bacillus may provoke certain atypical lesions of the kidney, such as a secondary sclerous reaction invading the tubercle, or an interstitial infiltration which, from the onset, is unlike the classic follicle.

In the kidney the connective tissue reaction is much more common. The sclerosis forms local cicatrices which for a long time are infiltrated with round cells and in which the presence of the tubercle bacillus can be demonstrated. The remainder of the cortex, even the areas adjacent to the tuberculous lesion, remain intact for a long time. In those cases where the most extensive lesions have produced the syndrome of both chloride and nitrogenous retention, this special character of tuberculous sclerosis will also be found, and given these data, it is unlikely that the tubercle bacillus can be incriminated in ordinary Bright's disease of tuberculous patients.

Koch's bacillus can provoke acute generalized lesions of the kidney under peculiar circumstances, but two elements are necessary for their production. On the one hand, a subject in the state of allergy, sensibilized for certain doses of antigen by the infection of the first inoculation which he has received—such is the case of the phthisical subject; on the other, a massive reinoculation of Koch's bacilli by way of the blood and also, perhaps, by its soluble toxins, an acute reaction to tuberculin being manifest. Such a bacillemia suddenly occurring may cause death without hardly any clinical reaction and it alone can explain the generalized acute lesions of the kidney, lesions paradoxical in appearance found at autopsy of certain cases of chronic pulmonary tuberculoses. Some instances of terminal acute nephritides represent the same pathogenesis. A less intense allergic reaction likewise undoubtedly explains certain acute hemorrhagic nephritides of a temporary kind that clinically represent a true Koch's phenomenon in the kidney.

THE PROGNOSIS AND COMPLICATIONS OF DIABETES INSIPIDUS.

GENERALLY speaking, it cannot be said that diabetes insipidus is a serious affection, although it has been compared to the mellitus form as far as its gravity is concerned. Symptomatically, diabetes insipidus gives rise to little disturbance other than some lassitude and pain in the renal and epigastric regions. On account of their incessant thirst and desire to micturate these subjects develop insomnia and a peculiar hypochondriacal state. The body weight rarely decreases in any notable degree.

In some cases the disease develops suddenly, while in others its onset is slow and announced by premonitory urinary disturbances. The affection is frequently encountered shortly after birth, and most observers believe that this congenital polyuria is far more serious than that occurring in the adult. In the young the normal development is interfered with because the disease causes a considerable loss of nutritive material, and because of the loss of vitality that ensues the child is unable to offer serious resistance to the common diseases of early life. Roger believes that polyuric children rarely live more than from three to nine years; others maintain that a polyuria commencing in adult life is more serious than that of childhood. But it is

nevertheless certain that death is common in the young and infrequent in adults. Some cases, although few, have been recorded of complete recovery from diabetes insipidus in childhood, but the subsequent histories showing that the cure was permanent are lacking.

One of the characteristics of diabetes insipidus is to improve for a time and then later on return. After several paroxysms of acute polyuria the daily amount of urine may drop to two or three quarts, but upon the slightest occasion, usually for some unknown reason, an increase of the diuresis takes place. The alternatives of amelioration and recurrence are often related to hysterical polyuria.

There is one form of diabetes insipidus which usually is recovered from, namely, when it is of traumatic origin, if the injury is not severe, and in which case it may not last for more than two or three months. Otherwise, the affection will persist. The same is true of diabetes insipidus resulting from acute or chronic intoxications; it invariably recurs in such cases. The most tenacious forms of this disease occur with cerebral tumors or other brain lesions, but it is to be recalled that syphilitic polyuria will disappear by appropriate treatment. Briefly put, diabetes insipidus may be recovered from, but more frequently only a temporary amelioration results, to be followed after a variable length of time by renewed attacks of polyuria. The affection accompanies the patient to the threshold of old age, but definitively disappears at about the age of sixty.

Complications are less to be feared than in diabetes mellitus, and intercurrent affections sometimes seem even to have a favorable influence on the evolution of the polyuria syndrome. Thus, acute affections often cause a drop in the urine to the normal daily output, which lasts as long as the acute disease. As soon as apyrexia occurs the diuresis rapidly assumes its previous course. At other times the polyuria is not influenced by high temperatures like that of scarlet fever, smallpox, etc. Pulmonary phthisis, regardless of what some observers have said, is a rare complication of diabetes insipidus, but it must not be forgotten that a polyuria may be a symptom of tuberculous infection. Pulmonary tuberculosis as a cause of death in diabetes insipidus is quite exceptional, since Lanceraux met with it in only two cases out of a total of seventy cases of diabetes insipidus under his care. Occasionally, diabetes mellitus may complicate the insipid type, but in these circumstances the amount of sugar eliminated is small and does not darken the prognosis. Cases of alternating diabetes mellitus and insipidus have been seen in the same subject or in one or several generations.

What really aggravates the prognosis of the polyuria is its tendency to be transmitted by heredity, especially when it has a nervous origin. However this may be, it can be said that diabetes insipidus is not a serious process *quoad vitam*, but it is a disagreeable infirmity, giving rise to nervous depression and hypochondriacal ideas.

THE ETIOLOGY OF OSTEOSARCOMA OF THE UPPER JAW IN CHILDREN.

THE history of sarcomatous growths in childhood is not old, especially of those of the bones. Schwartz of Paris, out of a total of one hundred and seventy cases, found three between the ages of one and ten years and forty-five between the ages of ten and twenty years, so that from these figures it would appear that late childhood and adolescence pays the larger tribute. Among the bones of the skeleton, the jaws hold an important place, if not the foremost, and out of one hundred cases of malignant neoplasms in children Picot found seventeen cases of tumors of the maxilla. Finally, Roger Williams has collected seven cases of sarcoma of the upper jaw, two of which were congenital, one in a child three years and a half old, two between the ages of ten and fifteen, and two in subjects over fifteen. Briefly, sarcoma of the upper jaw is more common in childhood than is generally supposed, and this fact was pointed out by Letailleur in his thesis (Lille, 1895), although it seems to have passed unnoticed. This relative prevalence in childhood may be accounted for to a certain extent by the developmental phenomena of the upper maxilla. Highmore's antrum, formed by the spreading of the osseous laminæ composing the upper jaw, does not exist in the fetus, but appears during early infancy and gradually develops. During this time the bone is the seat of a kind of physiological hyperemia related to the process of development of the osseous walls which favors the formation of neoplastic tissue. From the viewpoint of sex, these malignant growths differ from what is met with in adults. It is generally supposed that cancer in general is more common in the female, but during the first years of life the contrary holds true. As to the cause of these neoplasms it is no better understood in children than in the adult. In the first place, a previous injury is probably too often invoked to explain the production of the neoplasm, but in some cases it has distinctly acted as a real provocative agent in determining the localization of the growth.

Out of one hundred cases collected by Estlander, the left side of the upper jaw was the site in seventy, but why this should be so is not at all clear. In some cases the neoplasm has started around a deviated tooth or one that was in bad condition, or an ectopic tooth. The question of heredity, so much discussed in the case of malignant growths in general, is perhaps still more doubtful when childhood is concerned. Saint-Germain believed that heredity could be absolutely ruled out of the etiology of malignant growths in children, while a no lesser authority than Hutchinson professed an entirely contrary opinion. There are unquestionable instances in which heredity appears to play a distinct part in the constitutional foundation of the cancerous tendency, but in most instances it cannot be invoked.

The congenital origin of these sarcomata is of the utmost infrequency; however, there are two authentic instances of these growths in the upper

maxilla reported by Roger Williams. There are other factors which may have some influence in development of osteosarcoma, although this is not clear; such as the nationality, the rheumatismal diathesis, and syphilis. However this may be, it is evident that the distinct origin of sarcoma of the upper maxilla in children cannot be clearly accounted for. But one thing is certain, and that is in all the reported cases the growth in the upper jaw was not noticed until it had attained a certain degree of development, and thus nothing in the patient's antecedents in the way of predisposition could be ascertained with certainty.

CANCER AND MARRIAGE.

DEELMAN, chief of the laboratory of the Amsterdam Cancer Institute, reports some data on this subject in *Gynécologie et Obstetrique* for June, 1920, i, 6. The locations of cancer studied were the cervix and corpus uteri, breast, liver, and stomach. It is of interest to note that these studies were begun by the late Professor Treub and finished at his request by the author. The material all came from Amsterdam. In cancer of the breast the investigator should always note the number of children, the duration of lactation and the presence of mastitis. But as for being able to show any connection between these functional activities and the incidence of cancer it must be stated that cancer has no proved connection with the functions of the breast. The declarations of authorities on this relationship are negative or not pronounced. The author has studied records of breast cancer deaths in Amsterdam since 1862. Unfortunately the number of children borne by the women had not been recorded. Of 531 breast cancer deaths taken for analysis it was found that 428 patients were married, while 103 were single. But the number of married women greatly exceeded that of the single so that the marriage state alone cuts little figure. Study by decades, however, taking into account the ratio of married to single, shows plainly that the single woman after the age of forty is somewhat more predisposed than the married. Before that epoch the conditions are reversed. Hence the function of the breasts favors the appearance of the disease. Sanders has obtained the same results in Rotterdam. Fibiger in Denmark finds cancer of the breast relatively more common in the single, but no age periods are stated. Figures obtained from Stuttgart and from the whole of Bavaria support the author. Cancer of the uterus was found in 504 cases to be much more common in the married, this holding good for the period after as well as before forty. There is therefore a contradiction between uterus and breast figures. Here we have figures which cover the number of children born. Opinions from older literature were to the effect that the more children the greater liability to cancer. This is the result arrived at by Hoffman. Penris, a Hollander, has compiled a ratio between average births and average age for cancer of the portio. But 4 per cent. were nulliparous and apparently the number of children did not increase with the incidence of cancer. In Amsterdam cancer of the cervix and corpus are aggregated together in the statistics. About 10 per cent. as a rule are cancers of the body, and in the author's material it was found that the percentage was eight. The nulliparity of women with cancer of the body was found to be six times that of those with cancer of the cervix. The corpus cancers also occurred at a considerably later period, and, as stated, by preference in nullipara. Cancer of the stomach and liver in women occurs more frequently in the married. The number of children is not a factor in the production of any kind of cancer.

THE MORAL ELEMENT IN DIAGNOSIS.

THE belief that men bring on, or contribute to, their own ailments is common enough among moralists and cynics, and many questions come up in practice in which the patient's responsibility for his own condition is bitterly argued. Fortunately the business of the true physician is to cure his patient first, although he may preach to him or scold him afterwards to scare him into abandoning his injudicious courses. Aside from such subjects as alcoholism and drug addition the question of responsibility comes up very freely. As is stated by Ley in *La Presse Médicale* for August 28, 1920, xxviii, 61, no one accuses a patient with harelip or tuberculous kyphosis of bringing on his condition deliberately. But if an adenoid subject persist in holding his mouth open he may be accused of contributing to this habit by the layman and even some medical men. If he is a nail biter he will lay himself much more open to accusation, as will also be the case in nocturnal enuresis. Thousands of subjects accused of moral inertia have been shown to be suffering with the hookworm. Certain cases of onanism are due to irresistible impulses, and scores of psychopaths—habitual liars, kleptomaniacs, etc. —are clearly irresponsible, for one or another reason, to say nothing of hystericals and epileptics. No doubt many a paretic in his early stages has been scolded and abused for his moral delinquencies. We once attended a medical meeting in which a member in the beginning manic phase of manic-depressive insanity treated his fellows with contempt, abuse, and sarcasm; yet of all this body of intelligent practitioners not one realized the condition of the man, and many of them indulged in bitter criticism of his conduct, both to his face and after he had left the building.

PALILALIA AND PALIKINESIS.

ECHOLALIA in the strict sense of the term implies that the subject echoes the words of the speaker, while in palilalia the subject repeats his own short answers to questions. The expression palilogy means that an orator repeats himself for the sake of emphasis. Palikenesis is the repetition of a gesture several times, and among the gesticulating races must be closely related to palilalia. In the latter the words repeated are usually short and the custom does not extend to repetition of groups of more than two or three words. The reviewer knew of a subject with cerebral hemiplegia who was apparently in good mental condition; upon being told a

piece of news he would reply three times in succession "Is that so?" This peculiarity attracted no attention from the laity, who evidently regarded it only as a mannerism, yet it was evidently palilalia. In an article by Schulmann in *La Presse Médicale* for Sept. 22, 1920, xxviii, 68, the case is related of a woman of 76, a hemiplegic, who looked after herself very well although her mental powers were clearly diminishing, whose most pronounced symptom was palilalia with palikenesis. If asked how she was the reply was "Not well, not well, not well," and when asked her occupation repeated five times the word "flowers." If a word provoked a pleasurable emotion it was repeated more often than one without that suggestion. A gesture to indicate the act of scratching in describing the pruritis from which she suffered was repeated many times. Many of these subjects have pseudobulbar paralysis, but this could be excluded in the case in question. The palikenesis naturally suggests tic-like movements, and like certain tic subjects these patients may weep and laugh in purely spasmodic fashion.

Pancreatic Dyspepsia and Its Coprological Syndrome.

THE statement is occasionally made today that pancreatic preparations when given therapeutically are destroyed in the stomach, and this despite the fact that practically all writers on pancreatic insufficiency prescribe these remedies and prescribe them to the exclusion of all others, and often do not even allude to destruction. In addition we have seen many statements of recent years which imply that these remedies are not inert. We recall the statement that pancreatin will raise the opsonic index and in these experiments the drug was not even given in capsules, but, if we remember correctly in compressed tablets. During the period of interest in the antitryptic index and its clinical application we recall the statement from responsible clinicians that cancer patients gained in weight when pancreatin was given and lost it when the remedy was suspended. In fact, the claim that pancreatin is inert when taken by the mouth has never been fairly substantiated, while clinical experience is to the contrary. In the gastroenterological number of *La Médecine* (July, 1920, i, 10) Cade contributes an article on pancreatic dyspepsia as diagnosticated by the coprological formula—for clinically the symptoms are not typical. Negative finds do not exclude pancreatic dyspepsia. Insufficiency is by no means necessarily due to organic disease and may be functional. The tests enumerated to determine the coprological syndrome are too numerous for citation here, and nothing new is quoted. Under the head of treatment the sole mention is that organotherapy is sometimes successful. The author does not refer to the recent reports on the treatment of alimentary anaphylaxis by pancreatin.

Cure of Oriental Boil by Emetine.

THE conquests of chemotherapy have largely been made among tropical maladies and with the organic arsenicals, antimony, and emetine. At present it may not be possible to speak finally of the spirillocide, trypanocide, or analogous properties of these substances, for the curative action may be an indirect one. But for the time being a direct parasitotropism may be inferred. In *La Grèce Médicale* for June, 1920, xxii, 6, Photinos relates the cure of 23 cases of Oriental boil through local injections of emetine chlorhydrate. This series of cases is tabulated in detail. The average case requires from 15 to 30 days to cure it and the number of injections varies from one, as a rule, to a large number in advanced cases with multiple lesions. The author is satisfied that the drug acts directly on the *Leishmania tropica* or parasite responsible for the disease. As a rule one injection, as stated, answers the purpose, the actual amount of drug injected being from 0.01 to 0.05 gm. The diagnosis must, of course, be first made by microscopical study of blood drawn from the lesion. To obtain favorable results with such small dosage the lesion should be single and not larger than a silver franc piece. The necessity for prolonged treatment with indefinitely repeated injections appears to be due wholly to inability of the solution to reach the parasite. Spontaneous cure may be eliminated in these cases for this occurs only in cases of long standing in which the disease seems to have spent itself. At least a year must have elapsed before we can expect this termination, and as one of the names of the affection is the "one year button" this signifies that the untreated button pursues a chronic course by nature, spontaneous recovery being, of course, very unusual.

Diagnosis of Granuloma Malignum.

UNDER this term Pesce gives a systematic account of Hodgkin's disease and allied conditions in which leucemia is absent, in the *Revista Sud-Americana* for August 15, iii, 8. His remarks on diagnosis may be reproduced. In the first place we have no sure-fire resource and can only suspect its presence when we have ganglionic enlargement, fever, cutaneous manifestations, and a certain blood state. But both fever and skin lesions are often absent, and when present without characteristics while the blood picture varies, the most significant features being lymphopenia, eosinophilia, and myelocytosis. We must depend mainly on exclusion of a large number of granulomatous and neoplastic affections. The author adds his opinion that the morbid process is purely inflammatory, of unknown origin, having no characteristic blood formula, pursuing a chronic course, and destroying life by cachexia plus anemia. There is no efficacious treatment save the *x*-rays. The author reports five personal cases seen in the Italian Hospital at Buenos Ayres, both cervical and inguinal types being represented, the former being in part associated with axillary lesions. Two of the five subjects presented a positive Wassermann reaction.

News of the Week.

Foreign Doctors Invade Spain.—Foreign practitioners, particularly Austrians, have invaded Spain in such numbers that native physicians and surgeons have appealed to the Government to make regulations making it obligatory that foreign practitioners acquire a medical degree in Spain before being permitted to practise.

To Study Conditions in Europe.—The National Information Bureau has sent its Director, Mr. Barry C. Smith, overseas to make a special study of American relief work in Austria, Serbia and Poland. His investigations will make available to the members of the bureau an up-to-date estimate of the relative importance and efficiency of the various agencies abroad which make appeals for funds. It is expected that a flood of new appeals will be coming over, especially from American relief organizations operating in Eastern Europe.

Relief Workers Sail for Near East.—A party of men and women, members of the Commission for Relief in the Near East, sailed on the *Pannonia* last week, bound for Turkey and other parts of Asia Minor. Dr. Russell P. Uls of White City, Kansas, who was one of the party, will open a trachoma clinic in Constantinople.

Anti-Tuberculosis Vaccine.—It is announced in the daily press that Dr. Calmette and his colleagues of the Paris Pasteur Institute have discovered an anti-tuberculosis serum for cattle. They are reported as believing that they are on the right track to develop a vaccine that will prevent and cure tuberculosis in man.

Typhoid Epidemic in Ohio.—The water system of the town of Salem, Ohio, is held responsible for an epidemic of typhoid fever which, up to Nov. 13, had totaled 762 cases, with ten deaths. A sanitary survey was made by State and Federal officials, and recommendations were made for changes in the water system.

Warnings and Legislation Against Horsehair Shaving Brushes.—Surgeon-General Cumming of the United States Public Health Service, has just issued a fresh warning against the use of horsehair shaving brushes, to which not a few cases of anthrax have been traced. The Public Health Service has made every effort possible under existing laws and regulations to prevent the occurrence of anthrax due to infected shaving brushes, but in spite of its efforts anthrax cases occur and will continue to occur unless the public ceases to buy and use horse-hair brushes for shaving, according to Surgeon General Cumming. Congress at the next session will be asked to prohibit the use of horse-hair for that purpose. It is doubtful, however, if any effective measures can be taken by health officials to curtail the use of the horse-hair shaving brushes now in trade channels, some of which are presumably infected, except a direct warning to the public not to buy or use such brushes. Dr. Cumming strongly urges the issue of such an appeal by State Health officials and its widest possible publicity, as the only way, pending additional legislation, to obviate their potential danger. The New York State Health Department has started a movement against the manufacture of shaving brushes out of horse-hair, in the effort to eradicate anthrax. A bill will probably be introduced at the next session of the Legislature to prohibit the manufacture and sale of horse-hair shaving brushes.

Hospitals Take Place of Jails in Housing "Drunks."—A veteran Salvation Army worker in Chicago is reported as saying that empty jails are no criterion of the good results of prohibition, and that there are more drunks now than before the Eighteenth Amendment went into effect, "but the reason is that all the drunks now adorn cots in the hospitals. The stuff they sell for booze sends men to hospitals and cemeteries."

Another Aftermath of Prohibition.—In the annual report of the superintendent of the Chicago Juvenile Protective Association statistics are given which seem to show an increase of 238 per cent. in cruelty to wives and children since the prohibition law went into effect, and a still more rapid increase during the last six months. The reaction of heavy drinkers has manifested itself in surliness and abuse of the family, according to the report.

New Home for Scientific Bodies.—A site for the new building in Washington which is to serve as a home for the National Academy of Sciences and the National Research Council has recently been obtained. It comprises the entire block bounded by B and C Streets and Twenty-first and Twenty-second Streets, Northwest, and it faces the Lincoln Memorial in Potomac Park. The Academy and Council have been enabled to secure this admirable site, costing about $200,000, through the generosity of the following friends and supporters: Thomas D. Jones, Harold F. McCormick, Julius Rosenwald and Charles H. Swift, Chicago; Charles F. Brush, George W. Crile, John L. Severance and Ambrose Swasey, Cleveland; Edward Dean Adams, Mrs. E. H. Harriman and the Commonwealth Fund, New York City; George Eastman and Adolph Lomb, Rochester; E. A. Deeds and Charles F. Kettering, Dayton; Henry Ford, Detroit; Arthur H. Fleming, Pasadena; A. W. Mellen, Pittsburgh; Pierre S. duPont, Wilmington; Raphael Pumpelly, Newport; Mr. and Mrs. H. E. Huntington, Los Angeles; Corning Glass Works, Corning, N. Y. Funds for the erection of the building have been provided by the Carnegie Corporation of New York.

Gift to Society for Prevention of Cruelty to Children.—A gift of $4,000,000 has been made by Mr. and Mrs. August Heckscher to the Society for Prevention of Cruelty to Children. The gift comprises a plot at Fifth Avenue and One Hundred and Fourth Street, with a new building endowment sufficient for maintenance. Within two years, it is estimated, the Society will have a complete new plant with a capacity for the care of more than double the present number of waifs and mistreated children that come under its protection.

Medical Interne Wanted.—The United States Civil Service Commission announces an open competitive examination for medical interne to fill, among others, vacancies in Saint Elizabeth's Hospital, Washington, D. C. Applications should be made before March 1, 1921, to the Civil Service Commission, Washington, D. C., or the local Secretary of the Civil Service Board.

Physician Wanted for Panama Canal Service.—An open competitive examination is announced by the United States Civil Service Commission to fill vacancies in the Panama Canal Service, at an entrance salary of $250 per month. Applications should be made to the Civil Service Commission, Washington, D. C., or the secretary of a local Civil Service Board.

Dr. Carleton Simon, alienist and criminologist, has been appointed Special Deputy Police Commissioner in charge of rounding up drug addicts in

New York City. Police Commissioner Richard E. Enright, in announcing the appointment, declared that the drug evil has assumed alarming proportions since the prohibition law went into effect. There are said to be 30,000 unregistered addicts in this city. Forty per cent. of habitual criminals here are addicts.

Dr. Henry Lyle Winter has removed his office to 24 East Forty-eighth Street.

Dr. Russell L. Cecil has removed his office to 33 East Sixty-first Street.

Dr. Nellis B. Foster of the Cornell Medical College will deliver the third Harvey Lecture at the New York Academy of Medicine, Saturday evening, Nov. 20. His subject will be "Uremia."

Obituary Notes.—DR. HENDERSON SUTER of Washington, D. C., died Nov. 6, as the result of a paralytic stroke suffered five years ago. He was graduated from the University of Pennsylvania School of Medicine in 1877.

DR. GOTTLIEB C. H. MEIER of New York City died Nov. 11, at the age of sixty-eight. He was graduated from New York University Medical College in 1880.

DR. WALTER GUY HUDSON, medical director of the E. I. Dupont Company and the General Motors Company, and an expert in the matter of safeguards in the use of explosives, died suddenly, Oct. 30, at his home in Yonkers, N. Y., at the age of fifty-two. During the World War Dr. Hudson served as chairman of the Sub-Committee on Industrial Diseases and Poisons, Advisory Board, Council of National Defense.

CAPTAIN R. D. WAINWRIGHT, U. S. M. C., retired, died recently at Norfolk, Va., at the age of seventy-one.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, Oct. 22, 1920.

Annual Conference of the National Association for the Prevention and Cure of Tuberculosis.—The eighth annual conference of the British National Association for the Prevention and Cure of Tuberculosis took place at Liverpool on October 7, 8, and 9. Delegates to the number of about 1,000 were present from all parts of Great Britain. Sir Arthur Stanley presided on the first day and the meeting was largely concerned in discussing the comparative lack of success of sanatorium treatment in arresting the spread of pulmonary tuberculosis throughout the country. Many medical men who spoke stoutly defended the system and declared that not only had the best not been made of it, but that its greatest success could be achieved only in combination with other preventive measures. No doubt, however, that a main reason why the public and a goodly proportion of the members of the profession are somewhat prejudiced against sanatorium treatment is because when it was first introduced it was hailed by its too enthusiastic advocates as the one and sole means of successfully treating the tuberculous and of extirpating the disease. Of course, these far-reaching claims have not come to pass, and the consequence is that the sanatorium system is now condemned by many as a failure, whereas the truth is that in conjunction with other methods it should be and, when properly managed is a success. It supplies only a part of the treatment but a more or less essential part.

Dr. E. W. Hope, Medical Officer of Health for Liverpool, was down to read the first paper, but was unavoidably absent. In his absence Dr. Musson, the deputy medical officer, read the paper, which dealt with treatment and preventive measures and the results obtained. It was pointed out that the sanatorium was introduced with a flourish of trumpets, which resulted in inflated expectations among those who did not appreciate its precise functions, while the extravagant claims which its ardent supporters put forward gave the public the impression that admission to a sanatorium was equivalent to restoration to health, and exclusion to sentence of death. The disappointment engendered by failure to reach these expectations threatened at one time to retard the establishment of these institutions. It was a sad but justifiable criticism that the word "cure" was no longer used in connection with them. He drew attention to how much depended upon the type of case admitted and the duration of treatment, and pleaded for a recognition of the great value of educational methods of prevention in the treatment of tuberculosis.

Dr. Nathan Raw, M.P., declared that the fact that present results of treatment were unsatisfactory was due almost entirely to the patient being unable to devote sufficient time to his cure. The benefits of sanatorium treatment were largely nullified by the patient having to return to unsanitary home conditions and to attempt to earn a livelihood in the open labor market, only to find that he could not do a full day's work and finally breaking down. At best a consumptive had only 50 per cent. working capacity. Labor conditions must be arranged so that he could earn a modified wage. Soldiers and sailors to the number of 35,000 were demobilized with tuberculosis, and in the problem of taking care of them the Government must take full responsibility.

Dr. Halliday Sutherland contended that the results of sanatorium treatment were not better because patients were sent to sanatoriums at too late a stage, and the average residence was not long enough.

Dr. J. G. Adami read a paper in which he pointed out that it was more of an economic than a medical question. In the present state of our knowledge it was highly improbable that a drug could be obtained that would destroy the bacillus, and if there were such a drug he doubted whether it could be introduced into the body in sufficient concentration. Also it must be borne in mind with regard to the possibilities of a specific medicinal cure, that the bacillus has been known for two generations and that since the date of its discovery skilled men in various countries have endeavored to find a specific remedy and the result of their efforts have been partially successful only in regard to tuberculin treatment. The four essentials were early recognition, notification, isolation, and treatment. A combination of voluntary and official support was essential and would

be most economically brought about by the establishment of local tuberculosis dispensaries. Dr. Adami described the working at the Royal Institution, Montreal, of the class treatment introduced by Dr. Joseph Pratt of Boston and stated that in his opinion this method of treatment gave far better results than the sanatorium treatment and at a lower cost per patient. He advocated a modification of the system, together with the establishment of day camps and night camps for open-air treatment in the parks and gardens of cities and towns, as being the lines along which the best and most economical results could be obtained.

Sir Henry Gauvain thought that in fighting tuberculosis we had lacked a well-defined policy. Our army, he declared, was ill-trained, ill-equipped, unorganized, lacking in co-operation, had no staff officers, no authoritative leaders with full power to act. The teaching was ineffective. He spent more time as a student learning the anatomy of a frog than learning the nature of tuberculosis. He was taught, too, to operate on socalled surgical tuberculosis and to open up disease areas. There had been 110,000 primary notifications of non-pulmonary tuberculosis in the past five years and 59,000 deaths had occurred. At Alton, by other methods, out of 2,037 cases, they had lost only 52. In the first line of offence against tuberculosis was the general practitioner. He was not getting enough encouragement. Even more depressing was the position of the tuberculosis officer. There were half a dozen different officers all battened down in water-tight compartments, compelled to use certain materials, denied the use of others. Was it to be wondered at that there was a lack of co-operation? He urged the establishment of a diploma in tuberculosis. If the Government meant business they had better get trained men; ill-trained men were mere waste of money.

Milk as a Source of Infection.—On the last day of the meeting a discussion on milk as a source of infection and the preventive measures to be employed, took place. Sir Robert Philip, M.D., presided. The discussion was opened by Dr. O. W. Macfadden of the Ministry of Health, who pointed out that figures indicated the present exceedingly low consumption of milk in industrial districts, and the wastage in milking herds from tuberculosis. He suggested that public health authorities should combine with their direct endeavors to protect the community from dangers arising through milk, an active policy for increasing its consumption and to this end, encouraging the milk-producing industry in every way to attain its maximum commercial efficiency. Proposed new milk legislation should enable administration to be helpful in this direction. Professor J. M. Beattie of Liverpool claimed that proprietary milk preparations for the feeding of children were not practical substitutes for fresh milk, and that the sterilization or pasteurization of milk was not a guarantee against tubercle infection. Moreover, it was in its experimental stage and could not be said to be a success on a commercial scale. The rational method of procedure was to control milk at its source of supply and he suggested systematic inspection of dairy herds and examination of composite samples of milk from these herds, with special samples from animals suspected of tuberculosis, together with the isolation, on special isolation farms, of all suspicious animals. Sir Robert Jones of Liverpool said that one-half of the cripple cases among which he practically spent his life, were tuberculous in character. Further, two-thirds of the infection in these tubercle cases was bovine in character and one-third human. It was really a scandal that tuberculous cows could not be slaughtered, although those intended for butcher's meat could be. Dr. Dingwall Fordyce said that although it might seem ridiculous to say so, the medical profession was not as well educated as it should be in the elements of child nurture. It would be better for the nation that there should be small, healthy families than large ones, many members of which died. Dr. J. Rudd Leeson said that people had no business to drink milk. It was quite unnatural, as was shown by the fact that when a child's teeth came mother's milk ceased, and that applied to all mammalia. He regarded the drinking of milk as one of the curses of civilization. It may be interpolated here that Dr. Harry Campbell has long held the opinion advanced by Dr. Leeson. Dr. Campbell contends that when the teeth have come milk is not a natural food and not a good food for more than one reason. One strong reason that he brings against milk as a food for those who have their teeth is that it does not need mastication. Our teeth are where they are and our jaws are so constructed in order that we may chew hard food thoroughly, and hard food is our natural food because of the presence of our teeth and because in the evolution of man's diet we have become in our general physical make up largely carnivorous animals. If we do not use our teeth and jaws they degenerate and Dr. Campbell asserts that a cause of much of the dyspeptic trouble that is prevalent and of defective teeth which are so greatly in evidence, is the pappy mushy food that is eaten. If we wish to take milk when we are adults Dr. Campbell urges us to take it in the form of cheese, which is not only an exceedingly nutritious, tasty, and satisfying food but affords the exercise of the teeth and jaws which is necessary for their preservation and essential to good digestion by inciting by means of thorough mastication the salivary glands to perform their functions properly. While there is a good deal in what Dr. Campbell says, it does not alter the fact that an enormous quantity of cow's milk is consumed by young children and that it is in the best interests of the community that the food should be given in as pure a condition as possible. Professor Beattie stated without reserve what has been said before by many scientific medical men that neither sterilization nor pasteurization affords a sufficient guarantee against milk infection and that the only certain or fairly certain method of ensuring this result was to take measures to obtain milk pure at the sources of supply. But another speaker, Sir Robert Jones, made the statement equally true that tuberculous milk cows are extremely numerous, and that two-thirds of the cases of the tuberculous deformities with which he had to deal were bovine in character. Thus infection from this cause is

a menace. Again Professor Beattie declared that proprietary milk preparations for the feeding of infants were not practical substitutes for fresh milk. The situation then to be faced appears to be that cows' milk in existing circumstances in Great Britain is not a safe food for infants even if it be a nutritive food, which is doubted by some. Also that substitutes are not to be relied on. What then are the ways out of this serious dilemma. The most obvious and most effective mode would be to educate women to nurse their infants. But as things are this seems to be a Utopian idea, although every effort should be made to bring this about. The next best procedure would be to use every endeavor to ensure a pure milk supply, rigid inspection of cows and dairies, and uncompromising enforcement of the laws as regards proper transport, delivery in good condition and proper keeping in the shops in which it is retailed. All these desirable ends are impossible of accomplishment in a short time if ever, the cost would be too great and therefore reliance must still be largely placed on pasteurization and it should be seen to that this is effectively carried out and enforced in the strictest manner. There is little doubt that Great Britain could learn much and to her great advantage from America with respect to the control of the milk industry.

Progress of Medical Science.

Boston Medical and Surgical Journal.

November 4, 1920, clxxxiii, 19.

1. Interpretation of Wassermann Reaction. William P. Boardman.
2. The Diagnosis of Primary Syphilis. Henry D. Lloyd.
3. Lead in the Urine in Neuro-Circulatory Disturbances. C. A. McDonald and Henry McCusker.
4. A Review of the Recent Work on Amœbic Dysentery. William Allan.
5. The After-Treatment of a Dislocated Elbow. Ernest T. Saeger.
6. The Use of the Thermometer in Mental Diseases. E. D. Bond.

3. Lead in the Urine in Neuro-Circulatory Disturbances.—McDonald and McCusker, accepting Chapman's standard as the minimum amount of lead to cause symptoms and signs (from one-quarter to one-half a milligramme of lead per liter of urine, estimated by standard methods), report twelve cases. These cases represent nervous disorders of many types. Not one of them showed signs of lead poisoning, like the lead-line, anemia, or stippling. It was only by making a routine urinary examination for lead in doubtful cases that the lead element was discovered. The cases are reported, therefore, to stimulate corroboration or refutation of Chapman's standard, that four-tenths of a milligramme of lead per liter of urine is sufficient to cause symptoms; and to argue for the consideration of lead as the etiological factor, or one of the etiological factors, in obscure cases presenting neurological signs and symptoms.

6. The Use of the Thermometer in Mental Diseases.—E. D. Bond, recalling the fact that formerly the thermometer was considered of no value in mental diseases, and holding that there is not, even now, sufficient recognition of the importance of temperature records among the insane, gives the results of an examination of the temperature charts found in a series of seventy-one consecutive cases, singly and in groups. The patients were all women, admitted to the Department for Mental and Nervous Diseases of the Pennsylvania Hospital from January to July, 1916. Fevers, slight or severe, transitory or chronic, occurred in over 50 per cent. of the cases. The diagnoses are sufficiently varied, and show that fever has occurred in imbecility, epilepsy, arteriosclerotic dementia, general paralysis, dementia precox, and manic depressive psychoses. Of 19 cases of manic depressive insanity, 13 had fever and six did not. Of 19 cases of dementia precox eight had fever and 11 did not, this being the only disease in which normal temperatures were found more often than the reverse.

New York Medical Journal.

November 6, 1920, cxii, 19.

1. The Endocrines in Gynecology. William P. Graves.
2. The Obstetrical Department of a Modern Medical School. Barton Cooke Hirst.
3. Treatment of Displacement of the Uterus. P. Brooke Bland.
4. Amputation of the Cervix Uteri. James N. West.
5. Cervical Laceration, Cystocele, Prolapsus Uteri, and Multiple Fibromata. W. Frank Fowler.
6. Diseases of the Cervix Uteri. Alfred Heineberg.
7. The Rôle of Rectal Examination in Obstetrics. William E. Parke.
8. Cæsarean Section for Eclampsia. Edwin G. Langrock.
9. Repair of Injuries to the Pelvic Floor. W. Clovis Cummings.
10. The Female Pelvic Ureters. David W. Tovey.
11. The Value of Abdominal Exercises Before and After Delivery. Harry Koster.
12. Periodic Headaches of Ovarian Origin. George Knapp Abbott.

1. The Endocrines in Gynecology.—William P. Graves confines his discussion of the subject to the relationship of the endocrines to the specific neuroses of patients suffering from pelvic disease, and to the histogenesis and function of the internal secreting cells of the ovary. The more one studies the so-called nervousness of women, the more one is impressed with the possibility that the purely nervous mechanism of the body is of secondary importance. It is quite credible that the nerves are only the keys or instruments which are played upon by more dominant agents in the form of the endocrine glands. Whether women may be said to be peculiarly nervous or peculiarly endocrinous, the gynecologist undoubtedly accomplishes more accurate results if he estimates his nervous patients from an endocrinological rather than from a purely neurological viewpoint. Among other points with reference to the ovary as a gland of internal secretion the writer emphasized the following: Dysfunctions of the ovaries are usually attended with various neuroses. Some of these may be due to the direct disharmonious action of other endocrines, especially those that have an affinity for the autonomic nervous system. In evaluating these neuroses one must also take into account those neurotic habits which are the result of a sense of physical inferiority, and characterized as a continued endocrinous emotional state. From an organotherapeutic viewpoint the ovary must be regarded as primarily a homogenous gland, the essential secreting structure being the interstitial cells. Variations in secretions of different parts of the gland are probably differences of degree rather than of kind. A selective action of the secretion from different parts of the gland is not yet proved and if it exists is probably quantitative. All ovarian preparations exert a specific influence on hot flushes. In this respect the residue is the most intensive, but the difference in efficacy of the various preparations depends to some extent on the idiosyncrasy of the patient. In the treatment of menstrual irregularities ovarian extracts exhibit an undoubted specific action, but this action is inconstant. In temporary functional amenorrhea, delayed menses, dribbling before and after catamenia, and small clotting, ovarian therapy is fairly reliable, and is at least the best asset the gynecologist at present possesses for these symptoms. For the permanent amenorrheas, especially those associated with pluriglandular disturbances, ovarian therapy has little or no effect on restoring the menstrual function, but is of undoubted value in improving the patient's general health. In certain types of dysmenorrhea ovarian feeding is efficacious, occasionally brilliantly so, but is unreliable and often disappointing after giving early promise. In severe types of dysmenorrhea it is of comparatively little help. For menorrhagia and metrorhagia ovarian therapy is not indicated.

Journal of the American Medical Association.

November 6, 1920, lxxv, 19.

1. Abdominal Pain in Diseases of the Kidney and Ureter. Arthur B. Cecil.
2. A Dental Clinic for Children in a Settlement. Haidee Weeks Guthrie.

3. Progress in Dental Education. H. E. Friesell.
4. A Study of the Effect of Pulmonary Tuberculosis on Vital Capacity: First Report. F. W. Wittich, J. A. Myers and F. L. Jennings.
5. Movable Kidney with Unilateral Nephritis: A Report of Two Cases Cured by Operation. Joseph M. Cadwallader and Alexander A. Brown.
6. A Gauze Sponge Forming the Nucleus of a Vesical Calculus. Alice F. Maxwell.
7. Gradual Reduction of Fractures of the Maxilla and Mandible. A. L. Miller.
8. Orchitis from Mumps: The Need of Conserving the Testes by Incision of the Tunica Albuginea. Edgar G. Ballenger and Omar F. Elder.
9. Rate of Absorption of Digitalis from Gastro-Intestinal Tract: A Clinical Study. Harold E. B. Pardee.
10. Diaphragmatic Hernia Diagnosed During Life. Milton M. Portis and Sidney A. Portis.
11. Some Difficulties in the Diagnosis of Osteosarcoma. Robert B. Cofield.
12. Types of Pneumococci in the Throats of One Hundred Normal Persons. Jacob Meyer.

1. Abdominal Pain in Diseases of the Kidney and Ureter.—Arthur B. Cecil bases this paper on a critical review of 300 cases in which a complete urologic investigation has been carried out on the upper urinary tract. The study was undertaken for the purpose of determining the frequency of occurrence and distribution of abdominal pain in association with diseases of the kidney and ureter. The cases are classified under twelve main groups: stone in the kidney or ureter, renal tuberculosis, pyelonephritis, hydronephrosis, tumor of the kidney, polycystic kidney, nephroptosis, pyonephritis, chronic nehritis, congenital malformations of the kidney, cystitis, and a miscellaneous group comprising cases of essential hematuria, cases which were studied for differential diagnosis, various rare conditions, and those in which the findings were negative. The review of these cases shows that the most practical conclusions as to the distribution of abdominal pain in diseases of the kidney and ureter can be best arrived at by a study of those diseases which are most constantly characterized by pain, namely, stone and hydronephrosis. In the group of cases of stone in the kidney or ureter the distribution of the pain was purely abdominal in 28 per cent., and in 20 per cent. it was so misleading as to lead to abdominal operations. The figures from the tables on hydronephrosis are even more striking. Excluding the six cases of hydronephrosis which are associated with stone, it is noted that abdominal operations had been performed in 30 per cent. of the remaining cases, for the relief of pain which was subsequently demonstrated to have been of renal origin. The symptomatology of hydronephrosis is often obscure and misleading, and it is in this group of cases that the urine is so often practically normal. It is obviously impracticable to carry out urologic examinations as a routine. There are, however, certain well defined indications, and while abdominal pain is not one of them, it is by no means a contraindication, and becomes a definite indication when the urine shows abnormalities. In obscure cases of abdominal pain, pyelographic studies should be more frequently made. The writer concludes that emergency of operations in obscure abdominal pain does not depend on severity of the pain alone. Some of the severest types of abdominal pain have as their origin diseases of the kidney and ureter.

4. A Study of the Effect of Pulmonary Tuberculosis on Vital Capacity.—Wittich, Myers, and Jennings made observations on the vital capacity of 174 patients, 117 being cases of disease of the respiratory tract, 90 of whom were definitely classified as tuberculosis. They hold that the careful study of the vital capacity in its proper relationship to other body measurements will give important information in the diagnosis of pulmonary diseases, especially tuberculosis. It will aid in the accurate classification of the cases and in determining the progress of the disease and the influence of treatment. It is a simple and harmless method of determining the patient's actual physical fitness or limitations.

12. Types of Pneumococci in the Throats of One Hundred Normal Persons.—Jacob Meyer made this study of 100 normal individuals of varying ages, in whom no history of contact with an acute or recent case of lobar pneumonia could be obtained. Pneumococci were found in twenty-one instances. Types I and II were not found in any case. Type IIA was isolated once. Type III occurred in three instances, and Type IV in seventeen.

The Lancet.

October 16, 1920, cxcix, 17.

1. An Address on Medical Problems: Then and Now. Sir William Hale-White.
2. Extrapleural Thoracoplasty in the Treatment of Pulmonary Tuberculosis, with an Account of Thirty-seven Cases. P. Bull.
3. Sugar in the Blood: A Micro-Chemical Method of Estimation. R. L. MacKenzie Wallis and C. D. Gallagher.
4. Relapsing Fever: An Account of a Series of 125 Cases, with Special Reference to the Palestine Type. W. K. Calwell.
5. Pellagra and the Pellagra Psychosis. A Study of 757 Insane Egyptian Pellagrins. R. S. Miller and Ahmed Chafick Ismail.
6. The Operative Treatment of Congenital Deformities of the Lower Urinary Tract, with Special Reference to the Formation of a "Compressor Urethræ." Ralph Thompson.

2. Extrapleural Thoracoplasty in the Treatment of Pulmonary Tuberculosis.—P. Bull gives his experience with extrapleural thoracoplasty in pulmonary tuberculosis in the following summary: 1. In unilateral, or mainly unilateral pulmonary tuberculosis, which is not cured by rational treatment (including pneumothorax), good results can be achieved by means of extrapleural thoracoplasty. 2. The operation should be performed only after conference with the physician treating the patient, who must have had an opportunity, by observation during a considerable period, of forming a thorough opinion of the prognosis in the case concerned. 3. Resection of the ribs should be carried out under local anesthesia through a paravertebral incision, so that the posterior part of the ribs from the eleventh, or, in any case, from the tenth to the first inclusive, can be removed. 4. If a cavity remains, it can be brought to collapse by means of intrathoracic transplantation of fat. 5. It is necessary that practising physicians should acquire knowledge of the indications and results of extrapleural thoracoplasty. One has now no right to withhold the chance of operation from suitable patients.

3. Sugar in the Blood.—Wallis and Gallagher present a microchemical method of estimation of the sugar content of the blood which they have tried and perfected. The method, which is based on that of Folin and Wu, provides an accurate, reliable, and rapid method of estimation of blood sugar. It enables an analysis of the blood to be made with very little inconvenience to the patient, as also the determination of the glucose tolerance, and yields results of importance both as regards diagnosis, prognosis, and treatment.

British Medical Journal.

October 16, 1920, ii, 3120.

1. First Murphy Memorial Oration. Sir Berkeley Moynihan.
2. A Case of Osteomyelitis Treated by Oophorectomy. Prof. J. B. Heller.
3. A Contribution on Blood Pressure in Graves' Disease. J. Strickland Goodall and Lambert Rogers.
4. Intratracheal Anæsthesia by the Nasal Route for Operations on the Mouth and Lips. Stanley Rowbotham.
5. A Case of Cerebellar Tumor. R. T. Williamson.
6. A Note on Influenza in India, 1918-20. H. G. Waters.
7. Introductory Remarks by the President (Section of Pathology and Bacteriology, British Medical Association). Prof. J. Lorrain Smith.
8. Fifteen Cases of Liver Atrophy. James Miller and Andrew Rutherford.
9. The Morbid Processes in Atrophy of the Liver. Bernard H. Spilsbury.
10. Causation and Pathology of Atrophy of the Liver. Prof. M. J. Stewart.
11. Demonstration on the Liberation of Energy During the Interaction of Hypochlorous Acid and Organic Matter. Sir G. Sims Woodhead.

3. A Contribution on Blood Pressure in Graves' Disease.—Goodall and Rogers summarize their findings as follows: (*a*) In typical and uncomplicated cases of Graves' disease the systolic blood pressure is usually lower than normal, the diastolic pressure approximately normal, and the pulse pressure consequently low. (*b*) The systolic pressure passes through three phases: 1. *A Short stage of Primary Hypertension.*—This is associated with the onset of the disease, and due to vasoconstriction owing to suprarenal stimulation. 2. *A Prolonged Stage of Hypotension.*—This is due to peripheral dilatation caused by a depressor substance secreted by the thyroid, and is of variable duration, but usually lasts for years. 3. *A Stage of Secondary Hypertension.*—This comes on late in the disease, and is

associated with secondary changes in the cardiovascular system and reduced thyroid activity. (*c*) After operation on the thyroid the systolic blood pressure tends to rise. This rise is not infrequently associated with cardiac acceleration and an irregularity of the pulse due to auricular fibrillation, and possibly in extreme cases followed by ventricular fibrillation resulting in death. (*d*) A low systolic blood pressure in Graves' disease, other factors being equal, indicates from an operation point of view: (*i*) Little myocardial exhaustion. (*ii*) A small post-operative rise in blood pressure and consequently little liability to post-operative cardiac failure. (*iii*) Less hemorrhage. (*e*) Diurnal variations in blood pressure are considerable in Graves' disease, being relatively greater than in health.

10. Causation and Pathology of Atrophy of the Liver.—M. J. Stewart holds that atrophy of the liver is a toxic lesion in which the whole organ is more or less seriously injured. Certain portions are damaged so severely that the hepatic parenchyma undergoes more or less complete cytolytic disintegration while other parts survive, and the stage at which death takes place depends on the amount of tissue so surviving. Fatty changes are not a prominent feature in the areas which undergo necrosis, but are often present in the areas which survive. They are best seen in the so-called subacute cases—that is, after an interval of a few weeks or months. In case which recover, whether partially or completely, the persisting parenchymatous areas undergo regenerative hyperplasia, while often showing a certain amount of intervening portal cirrhosis and round-cell infiltration. The red areas of cytolysis and hemorrhage, on the other hand, become the seat of marked fibroblastic proliferation and round-cell infiltration, so that in course of time they become pale, firm, and sclerotic. They often show well marked proliferation of the bile canaliculi along the old portal tracts, and in chronic cases true functioning hepatic cells may be formed therefrom. The acute, subacute, and chronic atrophies of the liver so-called constitute a single morbid entity, and the different appearances seen post mortem are dependent on the stage of the disease at which death takes place, this in turn depending on the severity of the initial lesion. The lesions in the idiopathic atrophies and in those due to poisoning by trinitrotoluene and arsenobenzene are apparently identical. The lesions in phosphorus poisoning are of a different order, and are characterized primarily by extreme fatty degeneration, which may subsequently go on to widespread cytolysis.

La Presse Médicale.

September 25, 1920, xxviii, 69.

Superfetation Diagnosticated by Radiography.—Schwaab reports the following case: A woman of 38 gave birth to twins one-half hour apart. The children were bioval and ordinarily the condition would have passed as ordinary twin gestation. The children however showed considerable dissimilarity, the first born weighing but 1900 gm. while the second weighed 2850 gm. The first resembled a premature although none of the characters of prematurity are specifically mentioned. The author had an inspiration to radiograph the children for the purpose of comparing the ossification. The state of the lower epiphysis of the femur should alone be sufficient because ossification occurs here during the last fortnight of intrauterine life and is a document that the child was born at term. The first born of premature suggestion was seen not to have undergone this consolidation, while in the other child this phenomenon was distinctly in evidence. This fact with the difference of almost 1000 gm. in the weight showed plainly that the children could not have been of the same age. Had the children been unioval this difference could have been explained by the fact that inequality of development is an expression of asymmetry such as sometimes occurs in such twins, but no such marked differences occur in these births. In another case of twin birth the difference in weight was 800 gm., but the radiograph showed that ossification of the lower epiphysis of the femur had taken place in both. In these twins but one placenta existed, while in the first example the children had separate placentas.

La Presse Médicale.

October 9, 1920, xxviii, 73.

A Modified Borax Treatment of Epilepsy.—Marie, Crouzon, and Bouttier, starting with the well known fact that borax (boric acid) has a specific albeit mild power over epileptic seizures, have experimented with the borico-potassic tartrate. This double salt has been termed the "boric emetic," but this term is due to an error, for it possesses not a trace of such properties. It is also known as "soluble cream of tartar." In ordinary bromide medication the potassium salt has always been regarded as stronger than the other bromides, suggesting that the potassium component played some active rôle. Borax has had a limited use for many years. Tartaric acid does not seem to figure actively in the molecule but yields a double salt in which both boric acid and potassium are combined. In excessive doses the salt is a purgative. In testing a new remedy for epilepsy the reduction of the number of convulsive or minor seizures in a large number of epileptics is the criterion. The test is also made from the standpoint of the individual subject, since the treatment is apt to vary much with the personal equation. The only claim made by the authors appears to be that the new salt is more efficacious than any of the older boric preparations and hence may develop some usefulness in bromide-intolerant patients. Further, by acting as a synergist, it may enable one to reduce the usual dose of bromides. In serial attacks and cases of status the authors have succeeded in reducing the number of daily convulsions, while in other cases the number of monthly attacks was cut in two; but the failures offset such results and show that the drug will hardly supplant bromides in the treatment of epilepsy.

La Presse Médicale.

October 13, 1920, xxviii, 74.

"Cream Cakes" and the Paratyphus B.—Lesne, Violle and Langle refer to the success of Lecoq in collecting 700 cases of alimentary intoxication (1900-1906), in which cream cakes figured as the cause. The motivation was originally given in succession as the use of copper vessels, vanillin, synthetic vanillin and ptomaines; until it was proved that the cause was a microorganism, and later it was shown that the paratyphus B was the chief or sole offender. A case is given in which the agency of this germ was proved beyond all question. The next subject to be considered was the cream which is responsible for so much morbidity. Samples were found to be excessively rich in germ life and study of smears and cultures brought out the fact that the chief or sole germ present belonged to the Salmonelloses and was very similar to but not quite identical with the paratyphus B. The chief difference lay in the absence of any reaction toward maltose. This difference may have been only a matter of adaptation. Cultures from the cream gave positive agglutination with paratyphoid serum but the action was not specific for the test was also positive with the Eberth bacillus. More significant, however, was the very short incubation of the fever of cream cake poisoning. The number of bacteria ingested at a time was enormous and a correspondingly large amount of endotoxin was thrown suddenly into the circulation. When exceptionally the incubation period was long the fever was typical of the paratyphus B. The cream from which the cakes are made seems fresh and sweet. It is prepared with white of egg and apparently the article is not the same as the American cream cake which is cooked. The cakes of the French appear to contain raw cream in some form but there is no mention of whipping or freezing, nor of special cakes like Charlotte de Russe or others in which raw cream is used.

Le Progrès Médical.

September 18, 1920, xlviii, 38.

Treatment of Myxedema.—Sainton briefly presents a subject which ordinarily should be summed up in a few words. He divides the subject matter into four sections: thyroid treatment, treatment by type, adjuvants and the minimal forms of hypothyroidism. As

grafting is not necessary to cure mankind and as an injection treatment is indicated only rarely, there is nothing to do but give the substance of the gland in daily dose of 5 to 50 cgms, according to age, tolerance, and degree of the disease. Treatment must be supervised as it is advisable to watch the cardiac and renal actions. The syndrome of hyperthyroidism should be avoided. There is a first period of adaptation, a second of full activity and a third of tentative breaking off. There are three major forms of myxedema—the spontaneous, the post-operative, and cretinism. The post-operative form yields very promptly while the cretin does well if he change his abode and especially if he goes to the seaside. The spontaneous form does better under treatment if the disease is of late appearance. In the very young child we may see intolerance readily develop and the benefit is apt not to be permanent. Adjuvants include antisyphilitics if the subject have inherited that disease and in general the use of tonics—lime, arsenic, phosphorus and iron, life in the open, sunbaths and a diet poor in meat and other foods which facilitate autotoxemia. The picture of mild hypothyroidism is taken from Hertoghe and Leopold-Lévy and very small doses only of thyroid are indicated—1 to 5 cgms daily.

Le Progrès Médical.

October 16, 1920, xlviii, 42.

Alkaptonuria.—Lereboullet presented a case of this rare affection in the course of a clinical lecture delivered at the Laennec Hospital. The urine in these cases is relatively clear on passage but rapidly turns dark brown on exposure to the air, and frankly black after the addition of an alkali. It is to be differentiated from true and false melanuria. Alkaptonuric urine will reduce Fehling's solution on boiling but the coloring matter is not a sugar although in some ways related to the sugars. As the name implies, it is known as alkaptone. The patient was a female who entered the hospital for fever and pulmonary and joint lesions. The urine resembled in color the strongest beer. Its color deepened on the addition of ammonia and it reduced Fehling's solution. The patient was taking sodium salicylate and this was suppressed but without effect on the color of the urine. At a subsequent period she reentered the hospital with congestion of the lungs and arthritis of the hip, and alkaptone was seen to be strongly present. This triad of symptoms of a relapsing tendency suggested some obscure disease process and such is known to exist—ochronosis—in which there should be deposit of pigment in some of the joints. But in this case it would be necessary to exclude two types of arthritis of the hip, the gonococcic and tuberculous, before assuming that the condition was due to alkaptone. The latter was not found either in the blood or stools. At the present time alkaptone, otherwise hydroquinone-acetic acid, is believed to be formed at the expense of tyrosine—in other words alkaptonuria is a form of aminoaciduria, which condition is regarded as due to hepatic insufficiency. In alkaptonuria an additional renal insufficiency is believed to exist. The resemblance of this metabolic affection to gout is seen to be considerable. To prevent and cure it one must abstain from giving drugs like salicylates which tend to compromise the kidneys.

Le Bulletin Médical.

October 9, 1920, xxxiv, 48.

Simulation and Alcoholism.—Jaguaribe and Sao Paulo, Brazil, and Regnault of Paris contribute an article on social pathology with this title. One of the authors, when an interne 30 years before, used to inscribe on the discharge sheet the diagnosis "pigrite" when he had reason to believe that the patient had been shamming sickness. The word is clearly a derivative of the Latin *pigritia*—laziness, indolence—which survives in the Italian *pigrizia*. Literally it would imply a man who shams illness because too lazy to work. During the elapsed years he has reached the conclusion that alcoholism is responsible for most of these cases. The chronic alcoholic is unequal to sustained effort or good work. A state of idleness due to chronic intoxication results. The workman who is paid on Saturday may drink until his money is spent, which may not be before Monday or later. After the indulgence comes the reaction. This type of man is the antithesis of the Petrarch type who works incessantly despite fatigue and when he at last stops work becomes ill from the sudden change of life, and recovers only when he resumes his occupation. Petrarch was of course a total abstainer. But the subject of *pigritia* may originally have been a hard worker of the Petrarch type who came in time to seek in alcohol an aid to his powers of work. Hence the word may be applied not so much to the alcoholism as to the condition which predisposes to it. In great crises which affect the entire community, such as earthquakes and pestilences, idleness is forced on the community, but even were work possible few could be found to perform it. In the recent war victor and vanquished presented the same symptoms. There was a tendency toward alcoholic abuse, which, however, could be indulged only to a limited extent, and to obtain money by crime intsead of hard work. The authors begin by the attempt to trace a connection between alcoholism and hospital grafting, but are led to a consideration of the state of mind which favors alcohol indulgence.

Gazette des Hôpitaux.

October 9, 1920, xciii, 86.

Diseases of the Endocrine Glands.—Lereboullet sums up the history and ensemble of this subject and reaches the following conclusions: These organs play a considerable rôle in pathology and by reason of excess, diminution or vitiation of their secretions cause many diseases. One gland only may be concerned at first, but the tendency is for several to be involved either simultaneously or in succession. We should not attribute the various syndromes merely to altered chemistry of the blood for there is another component which involves the autonomous nervous system. The benefit which accrues from the use of organ extracts in disease should not straightway be attributed to the making good of a deficiency, and the use of pluriglandular extracts is to be encouraged. Endocrine subjects can be improved by other forms of medication as seen in heredosyphilitics who present glandular syndromes and in which cases great benefits are obtained by opotherapy conjoined with antisyphilitic measures.

Ocular Symptoms of Tetanus.—Roques and Condat relate a fatal case of idiopathic tetanus in which a pupillary symptom was notably pronounced. The case was not an example of socalled cephalic tetanus in which the facial nerves are involved, but was of the usual type. The pupils alternately dilated and contracted with a wide amplitude (pupillary nystagmus), without rhythm and independently of the usual factors. The tremor did not cease during sleep or under the full influence of chloral. The dilatation could not be explained by exacerbations of pain alone but bore a notable connection with an approaching paroxysm for which it acted as a certain warning, the pain doubtless playing a causal rôle. It was not absolutely certain, however, that the affection was not due in part to the action of chloral.

First Medical College in China.—During the war between Japan and Russia in 1894 the Chinese Red Cross was formed to look after thousands of Chinese who were left homeless and destitute in the regions where fighting raged for many months. After the situation was relieved, a considerable sum of money remained, and upon decision of members of the General Council, ground was purchased near Shanghai and a large handsome building was erected as the Chinese Central Red Cross Hospital and Medical College for Chinese students. The hospital is completely equipped with the most modern apparatus and furnishings. Instruction in the college is in English only. The first year there were twenty registrants. Each received his degree as a competent practitioner. Graduates of this school, under the direction of Dr. S. M. Cox, and by use of methods discovered by his brother, Dr. Robert Cox, have done much to alleviate suffering from former severe epidemics. The Chinese are proud of the school and view the results of its work with much satisfaction.

Society Reports.

AMERICAN ELECTROTHERAPEUTIC ASSOCIATION.

Thirtieth Annual Meeting, Held in Atlantic City, September 14-17, 1920.

THE PRESIDENT, DR. WILLIAM MARTIN OF ATLANTIC CITY, IN THE CHAIR.

(*Continued from page* 839.)

Various Ways of Using the Current in Exophthalmic Goiter.—Dr. S. SOLIS COHEN of Philadelphia made this presentation, which he prefaced by saying that electrotherapeutics had suffered in the past by two opponents, one the ignorant and obstinate and those unwilling to learn what could be done by the proper use of electricity in medicine, and the other the uncritical enthusiasts and electrical practitioners who made claims that could not be substantiated. Both of these drawbacks had disappeared and the Association had done much in getting rid of them. In considering his subject Dr. Solis Cohen said there must be individualization of patients. One must be flexible in his formulas and modify his treatment in different patients and in each patient must change the treatment with the changing condition of the patient. What was beneficial in the early stage of the disease might be harmful in the later stages. He described two varieties of Graves' disease, the highly toxic cases with great activity of the thyroid gland, attended sometimes with fever, sometimes not, but always with great nervous excitement and high blood pressure; and, on the other hand, the case that might be sluggish in development, in which the nervous symptoms might be prolonged, but were not of the excitable, almost maniacal variety, and the blood pressure was as a rule below normal. In the treatment of the first variety rest was of prime importance and was sometimes incompatible with the employment of electrical methods. When the patient might be disturbed a little without deleterious effect, he had found autocondensation a most useful adjunct to treatment, but only an adjunct. When the excitement was not great and when the blood pressure was normal or subnormal, he had found the static spark machine coupled with the Leyden jars and the use of the resonator coil Oudin current in addition a valuable form of treatment. The spark from the resonator coil might be applied to one or the other side of the seventh cervical vertebra or at times over the gland on both sides when the enlargement was bilateral; on one side if the enlargement was unilateral. The strength of the current must be regulated by the subjective reaction. The patient should have not quite as much as he or she could stand. Another method was the application of the sinusoidal current over the seventh cervical vertebra somewhat after the method of Abrams of San Francisco. He had used galvanism, 10 milliamperes continuous application, three to five, eight to ten, fifteen to twenty minutes, according to the results desired. The faradic current might be taken alone or the sinusoidal current and in addition the interruptions of the armature. All of these methods had proven useful in different cases. He had also used ionization with iodine. This he had used not knowing whether it would do good or harm, for there was some foundation for the belief that the use of iodine internally in exophthalmic goiter was harmful. There were other electrical methods that might be useful, as for instance, diathermy. It was important to make a distinction between hyperthyroidism and Graves' disease, for they were by no means synonymous. Exophthalmic goiter was a surgical condition in only a minimum number of cases in which the tumor became a mechanical threat to life and comfort; if there was a great degree of thyroid intoxication which did not permit of the long waiting necessary to non-surgical treatment surgery was indicated or when the patient was unable to give up the necessary time for the application of non-surgical measures, then surgery might be indicated. Even after surgery had been done and skillfully done the disease was still present, disease of the autonomic nervous system and of the endocrine system.

Dr. ALBERT E. ROUSSELL of Philadelphia said his conclusions were much the same as those expressed by the speaker. In some cases which showed no increase in the size of the gland electrical treatments were useful. In conjunction with Dr. Pfahler they had been using the *x*-ray in suitable cases of hyperthyroid secretion with the object of causing destruction of the glandular tissue and thus decreasing the amount of secretion that entered the system. He was able to recall nine cases treated with more satisfaction in this way than by any other plan of treatment.

Dr. G. BETTON MASSEY of Philadelphia agreed with Dr. Roussell's statement with reference to the *x*-ray. Since he had been using deep penetration with the Coolidge tube, five milliamperes for five minutes, three times a week, he had obtained very definite results and some cures. For mild cases of hyperthyroidism he had for a number of years used iodine with the cathode on the gland and a gauze pad beneath the shoulders, with 10 to 15 milliamperes, for 15 to 20 minutes. With this procedure one had to watch the skin on account of the violent action of the iodine, and he advised the use of ointment afterwards.

Dr. WILLIAM BENHAM SNOW of New York said that exophthalmic goiter was due to defective metabolism, and unless we went back to the metabolism not only in our attempt to cure exophthalmic goiter but in curing other conditions, we were making a serious mistake, and there was nothing so effective in regulating the metabolism as the static wave current. It activated the cells of the body. As it was the function of the liver to destroy the toxins in the circulation, that was the first organ to treat. In the treatment of exophthalmic goiter he believed there was nothing as effective as the static wave current, using it over the back of the neck and over the thyroid gland. With this treatment the tachycardia had disappeared in less than a month. The *x*-ray was a valuable aid in advanced cases. It inhibited the thyroid secretion and the pulse came down gradually to approximately normal. When he undertook a case of exophthalmic goiter he usually asked for five months, as it generally took that length of time to properly treat a bad case. Remarkable results could be accomplished with electricity and the *x*-ray in cases of exophthalmic goiter. When this was said it had been thought that we were exaggerating, but as a matter of record we were not.

Myocardial Degenerations and Their Treatment.—Dr. ALBERT E. ROUSSELL of Philadelphia read this paper, in which he declared that contrary to general opinion diseases of the myocardium were more frequent than those of the endocardium in the proportion of 505 to 245. This did not include the myocardial changes secondary to valvular changes, which were in the majority of instances the actual cause of death. After discussing the protean etiology of myocardial degeneration and calling attention to the different forms of degeneration, he described a method by which one might recognize a faint cardiac murmur that might ordinarily be overlooked and which he believed was original with him. Ashner had noted that in most individuals pressure on the eyeball caused a slowing of the pulse rate up to ten beats to the minute through vagus inhibition, and Loeper and Morelot, in 1913, noted the abolition of this reflex in tabes. This cardiac inhibitory reflex might be considered as the bilateral group of cells in the medulla at the level of the nuclei of the origin of the vagi, and when the tonic action constantly exerted through this center was increased, cardiac inhibition resulted. For several months the writer had applied this method in the examination of all his heart cases and found that in the majority of instances this pressure exercised for about two minutes would not only accentuate existing organic murmurs, sometimes to a marked degree, but would also bring out a previously unsuspected murmur. On the other hand, functional murmurs would seem to diminish in intensity or entirely disappear. In the treatment of acute myocardial degenerations rest followed by gradual exercise was of main importance, with the exhibition of tonic doses of strychnine. The *x*-ray for lowering blood pressure produced only temporary results.

Dr. MARY L. ARNOLD SNOW stated that they had many cases of myocardial insufficiency in which the blood pressure lying and sitting had been reversed, the

patient presenting a higher blood pressure when lying than when sitting. In these cases they used mechanical vibration with the ball vibrator between the seventh cervical and first dorsal vertebræ one and one-half to three mintes, as decided by the condition of the patient. The relief afforded was relatively commensurate with the symptoms and pathology of the condition. Many post-operative cases and cases that had not only hypotension but reversal of the blood pressure had been brought to approximately a normal condition for the sitting and lying blood pressure by this treatment.

Capt. C. M. SAMPSON of New York called attention to the fact that diathermy was also an aid in the treatment of heart conditions. The pain in angina was due to anemia as well as to the distress of the heart muscle due to blocking. Diathermy would produce hyperemia in any part, and in the heart would overcome the symptoms due to anemia.

Dr. FREDERIC DE KRAFT of New York called attention to a report made in 1916 in which he spoke of the use of diathermy in the treatment of various heart conditions. If one started with a low current, 100 milliamperes, and a short spark gap, and then gradually increased the current, and watched the patient, for there must be perfect balance, on some cases of valvular heart conditions, one was able to get a good effect that was not obtained from medicines.

Phototherapy in Benign Diseases of the Skin.—Dr. HERBERT F. PITCHER of Haverhill, Mass., presented this paper, which was based upon data drawn from his practice and from cases referred to him by physicians who had tried the routine remedies without beneficial results. Chronic eczema, psoriasis, acne, and some other skin diseases were usually due to gastrointestinal disorders, delayed metabolism, and other deranged conditions causing autoinfection. D'Arsonvalization aided oxidation in the tissues, stimulated the sudoriferous and sweat glands; while the wave generator, sinusoidal and static currents improved metabolism and promoted elimination from the bowels and kidneys. In treating cutaneous manifestations, one must fully understand the physiological properties of the indicated modality, its quality and quantity, and acquire a technique as nearly perfect as possible. If it was the Roentgen-ray it must be remembered that it was a two-edged sword, capable of causing great injury as well as great benefit. It could be made to produce a sedative, a stimulating, or a destructive action, depending upon the milliamperage or the amount of current passing through the tube, the length of the parallel spark gap, the distance of the anode of the tube from the skin, and the time of exposure. In a way the ultraviolet or quartz light had the same qualities, except its destructive qualities were not so far-reaching even in intensive applications. Even where blistering occurred, the results were not much different from sunburn, for in a few days the blisters subsided, the skin peeled and a new epidermis formed as soft and pliable as formerly. In palmar eczema, where the skin was thickened and fissured, the static brush discharge was an excellent auxiliary to the *x*-ray. The writer discussed the method of applying the various modalities in varicose ulcers, pruritus, acne vulgaris, acne indurata, scar hypertrophy or keloid, hypertrophic scars, acne rosacea, lupus vulgaris, lupus erythematosis, herpes zoster, seborrhea of the scalp, alopecia areata and other skin affections. Much could be written, he said, on the beneficial results of the treatment by ultraviolet light in sycosis, furunculosis, and carbuncles; also for the Roentgen ray in ringworm, in favus, hyperidrosis, mycosis fungoides, multiple warts and leukemic tumors of the skin.

Importance of Technique in the Application of External Therapeutic Measures.—Dr. ALFRED T. LIVINGSTON of Jamestown, N. Y., presented this paper in which he described the proper method of administering ergot hypodermically which he had recounted in previous papers, emphasizing the importance of administering it slowly. After experimenting with many localities he had long ago settled upon the region over the left scapula or between the left scapula and the spine as the best for the purpose. The results would be more satisfactory if the patient was recumbent and lying on the right side, and remained recumbent for at least an hour after the administration of the dosage. He then spoke of dry-cupping and recalled that he had devised the vacuum cup many years ago. The more cups that were applied at the same time over the region of the congestion of inflammation the better. He had upon his own person applied nineteen of these cups at one time and was greatly soothed by the lowering of tension and the withdrawal of blood from the brain and spinal centers. He had found this to be the usual result when but a half dozen cups were used, placed either side of the upper portion of the spine, above, opposite, and below the seventh-cervical vertebra, the patient lying prone. Among the conditions helped by dry cups were headache, nervousness, mental confusion, insomnia, inflammations within the thorax, abdomen, and pelvis, including acute inflammation of the kidneys and even appendicitis. Dry-cups, galvanism, and ergot constituted a triumvirate of corrective power which were difficult to duplicate in any other three therapies. Conjunctivitis, blindness from optic atrophy and from wood alcohol by filling the orbits of the eyes with yellow clay paste, three-fourths of an inch thick on the closed lids, and a piece of tinfoil, tightly roll at one end on the negative rheophore tip and pressed on the clay to make contact. The current was then gradually turned on until the meter showed 10 milliamperes and this treatment was continued from one to two and one-half hours. Most remarkable results had been obtained by this treatment in apparently hopeless cases. In order to secure the many and varied results possible with galvanism too much emphasis could not be laid on the importance of using a *rational technique* and a *proper dosage* applied a *sufficient length of time*. Thus used, galvanism, the twin of vital force, would develop atrophied muscles (increase metabolism), awaken activity in an indolent organ, increase functional action in a gland, dissipate pain or nervousness, induce sleep, restore sight, hearing or other special sense in certain cases, and would remove fibroid hypertrophy and even pus through the natural channels of elimination.

The Rôle of Radium Needles in the Treatment of Malignant Disease.—Dr. WILLIAM L. CLARK of Philadelphia made this presentation, describing his early experiments in attempting to devise radium needles that would be suitable for the treatament of malignant disease. He was told that the secondary rays from the needles would produce necrosis and sloughing. This he determined to test out for himself. He found it quite true that one would get sloughs from the secondary rays in dry skin, but in malignant disease this did not occur unless the exposure was too prolonged. This was explained by the fact that in malignant disease the moisture around the needles absorbed the secondary rays. Unless the tissue was very much devitalized one could leave the needles in for twenty-four hours without causing sloughing. Radium capsules and plaques had a distinct field of utility, but the needles had made many things possible which were not possible without their use. The removal of a malignant growth from the mouth and of metastatic glands in the neck was pure folly because the migratory cells were not taken into account. The migratory cells in the ducts should be treated, not necessarily with the needle because they might be reached by the element properly filtered. The needle might be inserted right into the gland, which was absorbed, inhibited, retrogressed, and disappeared. Where the glands had broken down it might be possible to excise them and then insert a radium tube. They had had cases treated in this way in which they appeared to have inhibited malignant conditions. Therefore, he believed in all cases supposed to have metastases in the early slow stage, if they destroyed the localized lesion they might very seldom expect a cure, unless something was done to prevent the migration of the disease to the glands. Lantern slides were exhibited showing the use of radium needles in cancer of the stomach following gastroenterostomy, squamous epithelioma of the lip, a malignant growth of the mastoid region which, when treated with the radium needles, showed regression without great destruction. Results were also shown in angioma and glioma and other malignant conditions. Dr. Clark entered a protest against the taking of pathological specimens indiscriminately. In stomach and uterine cases they sometimes used the capsules and sometimes the needles. In cancer of the rectum they sometimes used electro-

thermy and sometimes the radium needles. He believed the radium needle had come to stay.

The Futility and Unfairness of Improper Technique in the Use of All Physical Measures.—Capt. C. M. SAMPSON, M. C., U. S. A., of Hoff General Hospital, Staten Island, N. Y., presented this paper, in which he expressed the opinion that the greatest obstacle to be overcome in placing physiotherapy on its rightful plane and giving it its proper place as a specialty distinct from either medicine or surgery, yet closely interwoven with both was the prejudice against its use existing in a good portion of the medical profession itself. The blame for this prejudice must be placed squarely where it belonged, upon the shoulders of unsuccessful users of physical remedies. The profession at large could hardly be censured for judging the different modalities by the results following their use, and these results in a very large percentage of cases were either nothing or worse. It did not require a great strain of the imagination to picture the intense prejudice that would have arisen against music at first had each purchaser of a musical instrument at once started upon a concert tour without waiting to acquire a technique and had each one given it up when the public failed to respond; yet this was a practical parallel to what had happened in the field of physiotherapy, the medical profession taking the place of the public in the simile. Before a surgeon's statistics could be accepted as reliable and as proving or disproving the value of certain procedures he must have acquired a good technique and this required a thorough understanding of every factor influencing the final results. To build a technique in physiotherapy demanded the same intimate knowledge of all these factors except the skill with the knife, and instead of this one had a wide assortment of physical remedies each acting in its own peculiar manner, some comparatively simple and some extremely complex. Why should not physiotherapy be judged as in surgery, not by the failures of the novice or of the irresponsible, but by the results of men of experience and ability? He believed that a recognition of the fairness of this was beginning to make itself felt and was one of the reasons for the fast diminishing prejudice now evident. Contrary to the not unusual idea that if a man had failed to make good somewhere else on the staff he was good material from which to make a director of a new physiotherapeutic department being established, it was a fact that the only man who would do was one who had proven himself a keen student and successful practitioner. There was no other specialty so absolutely demanding the broad influence of years of successful general practice as that of physiotherapy and one could safely predict failure for any man not intelligent or energetic enough to succeed in general practice. The technique of physiotherapy was a science which could be taught but the prescribing was an art which, like music, could only be acquired by the faithful. A most important point in technique was the proper blending of physical remedies. Rightly combined and sequenced, physical remedies would often amaze even an experienced user. They could not afford to lose from their clinic any one modality. The man who attempted to practise physiotherapy with only one remedy or class of remedies was sadly handicapping himself and his many inevitable failures would not only discourage him but were sure to react against the physical field as a whole. While it was unreasonable to ask a successful physiotherapist not to become enthusiastic, that enthusiasm should be kept within bounds, and should avoid destructive radicalism.

The High Potential Currents, Their Significance and the Indications for Their Use.—Dr. WILLIAM BENHAM SNOW presented this paper, in which he expressed the belief that static and high frequency currents with their numerous modifications in the hands of the physician who understood their physical characteristics and physiological effects were destined to play a very large rôle in the future of medical practice. The action of electricity as applied with high potential currents had nothing in common with the body currents, as some modern writers seemed to think, or with the currents of low potential, except in the qualities common to, and characteristic of all electric currents. By this he implied that the application of these currents as employed in therapeutics possessed qualities infinitely superior to the currents of low potential in their *influence upon metabolism* and in their *mechanical* and *thermic* effects as influencing the processes for which nature had not made adequate provision to overcome or control. The high potential static current possessed the property of diffusion by means of which it pervaded and passed through all the tissues of the body, back and forth, with every charge and discharge of the spark gap during the administration of the one-pole static wave current. During this passage of the current in and out of the body it influenced not only the cells but also produced energetic local responses where the current entered and escaped from the body causing successive energetic muscular contractions relative to the length of the spark gap and the size of the electrode. The static current and other modalities of high potential were especially capable of effecting the dispersion of local stasis and infiltration, rendering possible the prompt cure or relief of conditions not otherwise so effectually relieved. Clinical evidence had so fully established the validity of these statements that there was no likelihood of their being controverted, and no effort was longer made to do so except by those who were unfamiliar with the relative potentiality as compared with the currents of low voltage. The essayist gave a résumé of the variety of conditions favorably influenced by high frequency modalities employed and their relation as affecting the principles of administration. Details in connection with the use of the auto-condensation current in the treatment by auto-condensation were discussed and the importance of a proper technique emphasized. A uniform scale of dosage should be employed. A careful study of the relative effects of varying dosages either in point of time or milliamperage had caused a rise instead of a fall in blood pressure which was attributable to over-stimulation. It was the consensus of opinion of those familiar with the method that a dosage of 500 milliamperes administered on the auto-condensation couch with a cushion three inches in thickness for twelve minutes produced the maximum effect in lowering blood pressure. The best results were obtained when the current was administered from a directional source. The employment of the high potential currents by scientific methods evolved during the past two decades had opened to the medical profession and humanity prospects for the relief of suffering and the prolongation of life which prior to their introduction were impossible and which had been demonstrated as invaluable in the management of conditions inflammatory, infectious, and metabolic.

Diffusion of Foreign Ions into the Body by the Direct Current.—Dr. G. BETTON MASSEY of Philadelphia read this paper, in which he refuted recent statements denying the possibility of securing the specific action of medicines in a part of the body by diffusing its ions into it by the direct current. He stated that we were only now glimpsing at the true nature of ionization, and that we did not realize that drugs inserted into the body in watery solution during most of their stay in the body were in the ionic state, no matter how introduced, whether by the mouth, by hypodermic injection, or by ionization, the ionic state being the result of simple solution in water, and that these ions reached what might be called their "opposite poles," and gave up their charges *at any point* in the body when they met their affinities. This selective action between molecules, on which the physiological action of remedies of many kinds doubtless depended, was a simple electrochemical reaction between an atom or molecule deficient in electrons and its mate with an excess. Experiments in passing iodine through a potato and finding it as an active atom only at the anode should be interpreted to indicate that such was true of all drugs dissolved in the body as ions, with the understanding that the opposite pole was found within the body itself whenever the foreign body met its affinity. The practical value of medicinal ionization should be attacked only on clinical grounds, and preferably with adequate control experiments. Under such tests the method would be found valuable or valueless, the only explanation of the latter possibility being a failure to consider secondary factors in the work. The physical laws of which the main factors were portrayed by Leduc were as definite as the action of the planets.

Diathermy an Aid in Empyema.—Dr. A. B. HIRSH of New York read this paper, in which he considered certain cases of empyema in which even most persevering, faithful attention to approved surgical technique failed to induce closure of the diseased chest cavity, where the infective process refused to yield though repeated change was made in chemical agents intended to check the purulent secretion. It was under such circumstances, beginning in December last, that a number of cases at Hoff General Hospital were referred by the Surgical Section to the Section on Physiotherapy for possible betterment through application of one or more of its physical treatment measures. The conditions faced in such a case were those dependent upon an active infective process with abundant purulent process in a practically closed cavity the walls of which, through respiration, were in continual action. Two therapeutic indications were therefore presented, the first being to induce intense phagocytosis for removal of infective material, and, second, to markedly increase the arterial blood supply locally for improved nutrition of involved structures, having in mind the early closure of the pleural space by enforced growth of granulation tissue. The facts known in regard to diathermy suggested that this agent might be effective in these cases, hence its use was originated at Hoff General Hospital for this purpose. An illustrative case was cited in detail, as it served to bring out most of the difficulties presented by this class of cases. This patient had a history of empyema covering eighteen months, during which time he had undergone several rib resections. Finally an operation was performed, which was followed by diathermy, under which the case progressed favorably. It was given daily to the involved region. The one electrode, of 22 gauge Crooker metal, 5 inch by 8 inch, was placed directly over the inflamed area, including the incision scars and the discharging aperture. The other much larger electrode was held over the anterolateral surface of the left chest. The electrodes were to be shifted downward in the course of treatment so as to take in areas treated by the Dakin tubes. Starting at 300 milliamperes for 40 minutes, the current was in a few days increased to 650 milliamperes for 60 minutes; later, to 2000 milliamperes. A month later ultra violet light was added for its systemic effect. This had in view the excellent results obtained in treating chest cases, especially tuberculosis, with outdoor therapy. Each day the quartz lamp was applied at a distance of twenty-four inches for three minutes, to each body region, the chest, arms, legs, front, and back being rayed in succession. Areas where diathermy was applied were avoided so as not to interfere with its continuing action. Patients who had this general ultra violet treatment showed subjectively and objectively a better morale. At the end of six months roentgenograms showed a disappearance of the osteomyelitis, an almost complete correction of the chest deformity, and the wound had closed. Diathermy was now a recognized addition to the treatment of empyema in this institution. A study of the literature showed a growing tendency to use diathermy, in addition to other electrical modalities, in affections of the chest. It was generally indicated in the treatment of pleurisy, both of the serous and the fibrinous varieties.

Captain SAMPSON of New York said that following their success with diathermy in a few cases of empyema they were allowed to have a series of the worst cases, and it was on the results in this class of cases in which everything else had failed that the value of physiotherapy was to stand or fall. Two points he thought should be emphasized. The first was the influence of diathermy on infection. Applied to an area of infection it stimulated metabolism and the absorption of the toxins of dead bacteria and it strengthened the reparative processes. It brought more phagocytes to the field of action and gave the phagocytes more energy. Diathermy could be used at the same time that Dakin's solution was employed, as it did not change the composition of chemical solutions.

The Use of the Static Machine in Reconstruction Work in the United States Army.—Dr. C. L. BARBER of Lansing, Mich., presented this contribution, in which he stated that he had been a user of electricity in general and surgical practice for thirty-five years, and had seen many beneficial and happy results with its use as a remedial agent. In those cases in which he had not obtained the desired results he knew it was due to his not using the proper modality of treatment, at the right time and in the right place. It was his desire, he said, to stimulate the members of this society to a more thorough campaign to teach the value of physiotherapy, by reading papers and telling of their experiences to the members of their own county and State societies, and if possible to induce every medical college in the land to sustain a professorship and teach electrotherapy, and the value of static electricity as a remedial agent for the use of the general practitioner. In the reconstruction hospitals it was in acute strains, bruises, and contusions of the various joints and muscles, as well as those injuries that had become chronic in character, that the static machine proved a valuable adjunct to their armamentarium. A number of cases were cited, among them that of a private who had been in the hospital for two months with boils on the back of his neck. The effluevе from the deKraft pencil used once daily for four days effected a cure. Very many cases of neuritis, neuralgia, arthritis, synovitis, paresis, catarrhal deafness, myositis, locomotor ataxia, etc., came under the list of diseases that would yield to the subtle therapy of the static current.

Physiotherapy in the Treatment of Industrial Disabilities.—Dr. WILLIAM D. MCKEE of Haverhill, Mass., presented this paper, in which he spoke of the growing recognition of the importance of caring for the health of the industrial worker. The treatment of accidents and sickness, or, in other words, the disabilities of industrial life or occupations, now formed a large part of the work of physicians and surgeons in productive business communities. All plans for the proper care of those disabled by industrial pursuits must certainly include physical measures which had been found of such inestimable value in the reconstruction work of the army. Physiotherapy as embodied in the use of electricity, light, *x*-rays, heat, cold, water, massage and exercise could be used properly only as allied and interdependent agencies, any one of which alone had a very limited scope as a therapeutic value, so that to achieve the greatest measure of successful results our equipment must include several if not all of those means for producing the desired mechanical, chemical and heat or thermal effects. Sprains, fractures and contusions with their attendant congestion, swelling and local rise of temperature had been treated with most gratifying results with electrical and other physical agents. Arthritis and other bone and joint conditions were quickly relieved and permanently improved by those agents which produced heat and mechanical effects. The healing of wounds was greatly facilitated by the different healt producing factors which increased the peripheral circulation and promoted nutrition. The application of physical measures in the treatment of ailments and injuries pertaining to industry was relatively no different than that of other fields of existence, but a new point of view and an awakening on the part of the profession had been created toward the value of physical therapeutic treatment by reason of what had been accomplished by these means in the reconstruction of our disabled soldiers. Many of the big industries of the country now had completely equipped departments for physical therapeutic treatment and were employing physicians and assistants who were familiar with their use. The need and means of preventing disabilities and the necessity of employing physiotherapy or physical measures of treatment for those that did occur was a viewpoint which was being rapidly molded and adapted to the great service of restoring to active and useful lives those unfortunate victims whose ailments were classified under the term industrial disabilities.

Graduated Exercises in Cases of Functional Heart Disturbance.—Major B. W. CARR of Washington, D. C., contributed this paper, in which he said that an opportunity was rarely afforded to observe the effects of graded exercises on classes of young men with cardiac disturbances both organic and functional, under so favorable conditions as in the large army hospitals during the world war. A large part of the cardio-vascular patients coming under observation in the army hospitals were suffering from functional disturbances of

various kinds, dependent upon the nerve control of the heart action. A systematic course of graduated exercises of rhythmic type was found to possess special value with these cases. The writer was privileged to observe daily for some time the results of exercises of this type upon classes of cardio-vascular cases at Walter Reed General Hospital. The five grades of exercises used were as follows: (1) Passive and resistive exercise. (2) Active exercises, in lying and standing positions. (3) Active exercises with co-ordination. (4) To speed with co-ordination. (5) Walking and slow running, graded. In the lower grades special efforts were made to induce muscular relaxation and lower nervous tension. To this end the directions for the movements were given deliberately in a low tone of voice and the movements carried out slowly with rhythmic breathing. The effect was almost hypnotic and the spectators would note the somnolent effects of listening to the commands and watching the class. Rest periods with complete relaxation were frequent. The aide in charge kept close watch for the appearance of any untoward symptoms and in doubtful cases the pulse was taken at frequent intervals. After giving detailed instructions for these exercises and citing statistics to show the beneficial effect on the pulse rate, the decrease in pulse rate following exercise being noticeable in its constancy, he concluded that the value of graduated exercises in functional disturbances of the heart must be conceded, but in order to obtain good results the treatments should be carried out systematically and under competent supervision. Each case was to be considered individually and advanced in the grades only as the condition indicated. Exercises of the character of Grades I and II might be initiated early in many of these cases, and if judiciously selected, exercises would not be found inconsistent with the prescription "rest."

The Relation of Physiotherapy to Surgery.—Dr. FREDERICK J. COTTON of Boston presented this paper. He stated that for a dozen years or more he had depended on the physiotherapist's aid for results. The results of this work in the war had been very notable, but unfortunately, since the close of the war this improvement had not held in industrial cases. The real reason of this was that they were missing the main lesson—the value of team work. The physiotherapist who worked alone got no further than the surgeon who considered his operation the only thing worth while. This was true in the army and it was true now. The speaker reviewed a number of cases which had had physiotherapeutic handling in various hands, mostly in rather expert hands, and yet all save one, had lost time, often many months in an attempt to do what could not be done. The moral was that all surgical cases should be surgically reviewed; that surgeon and physiotherapist were mutually indispensable, each to the other; that the present tendency to erect clincs for physiotherapy was all wrong. They were going to have medical teams not for physiotherapeutic work only but for co-ordinating all means toward the recovery of this class of patients, teams that could utilize the service of the internist and the neurologist, as well as the surgeon and the physiotherapist.

Physiotherapy in the Treatment of Trauma.—Dr. MARY L. H. ARNOLD SNOW of New York presented this communication. She defined trauma in its broadest sense as "any injury to the body due to violence or a wound" and its causes might be mechanical, chemical or thermal, or bacteriological, infectious. It might be a fracture, neuritis, a bruise, a sprain, an inflamed joint, an atrophy, a over-strained heart, lacerations with subsequent development of scar tissue, myalgia, neuroses, including hysteria and traumatic tremor, a tennis elbow, a Charley horse, a dislocation with the resultant enlarged joint, an ulcer or gangrene, a burn with keloid and scar tissue, or an infection, but whatever its character, relief was the one desire of the afflicted individual. As an offset to the meagre offering of the pharmacopeia for the alleviation of the above conditions, physiotherapy was replete with modalities from which the surgeon might choose, selecting that whose action of which physically and physiologically was best suited to relieve the pathological condition presented.

Among these measures were radiant light and heat, dry heat, the static current including the resonator emeuve, the high potential modalities, including those of low frequency as well as those of high periodicity and high frequency, the *x*-ray, radium, the sinusoidal current, the galvanic and faradic currents, including ionization, hydrotherapy, paraffin baths, mechanical vibration and massage, exercise, and the ultra-violet light. The employment of these modalities on a rational basis called for a consideration of the relation of the physical properties of the agents to the physiological action upon the tissues. To illustrate, in the after treatment of a fracture, a sprain, or a mechanical injury, the indications to be met were the removal of edema, the relief of neuritis, muscular tension, and sensory disturbances, as well as the restoration to normal activity. For the edematous condition, radiant light and heat and mechanical vibration in the form of light vibratory friction over the muscles involved, and interrupted vibration over the joints, the static current and the brush discharge, diathermy or the vacuum tube connected to the static machine might be effectually used. The essayist described more in detail the method of applying these agencies and how they acted to produce the results desired. She then considered the effects of static electricity under the headings: (1) Circulatory effects; (2) relief of nervousness; (3) increase of diaphoresis; (4) increase of metabolic activity.

In that class of cases in which an injury was associated with infection, or in treating the after effects of an infectious process, a scar tissue formation, as for instance, the result of chemical action, as burns, the employment of radiant light and heat, or dry hot air, diathermy alone or as an auxiliary measure, and the *x*-ray or radium might be indicated. For septic infection the use of radiant light and heat or of dry heat or hot air was indicated. Radiant light and heat acted in acute and subacute infectious conditions, alone or as an auxiliary measure, by increasing phagocytosis, inhibiting germ activity, by stimulation, and by the elimination of toxic products. As a derivative measure it lessened stasis, lowered arterial tension, relieved an overworked heart and promoted the elimination of catabolic processes. In the use of diathermy, too much attention could not be placed upon time as a factor as it made for success or failure. The heating process should be gradual, the patient's tolerance being reached during the last fifteen minutes of the treatment, and treatments should consume less than three-quarters of an hour to an hour at a time. Their treatments, in all cases requiring diathermy, were given daily until improvement warranted a lessening of the number to every other day. When scar tissue was present the use of ionization, the *x*-ray, radium or ultra-violet light was indicated. The method of employing chlorine ionization was described and a number of cases illustrating the results in various conditions reviewed. In closing, Dr. Arnold-Snow stated that with its large equipment, its extensive range of action, its many modalities, and the marked benefits derived from their use when technically applied, physiotherapy was rich with possibilities for the treatment of trauma in the hands of any practitioner who would take the trouble to give the subject its due consideration.

Physiotherapy in the United States Navy.—Commander WILLIAM SEAMAN BAINBRIDGE delivered this address which was profusely illustrated by lantern slides. He stated that in 1916 he made recommendations urging that we might have in the United States Navy adequate physiotherapeutic departments in connection with one or more of the large base hospitals, but we were illy prepared for war, and illy prepared for peace, certainly in the navy. Last fall he had obtained permission to establish a fully equipped physiotherapy department in the Third Naval District. The details in connection with this work Commander Bainbridge described, and stated that since the department began its work they had given about forty thousand treatments and they were daily convincing the old line officers of its value and were winning their cooperation. The lantern slides demonstrated the methods employed and some of the very remarkable results obtained.

(To be concluded.)

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

West Virginia State Board of Health.

July 13, 1920.

(*Continued from page* 798)

MATERIA MEDICA AND THERAPEUTICS.

1. What is an alkaloid, a tincture, a fluid extract?
2. What drugs would you use hypodermically, to meet the following requirements: (1) To stimulate the heart's action; (2) To produce emesis; (3) To control hemorrhage?
3. What is the strength of normal salt solution? How would you prepare same from common table salt? Give indications for its use, and modes of administration.
4. How is nitrate of amyl used, and for what purpose?
5. Give principal alkaloid of belladonna, indication for its use, also dose.
6. What is the physiological antagonism between belladonna and morphine?
7. Give the preparations of bismuth, how administered, and indications for use.
8. Give the preparation and doses of the mineral acids and their therapeutic effects.
9. State source of quinine; for what is it a specific?
10. Give complete treatment for a case of dysentery.
11. Write a prescription for a general tonic, same to contain tincture of nux vomica and a preparation of arsenic.
12. Write a prescription for a syphilitic adult, same to contain potassium iodide and corrosive sublimate in solution.

PRACTICE AND PEDIATRICS.

1. Give symptoms and treatment of scarlet fever.
2. Give etiology, symptoms, and treatment of erysipelas.
3. Give symptoms and treatment of influenza.
4. Give symptoms and treatment of acute nephritis.
5. Give symptoms, treatment, and cause of urticaria.
6. Differentiate between gastric and duodenal ulcer.
7. What is neuritis; symptoms and treatment?
8. Differentiate between bronchial and lobar pneumonia, and give treatment of lobar.
9. Give method of preparing milk for a baby two months old.
10. What is marasmus, and its treatment?
11. Give symptoms, incubation period, and treatment of measles.
12. Mention four complications of gonorrhea, and what is the State law relative to venereal diseases?

OBSTETRICS AND GYNECOLOGY.

1. What are the synonyms for obstetrics?
2. What are the immediate and remote dangers of abortion?
3. How can a foot be distinguished from a hand, or a knee from an elbow?
4. When should the forceps be applied in a labor delayed by weak uterine contractions?
5. Is the induction of premature labor indicated when children of previous pregnancies have been still-born from excessive development? Give reasons for your opinion.
6. What do you mean by the mechanical phenomena of labor?
7. What is included in the term external genitals?
8. What are contained between the folds of the broad ligament on either side?
9. What are the dangers in the use of the uterine sound?
10. What are the varieties of perineal laceration?
11. What are the chief causes of enlargement of an ovary?
12. Define metritis and endometritis; give etiology of each.

ANSWERS.

MATERIA MEDICA AND THERAPEUTICS.

1. An *alkaloid* is an organic substance, basic in character, containing carbon, hydrogen, nitrogen, and generally oxygen; it has a very complex constitution; it acts with acids to form salts in the same way that ammonia does.

A *Tincture* is an alcoholic solution of a non-volatile substance.

A *Fluidextract* is a solution of a vegetable drug, of such strength that 1 cc. of the fluidextract represents 1 gram of the drug.

2. For hypodermic use. A *cardiac stimulant*, atropine sulphate. An *emetic*, apomorphine hydrochloride. *To control hemorrhage*, adrenalin.

3. Normal salt solution is of the strength of 0.7 of 1 per cent. It may be prepared from common table salt by placing a teaspoonful of salt in a quart of warm boiled water. It is *indicated* in shock or hemorrhage, as an irrigating fluid, and for intravenous infusion. *Method:* An aspirator needle is sterilized by boiling, and is then inserted into the loose connective tissue of the buttock, back, abdomen, or axilla. The needle is connected with a reservoir by means of a rubber tube, and the reservoir held several feet above the point of insertion of the needle, so that the fluid is slowly forced into the tissues, forming a swelling which slowly subsides as the fluid is absorbed. If more than a pint is injected the needle should be introduced in another situation.

4. *Nitrite of amyl* is used by inhalation; in cases of angina pectoris and cardiac dyspnea.

5. The principal alkaloid of belladonna is atropine. *Therapeutic indications:* For the relief of pain, to dilate the pupil, to check secretions, for diarrhea, for asthma, for shock and collapse, for colic of all kinds, for delirium, for epilepsy, chorea and migraine, for paralysis, for cough, in constipation, in chorea, spermatorrhea, or cystitis. Dose, 1/150 of a grain.

6. The physiological antagonism between *Belladonna* and *Morphine* is as follows: *Belladonna* (1) acts as an excitant and stimulant of the cerebrum; (2) produces dilatation of the pupil; (3) quickens the pulse; (4) first stimulates and then depresses the respiratory center; (5) decreases all the secretions, except urine.

Morphine (1) acts as a sedative on the cerebrum; (2) contracts the pupil; (3) slows the pulse; (4) does not at first depress respiration, but in overdose it paralyzes the respiratory center; (5) checks all the secretions except perspiration.

7. The official preparations of bismuth are: The citrate, bismuth and ammonium citrate, the subcarbonate, the subgallate, the subnitrate, and the subsalicylate.

Therapeutic uses of bismuth: "Bismuth salts, as dusting powders and in ointments, are used for excoriated surfaces, wounds, etc., and in the treatment of skin diseases. The subnitrate, snuffed into the nostrils, is employed in coryza and simple ozena and as a topical application in aphthous or nursing sore mouth, mercurial ptyalism, chronic conjunctivitis, and granular lids, and ulcers of the rectum. Internally bismuth salts are useful in gastralgia, vomiting, gastritis, and diarrhea, and as intestinal antiseptics."—(Wilcox's *Materia Medica.*)

8. Mineral acids. *Preparations and doses.*—Aromatic sulphuric acid, dose 15 minims; diluted sulphuric acid, dose 30 minims; diluted nitric acid, dose 30 minims; nitrohyrochloric acid, dose 3 minims; diluted nitrohydrochloric acid, dose 15 minims; diluted hydrochloric acid, dose 15 minims. *Therapeutic effects.*—Any well diluted acid will check slight hemorrhages; sulphuric acid has been used locally to check the night sweats of phthisis; dilute nitric and sulphuric acids have been used in diarrhea; dilute hydrochloric acid is given to remedy deficiency of acidity of gastric juice; dilute nitrohydrochloric acid is used in disordered conditions of the liver.

9. *Quinine* is derived from cinchona; it is a specific for malaria.

10. *Treatment of bacillary dysentery.*—"In *acute* cases the patient must be confined to bed, and the food must be fluid (milk, chicken tea, barley water, etc.). Pain and tenesmus may be met by morphia, or small

laudanum enemata. The ipecac treatment is much favored in the tropics. The stomach being kept empty for three hours, m. xx of laudanum are given, and in about twenty minutes gr. xx-xxx of ipecac, followed by *absolute rest on the back.* If rejected, the dose is repeated, and the same dose is given every eight hours or so for two or three days. Alternatively Sodii Sulph. 3i may be given every two hours till a feculent motion is produced, and then so as to produce two or three motions daily. When mucus and blood have gone, bismuth and opium are given till the motions are solid. Calomel, gr. ¼ to ½, every hour, or minute doses of perchloride may also be given in the acute stage. Irrigation is contra-indicated by the pain and irritability of the bowel. *Chronic* cases must be treated at first by rest in bed and careful dieting, combined with irrigation. Two to four pints of a warm (100° F.) solution of nitrate of silver (grm. 1.0 to 3.0 to the liter) are allowed to flow slowly through a long tube into the bowel, the patient lying on his back with the buttocks raised on a pillow. Large doses of bismuth are also useful. *Serumtherapy:* A polyvalent serum has been prepared by Shiga, and used by him with good results. Other observers are not so enthusiastic. A vaccine has been beneficially employed in chronic cases."—(Wheeler and Jack's *Handbook of Medicine.*)

Treatment of amebic dysentery.—"Rest in bed and light or liquid diet are required, according to the severity of the case. Symptoms may be relieved as in bacillary dysentery, but internal remedies (ipecacuan, antiseptics, etc.) are of little use. Irrigation of the bowel is the most important measure, and Osler strongly advocates warm solution of quinine in strengths increasing from 1 in 5,000 to 1 in 1,000. One to two liters should be used twice daily. Nitrate of silver may also be used. The treatment of hepatic abscess is surgical."—(Wheeler and Jack's *Handbook of Medicine.*)

11. ℞

Ferri et ammonii citratis ʒj
Tincturæ nucis vomicæ
Liquoris potassii arsenitis āā 3ij
Tincturæ calumbæ ʒj
Syrupi limonis ʒij
Aquæ q.s. ad ʒviij

Misce et signa: One teaspoonful, three time a day, after meals.

12. ℞

Potassii iodidi ʒiv
Hydrargyri bichloridi gr. ij
Syrupi sarsaparillæ compositi ʒiv

Misce et signa: One teaspoonful after meals.

PRACTICE AND PEDIATRICS.

1. *Symptoms of scarlet fever.*—The principal features of the onset are vomiting, rheumatic pains, soreness of throat, high fever, and headache. In infants, convulsions are not uncommon. Soon the throat becomes very sore, the neck feels stiff, and the glands at the angle of the jaw are swollen. On the first or second day the rash comes out, first on the chest, then rapidly spreads over the face, body, and extremities. Its appearance may be delayed for a day or two. As the fever progresses, the throat symptoms become more severe; the tonsils approach the middle line, and yellowish points appear. These may coalesce and form a "patch" resembling that of diphtheria. The *tongue* is at first covered with thick white fur, with papillæ projecting—*i.e.* the white "strawberry" tongue; later, the fur peels off, leaving the typical red "strawberry" or "raspberry" appearance. There may be ordinary febrile albuminuria, even when there is no nephritis. The diazo-reaction may be present.

Treatment of scarlet fever.—The treatment is that of infectious fevers in general, and in addition: "1. *Serum treatment.*—Serum from convalescents, injected in doses up to 20 c.c., has sometimes proved successful. Good results have also been obtained with polyvalent antistreptococcic sera (*i.e.* sera prepared from several different strains of cocci). 2. The danger of spreading the disease is greatest during the desquamative period. Isolation must therefore be kept up for at least six weeks from the onset, or till all desquamation and discharges (nasal, aural, etc.) have ceased. 3. A minimum amount of nitrogenous food, to avoid irritation of the kidneys. This caution does not affect milk, which may be freely used. 4. Daily toilet, tepid sponging, or tepid baths. 5. Inunction of oily antiseptic preparations into the skin, to prevent dissemination of the desquamating scales. 6. Examine the urine daily for signs of nephritis. 7. The condition of the ears must be carefully watched."—(Wheeler and Jack's *Handbook of Medicine.*)

2. ERYSIPELAS. *"Etiology: Predisposing causes.*—(1) A wound or abrasion; (2) constitutional debility; (3) bad hygiene. *Exciting causes: Streptococcus erysipelatis,* which is indistinguishable from the *Streptococcus pyogenes.*

Symptoms: Malaise with rigor and headache. Rash appears within twenty-four hours; it appears first around the wound, which breaks open; it is of a vivid red color, which fades on pressure. Pain and swelling are not much marked. The eyelids and scrotum when affected become very edematous. Vesicles and bullæ form superficially, and a fine desquamation occurs, with some staining of the skin as the rash fades away. The margin is well marked, rather gyrate, slightly swollen, rapidly advancing. Sloughing of the skin rarely occurs, and then usually in cases of scrotal affection. Lymphatic glands in the neighborhood are enlarged and tender. Extension may occur by the lymphatics or veins to the deep structures, or pyemia may be set up. Constitutionally, the patient is very ill, with high temperature—102° to 104° F. Delirium is frequent, especially when the scalp is affected. Vomiting is common. —Grove's *Synopsis of Surgery.*)

Treatment: Prophylaxis.—Secure the asepsis of all wounds. All cases should be isolated to prevent the infection of others. *Local.*—In most cases all that is necessary is to apply lead, or lead and opium lotion. This has no curative action, but it relieves the stiffness and burning. Other applications, such as ichthyol, are used, but do not hasten the termination of the process. A form of treatment which aims at getting ready a supply of phagocytes at a distance of 2 inches from the spreading margin is the most promising. The skin is irritated by free scarification, and the tissues then become infiltrated with leucocytes, which are ready to attack the cocci when they spread in this region. The part is kept covered with carbolic fomentations (1 in 40). *General.*—Good food and stimulants. The bowels should be kept acting by magnesium sulphate, and 2 to 4 grains of quinine with 15 minims of the tincture of perchloride of iron are generally given every four hours. Antistreptococcic serum sometimes is very useful, either injected or given by the rectum. The treatment of cellulocutaneous erysipelas is that of cellulitis." —*Aids to Surgery.*)

3. INFLUENZA. *Symptoms.*—"The onset is sudden. There are severe frontal headache and backache, pains in the bones, and marked weakness. The temperature rises smartly to 102° F. or even 104°. Coryza and catarrh of the upper air passages are present, and the larynx or pharynx is often involved. In mild cases convalescence sets in in a few days, but a feeling of prostration persists for a considerable time. In severer cases, after the first few days, the disease assumes one of three types: (1) *Respiratory type,* in which bronchitis, bronchopneumonia, or croupous pneumonia develops. (2) *Gastrointestinal type.*—Epigastric pain, vomiting, diarrhea, and anorexia, associated sometimes with jaundice and enlargement of the spleen, are the commonest symptoms. (3) *Nervous type.*—The initial pains are more severe, and after defervescence the heart becomes slow or irregular and there is sometimes anginoid pain. Great depression and insomnia follow. In grave cases there may be coma or delirium.

Treatment.—"Rest in bed should be insisted on even in the mild cases, and continued for a day or two after the temperature has become normal, in order to avoid the risk of relapses or complications. The sputum and nasal secretion must be disinfected. Great care must be taken during convalescence, especially in the elderly. The pains of the first stage are best relieved by salicylate of soda, or where headache is severe by phenacetin (acetphenetidin). Quinine is also useful at this stage. Diarrhea may be checked by warmth to the abdomen and by fluid foods; bismuth and sedatives are of little use. For insomnia, bromides may be given, particularly the bromide of ammonium. In convales-

cence, tonics, and especially strychnine, are of importance. Complications must be treated as they arise."—(Wheeler and Jack's *Handbook of Medicine.*)

4. ACUTE NEPHRITIS. *Symptoms.*—"At first chilliness, pain in the back, vomiting, and pain over the brows; the temperature is raised (but may never be high); and the characteristic edema rapidly appears, at first in the eyelids, cheeks, and ankles, and later it may become general. The pulse is usually quick and of high tension from the beginning. The urine is voided frequently, but is scanty in quantity, and indeed may be suppressed for a time. It is dark from the presence of blood, exhibits the well-known smoky hue, and generally gives a copious deposit of urates, blood discs, granular debris, epithelial and hyaline casts, and blood casts, and a large amount of albumin. Though the urine is of high specific gravity, the total amount of urea passed daily is much decreased. Dropsy may be very slight, or may go on to anasarca; there may be dangerous dropsy of the serous sacs, edema of the base of the lung or of the glottis. Anemia is marked. The bowels become constipated, the tongue dry, and there is great thirst. Hypertrophy of the heart is seldom marked in acute cases, although acute dilatation of the heart may occur. If improvement does not quickly take place, grave dangers arise from the development of uremia; and intense headache, convulsions, and coma usher in a fatal termination. Most cases, however, with care, recover; others pass into the subacute stage or "large white kidney."

Treatment.—"Absolute rest in bed, the patient being laid between blankets, dry cupping followed by hot poultices over the loins, a free saline purge, diluents, such as bitartrate of potassium ʒi, syrup of lemon ʒiss, water ʒxx, and a non-nitrogenous diet, form the routine treatment. The diet should, if possible, be of milk only. Remember that nitrogenous extractives are highly irritating to an inflamed kidney, hence the necessity of diminishing the quantity of proteids taken and of withholding such preparations as beef tea. Acetate of potash and nitrous ether with hyoscyamus form a useful mixture, as we have at once a diuretic, a dilator of the peripheral arterioles, and a sedative to the urinary tract. But if there is excessive renal congestion causing marked diminution or suppression of urine, diuretics should not be given till the congestion is relieved by cupping, hot air baths, or leeching, and it may even be advisable to allow nothing but sips of water for the first few days. During the convalescence the anemia should be treated by iron."—(Wheeler and Jack's *Handbook of Medicine.*)

5. URTICARIA. *Symptoms.*—"The eruption appears suddenly, manifesting itself as firm, circumscribed, whitish or pinkish elevations with a reddish areola. The wheals last from a few minutes to several hours, disappear, and are succeeded by others. They are asymmetric, though usually bilateral, pea-sized or bean-sized, and irregular in shape, often, however, being linear. They may involve any portion of the cutaneous surface, or even the mucous membranes. The itching in urticaria is intense, the relief produced by scratching being purchased at the cost of the excitation of new lesions. The skin is markedly sensitive to all sorts of irritation, and responds by the production of wheals. In some urticarial subjects a word may be inscribed upon the skin with a pointed instrument, and in a few minutes the letters will stand out in wheals as if embossed."

Treatment.—"In severe acute cases seen early an emetic should be administered to get rid of the offending substance. Later, magnesium sulphate is to be employed until free catharsis is produced. In subacute cases salol or phenacetin, in 5 to 10-grain doses after meals, may be used with good results. In chronic cases most earnest efforts should be directed toward the discovery of the cause. The patient's dietary must be the subject of the most careful study. Every detail of occupation, of mode of living, and of habits must be scrutinized. The most careful examination, however, will sometimes fail to disclose any discoverable cause. Most cases will be found to be due to gastrointestinal disturbances. In such the most simple diet should be prescribed. In obstinate cases one will do well to restrict the patient for a few weeks to a milk diet. In obscure cases some of the following remedies may be tried: atropin by mouth or hypodermically, antipyrin or phenacetin, quinine in full doses, sulphurous acid in dram doses, long-continued course of arsenic in small doses, bromid of potassium, pilocarpin, etc. Local treatment is necessary to give relief from the harassing itching. The best antipruritic lotions are: Phenol, 1 to 3 drams to the pint; menthol, 5 to 15 grains to the ounce; liquor carbonis detergens, 2 to 3 drams to 8 ounces of water; saturated solution of benzoic acid; alkaline baths (¼ of a pound of washing soda to 20 gallons of water), etc."

Cause: "The great majority of cases of acute urticaria are produced through the alimentary tract. Substances taken into the stomach may cause urticaria, either by a mechanic irritation of the stomach or bowel or by producing a toxemia. Intestinal parasites and undigested aliment act by mechanic irritation. The substances capable of producing toxemia are almost numberless. They may be primarily toxic, or may only develop their toxicity through putrefactive changes while in the bowel. Again, a large number of substances, both foods and drugs, perfectly innocuous to the ordinary individual, act, on account of idiosyncrasy, as poisons to others. The following articles of food are particularly apt to produce hives: lobsters, crabs, mussels, cheese, sausage, pork, nuts, strawberries, etc. The following drugs are prone to produce urticarial eruptions: quinine, copaiba, cubebs, salicylic acid, morphine, turpentine, chloral, etc—(From Gould and Pyle's *Cyclopedia of Medicine and Surgery.*)

6. *Gastric ulcer* is generally caused by injury or bacteria, is most apt to occur between the ages of twenty and forty-five: after eating there is pain localized in the stomach, vomiting occurs soon after eating, hematemesis is common, there is localized tenderness over the stomach, and examination of the gastric contents shows an excess of free HCl.

In *duodenal ulcer* the pain is apt to be more to the right, and to occur at an interval of two or three hours after meals; the hemorrhages will be intestinal, and the blood will be passed by way of the bowels, and not vomited. In many cases the symptoms are identical with those of gastric ulcer.

In *ulcer of the duodenum* the symptoms are very similar to those found in ulcer of the stomach; but in the former condition there is less tendency to vomit, the pain does not come on till some time after food has been swallowed (and has had time to pass the pylorus), and blood in the stools is more common. All of these points are due to physiological and anatomical reasons based on the relative position of the stomach and duodenum. A special sign of duodenal ulceration is the so-called "hunger pain" which occurs at the end of digestion, when the unmixed acid of the gastric juice is passing into the duodenum. This pain is relieved by taking food, for when this occurs the pylorus closes, and the gastric juice is for the time retained in the stomach to be mixed with the food, while the alkaline duodenal and pancreatic secretions are stimulated.

7. *Neuritis* is an inflammation of the nerve-trunks, characterized by pain, impaired sensation, motor paralysis, and atrophy.

Symptoms: "The onset may be accompanied with febrile reaction. The most decided symptom is pain with tenderness along the course of the nerve-trunk and its peripheral distribution, of a burning, tingling, tearing, intense character, increased by pressure or motion. If the affected nerve be a mixed one—sensory and motor—spasmodic contractions and muscular cramps occur, followed by impaired motion, terminating in paresis of the muscles innervated by the affected trunk. The sense of touch and of pain are markedly impaired, while the temperature and muscular sense are but slightly disturbed.

If the inflammation proceed to destruction of the nerve-trunk, wasting and degeneration of the muscular tissue ensue. Various trophic changes also occur, such as cutaneous eruptions and clubbing of the nails. The electro-contractility is impaired or lost.

Treatment: "The affected part should be placed at rest. Repeated blistering along the course of the nerve, preferably with the Paquelin cautery, together with the administration of full doses of potassium iodide is usually successful in relieving the condition. Sedative lotions will also serve to lessen the pain. Sodium salicy-

late, phenacetin, and antifebrin may be of value at times, but in severe cases morphine hypodermically, is necessary. In syphilitic cases, the iodides are indicated, and in those due to exposure to cold and wet and rheumatism, the salicylates and alkalies are of great value. In all cases quinine sulphate, gr. ii to v, every four hours, should be employed from the onset. As the acute symptoms subside, galvanism or a feeble, slowly interrupted faradic current should be used to restore the functional activity of the affected nerve and the muscles to which it is distributed. Potassium iodide and strychnine during this period are also of value."—(Hughes' *Practice of Medicine.*)

LOBAR PNEUMONIA	BRONCHIAL PNEUMONIA
Generally a primary disease.	Generally secondary (to bronchitis or an infectious disease).
Age has little influence.	Generally found in very young or very old.
Sudden onset.	Gradual onset.
Fever is high and regular.	Fever is not so high, and is irregular.
Ends by crisis between sixth and tenth day.	Ends by lysis, at no particular date.
Generally only one lung affected.	Generally both lungs affected.
The physical signs are distinct, and there is a large area of consolidation.	Physical signs indistinct, and the evidences of consolidation are indefinite.
Sputum is rusty.	Sputum is rather streaked with blood.

The *treatment of lobar pneumonia* "depends entirely on the type of case, and the condition of the patient. Routine treatment is the worst of all treatments. Answer the following questions before prescribing: Is the patient full-blooded, and is there a full bounding pulse? Is the pulse feeble, irregular, or intermittent?

"In the first case, in a young and previously healthy adult, if there be cyanosis, or signs of dilatation of the right heart, blood-letting to the extent of a few ounces may perhaps relieve the strain, but more generally treatment should be directed to maintaining the strength from the outset.

"In the latter case we can hope for nothing from a depressing treatment, so stimulants must be resorted to, such as alcohol, ammonium carbonate, egg and brandy mixture, quinine, ether, etc. The giving or withholding of alcohol depends upon its effect upon the pulse; should the pulse rate fall and the tongue become moist it may be continued. In asthenic cases, strychnine hypodermically is necessary from the outset, and normal saline may be given by the rectum or by the skin. Oxygen inhalations are used where there is cyanosis, but it is doubtful whether they have saved many lives. When there is evidence of failure of the heart (weakness of the second pulmonary sound, etc.) digitalis should be resorted to. Many prescribe it from the outset.

"The diet should consist of milk, beef-tea or broths, white of egg, and so on. The patient should be as little moved as possible, and the bed-pan must be used. As in other fevers, an airy room and good nursing are essential.

"Remember that narcotics are not well borne in respiratory embarrassment as a rule. Chloral should be avoided, but *if pain be excessive* a hypodermic injection of morphine does *more good* than harm, notwithstanding that theoretically morphine is contraindicated. It should not be given later than the first few days of the illness. The pain may also be relieved by poultices, which, however, are of doubtful use if carelessly made, or by application of ice. Cold packs applied to the trunk only, and frequently repeated, are very useful in relieving both pain and fever. Depressant antipyretics are to be avoided.

"A Type I antiserum is useful in Type I infections, but not in others."—(Wheeler and Jack's *Handbook of Medicine.*)

9. For an infant of two months, Winters advises the following:

Take the upper eleven ounces from a quart of milk, 16 hours after milking.

Milk-sugar, about 7½ teaspoonfuls.
Lime-water, 4 ounces.
Filtered water, enough to make one quart.
Quantity at each feeding, 3 ounces.
Eight feedings, at 6, 8:30, 11 A. M.; 1:30, 4, 6:30, 9 and 12 P. M.

10. *Marasmus* is a nutritional disorder, and occurs independently of any constitutional disease, as tuberculosis or syphilis, in which diseases, of course, an extreme condition of wasting is seen. The principal causes are bad hygiene and improper feeding.

Treatment: Hygienic treatment is important, and consists in daily bathing, massage with oil, warm clothing, and, if the temperature is subnormal, external heat by hot-water bottles, etc. The principal treatment is the institution of proper feeding. When practicable, wet-nursing will be the best means of giving nourishment, but in cases in which this method cannot be used, a properly modified milk diet must be given. No medicines internally are of any use in marasmus, but any indications should be properly met, and it is well to begin the treatment by giving, for 2 or 3 days, mercury in small doses to clear out the intestinal tract.

℞. Mercury and chalk, Sodium bicarbonate, Sugar of milk, } gr. ij each, gr. xij.

Mix and make 12 powders, and give 1 every 2 hours until 4 are taken, repeating daily for 3 days, and giving every morning following about ½ a teaspoonful of magnesia dissolved in milk or water.—(Gould and Pyle's *Cyclopedia of Medicine and Surgery.*)

11. MEASLES.—*Symptoms:* After an incubation period of from ten to fourteen days the disease is manifested by a chill or chilliness, fever ranging from 101° to 102° F., muscular soreness, headache, and intense nasal, pharyngeal, and laryngeal catarrh. There are present also intolerance to light, redness and watering of the eyes, sneezing, and coughing. On the second day the fever remits to rise again on the fourth day, when an eruption of small, dark red, velvety papules arranged in crescentic groups appears on the face and soon spreads over the entire body. The catarrhal symptoms still persist. The eruption is attended by itching and more or less burning, and about the ninth day begins to fade and disappear entirely by bran-like desquamation. All the symptoms then gradually ameliorate. Koplik's spots (a peculiar eruption consisting of small irregular spots, of a bright red color, with a bluish-white center, which appear on the mucous membrane of the lips and cheeks on the first day of the invasion) are said to be pathognomonic.

"*Treatment:* Isolation, rest in bed, and protection from drafts and from bright light are necessary from the onset of the disease. It is often desirable to give a diaphoretic mixture. The bowels should be kept regular by means of some mild laxative. The diet should be semisolid. Mild cases require no medicines. Cool sponging or the following will reduce the temperature when it becomes alarmingly high:

℞ Tinct. aconiti .....mij to iv
Spts. ætheris nitrosi.....mx to xv
Liq. potas. citrat. q. s. ad f 3j

M. S.—Every two hours.

"Daily inunction of cold cream, cocoa-butter, eucalyptol in petrolatum, and similar oily substances will serve to relieve the itching of the eruption. Camphorated oil rubbed on the chest and applied to the nose and neck aids in lessening the catarrhal symptoms."—(Hughes' *Practice of Medicine.*)

12. *Four complications of gonorrhea:* Epididymitis, periurethal abscess, stricture, gonorrheal ophthalmia.

State law relative to venereal diseases (in West Virginia): All physicians are required to make a report of all cases of gonorrhea, syphilis and chancroid occurring in their practice.

OBSTETRICS AND GYNECOLOGY.

1. *Synonyms for obstetrics:* Midwifery; maieutics.

2. *Immediate dangers of abortion:* Hemorrhage; sepsis.

Remote dangers of abortion: Sepsis; endometritis; uterine displacements; subinvolution of the uterus; sterility; subsequent abortion.

3.

FOOT.	HAND.
This is at right angles to the leg.	This is a straight line with the arm.
The inner border is thicker than the outer.	Both borders are of equal thickness.
The toes are short and are in a straight line.	The fingers are longer, and the thumb is at right angles to the other digits.
The great toe cannot be altered in its relation to the remaining toes.	The thumb may be bent across the palm, and thus brought into contact with the other fingers.
The toes cannot be separated to any great extent.	The thumb and first finger may be considerably separated.
The malleoli and heel (projecting os calcis) may be felt.	There is an absence of such features.
The ankle-joint is not freely movable.	The wrist joint is quite movable.

—(Dorland's *Obstetrics.*)

In the *knee* presentation, the flat patella may be felt; there are also two tuberosities with an intervening depression; abdominal palpation will show that the fetus is in a more or less vertical position.

In the *elbow* presentation, the sharp point of the olecranon will be felt, with a depression on one side; there are also two lateral prominences; abdominal palpation will show that the fetus is in a transverse position.

4. In a labor delayed by weak uterine contractions, the forceps should be applied when there is any sign of either exhaustion of the mother or asphyxia of the fetus. Of course, the cervix must be dilated and the membrane must be ruptured. Pituitrin has been recommended.

5. The induction of premature is sometimes indicated when the children of previous pregnancies have been still-born from excessive development. Herman advises that in these cases the patient should be examined fortnightly during the last two months of pregnancy; and if the length of the uterus equals or exceeds thirteen inches the patient should be advised that she may go to term and be delivered by cesarean section, or have premature delivery done at once. The patient should be told that cesarean section done under favorable conditions had the advantage of certainty of a living child without any appreciable risk to her own life.

6. By the term *mechanical phenomena of labor* is meant the way in which the fetus descends through the parturient canal, and the various movements and forces concerned in the same.

7. The term *external genitals* includes: Labia majora, labia minora, clitoris, urinary meatus, the orifice of the vagina, and the mons Veneris.

8. *Structures contained between the folds of the broad ligament,* are: The Fallopian tube; the ovary and its ligament; the organ of Rosenmuller; connective tissue; uterine artery and veins; nerves.

9. *Dangers of the use of the uterine sound:* Sepsis, hemorrhage, perforation of the uterus, and induction of abortion.

10. *Varieties of perineal laceration:* First degree, or superficial; Second degree, which extends more deeply but does not involve the sphincter ani; Third degree, in which the sphincter ani and the rectum are involved.

11. *Causes of enlargement of the ovary:* Inflammation, infection, prolapse, tumor, or cyst of the ovary; pelvic congestion; peritonitis; abortions; frequent pregnancies; and gonorrhea or other septic conditions.

12. METRITIS is inflammation of the body or parenchyma of the uterus. *Causes:* Wounds, injuries, operations, gonorrhea, septic infection, puerperal sepsis, cold during menstruation, intrauterine medication, and manipulations.

ENDOMETRITIS is inflammation of the mucous membrane lining of the uterus. The *acute* form is due to the introduction of septic bacteria. *Chronic* endometritis may accompany numerous pathological uterine conditions, but is generally due to gonorrhea.

BULLETIN OF APPROACHING EXAMINATIONS.

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†
Alabama*	S. W. Welch, Montgomery	Montgomery...Jan. 11
Arizona*	A. Martin, 207 Goodrich Building, Phoenix	Phoenix.....Jan. 4
Arkansas	T. J. Stout, Brinkley	Little Rock....
California	C. B. Pinkham, Sacramento	Los Angeles...Feb. 14
Colorado	David A. Strickler, Empire Building, Denver	Denver.....Jan. 4
Connecticut*	R. L. Rowley, Hartford	Hartford.....
Delaware	H. W. Briggs, Wilmington	Wilmington....Dec. 14
Dist. of Col'bia	E. P. Copeland, Washington	Washington....Jan. 11
Florida*	W. M. Rowlett, Tampa	Gainesville....Dec. 6
Georgia	C. T. Nolan, Marietta	.....June ..
Idaho*	Robt. O. Jones, Boise	Boise.....April 5
Illinois	F. C. Dodds, Springfield	Chicago.....
Indiana	W. T. Gott, Crawfordsville	Indianapolis...Jan. 11
Iowa	G. H. Sumner, Des Moines	Iowa City.....
Kansas	H. A. Dykes, Lebanon	Topeka.....Feb. 8
Kentucky	J. N. McCormack, Bowling Green	Louisville.....
Louisiana	E. W. Mahler, New Orleans	New Orleans...Dec. 2
Maine	F. W. Searle, Portland	Portland.....
Maryland	J. McP. Scott, Hagerstown	Baltimore.....Dec. ..
Massachusetts*	W. P. Bowers, 1 Beacon St., Boston	Boston.....
Michigan	B. D Harrison, 205 Whitney Building, Detroit	Ann Arbor....June 14
Minnesota	T. McDavitt, St. Paul	Minneapolis...Jan. 4
Mississippi	J. D. Gilleylen, Jackson	Jackson.....
Missouri	G. H. Jones, Jefferson City	St. Louis.....
Montana*	S. A. Cooney, Helena	Helena.....April 5
Nebraska	H. H. Antles, Lincoln	Lincoln.....
Nevada	S. L. Lee, Carson City	Carson City....
N. Hampshire	C. Duncan, Concord	Concord.....
New Jersey	A. MacAlister, Trenton	Trenton.....June 21
New Mexico	R. K. McClanahan, E. Las Vegas	Sante Fe.....
New York	G. M. Wiley, Univ. of State of New York, Albany	New York.... / Albany..... / Syracuse..... / Buffalo..... — Jan. 24
No. Carolina	K. P. B. Bonner, Moorehead City	Raleigh.....June ..
No. Dakota	G. M. Williamson, Grand Forks	Grand Forks...Jan. 4
Ohio	H. M. Platter, Columbus	Columbus.....Dec. ..
Oklahoma	J. M. Byrum, Shawnee	Oklahoma City.Jan. 11
Oregon	B. E. Miller, Portland	Portland.....Jan. 4
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia... / Pittsburgh.... — Jan. ..
Rhode Island	B. U. Richards, Providence	Providence.....Jan. 5
So. Carolina	A. E. Boozer, Columbia	Columbia.....
So. Dakota	H. R. Kenaston, Bonesteel	Pierre.....Jan. 18
Tennessee	A. B. DeLoach, Memphis	Memphis..... / Nashville..... / Knoxville.....
Texas	T. J. Crowe, Dallas	Dallas.....Nov. 16
Utah	G. F. Harding, Salt Lake City	Salt Lake City..
Vermont	W. Scott Nay, Underhill	Burlington.....Jan. 11
Virginia	J. W. Preston, Roanoke	Richmond.....Dec. 14
Washington*	W. M. O'Shea, Spokane	Spokane.....Jan. 4
W. Virginia	S. L. Jepson, Charleston	Charleston.....
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Wyoming	J. D. Shingle, Cheyenne	Cheyenne.....
National Board	S. Rodman, 1310 Medical Arts Building, Philadelphia	.....

*No reciprocity recognized by these States.

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THE MEDICAL CLINICS OF NORTH AMERICA, September, 1920. Volume 4, Number 2. Published by W. B. Saunders Company, Philadelphia.

PRACTICAL PHARMACOLOGY. By W. E. DIXON, M.D. 86 pages with illustrations. Printed at the University Press, Cambridge.

STATE OF NEW YORK, THIRTY-FIRST ANNUAL REPORT OF THE STATE HOSPITAL COMMISSION, July 1, 1918, to June 30, 1919. 442 pages with illustrations. Printed by J. B. Lyons Company, Albany.

THE LINK BETWEEN THE PRACTITIONER AND THE LABORATORY. By CAVENDISH FLETCHER, M.D., and HUGH MCLEAN, M.D. 91 pages. Published by Paul B. Hoeber, New York.

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Original Articles.

ROENTGEN-RAY FINDINGS WITH THE DELINEATOR IN CASES OF PYLOROSPASM.

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PYLOROSPASM occurs in adults much oftener than is generally believed. The constriction of the pyloric end of the stomach may be of an intermittent character, the spasm taking place for longer or shorter periods of time, or it is permanent and then might finally cause a palpable thickening of the pylorus.

Etiologically, we distinguish two types of pylorospasm, the idiopathic form and the secondary form. The latter is by far the more common, while the former occurs very rarely.

The secondary form has as its cause usually an organic lesion, either near the pylorus or in organs situated at some distance from the same. This organic lesion may lie within the stomach itself, for instance, gastric ulcer or gastric carcinoma; or the factor causing the spasm may be outside of the stomach, for instance a gall-bladder lesion, duodenal ulcer, appendicitis, neoplasm of the colon, etc.

The clinical symptoms are not always very characteristic, so that the diagnosis of the condition often appears quite difficult and is sometimes entirely impossible.

At its very beginning the presence of pylorospasm is usually overlooked. In more advanced cases the patients complain of pain in the epigastrium, radiating sometimes to the right side of the abdomen. Sometimes vomiting occurs. More or less pronounced gastric retention may, in fully developed cases, complete the clinical picture.

In very severe forms of pylorospasm peristaltic restlessness of the stomach is encountered and the pylorus may occasionally be palpated and felt as a smooth oval tumor. If ischochymia is fully developed the suffering is great and the picture of the disease resembles that found in an organic stricture of the pylorus.

Clinically the differential diagnosis between pylorospasm and organic pyloric stenosis sometimes is very difficult. In pyloric stenosis of an organic nature the motility test will always show food retention in the stomach. In beginning pylorospasm, which condition usually is of intermittent character, moderate retention will be found at one time and no retention at other times. In permanent pylorospasm retention will always be present.

In cases of an organic stricture of the pylorus the duodenal bucket will never pass through the pylorus, not even after previous application of antispasmodics. In cases of spastic pyloric obstruction, however, it will pass through the pylorus, especially after the application of an antispasmodic. In order to determine whether the bucket has reached and passed the pylorus, one sees whether the lower end of the string shows a golden-yellow or greenish-yellow discoloration. Such being the case proves definitely that the pylorus is passable. This, however, holds good only when but a small part of the string presents the above discoloration. Discoloration of one-half to one-third of the string, the full length of which is about 75 cm., means that regurgitation of bile into the stomach is taking place. In such a case one could not draw any definite conclusions in regard to the permeability of the pylorus by this test.

The best proof of the presence of pylorospasm is the direct measuring of the lumen of the pylorus by means of the pyloro-dilator.[1,2] If one finds in such a case that a balloon of about 60 mm. in circumference or more can be pulled through the pylorus, it means that a real narrowing of the pylorus does not exist. In making this test one has, of course, to apply atropine or papaverine. The instrument is then introduced in the same way as the duodenal tube and left *in situ* over night.

Roentgenologically very little attention was first paid to the diagnosis of pylorospasm. More interest in this subject was aroused by the work of Glaessner and Kreuzfuchs.[3] But even now this pathological condition is not given by the roentgenologists the importance it really deserves. We think that the *x*-ray findings in pylorospasm are of such importance that every roentgenologist should familiarize himself with this symptom complex and keep the possibility of the presence of this condition in mind during every examination of the gastrointestinal tract. Many an unnecessary operation could so be avoided, because it is a well known fact that not infrequently at the operation a perfectly normal pylorus is found in cases in which a definite roentgenological diagnosis of an organic lesion at the pyloric end of the stomach had been made. We believe that in the majority of these cases the condition of pylorospasm is responsible for the discrepancy between the roentgenological and the operative findings.

A full understanding of the radiographic aspect of this spastic condition would therefore help the roentgenologist in avoiding a wrong interpretation of *x*-ray findings concerning the pyloric end of the stomach.

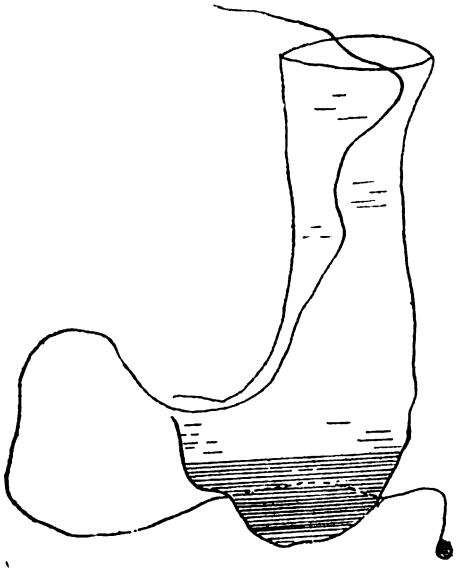

FIG. 1.—Dr. P.: Normal course of delineator along stomach, pylorus, and duodenum. Note even outline of the string.

The radiographic findings in cases of pylorospasm consist, on the plate, in a narrowing of the barium shadow along the pyloric portion of the stomach. This narrowing may involve only the extreme end of the stomach or may be evident along a larger part of the pars pylorica. In this latter case the condition might also be called a partial gastrospasm. The constriction may be very slight and evenly outlined, or it may be very marked, showing deep indentations along the contours of the narrowed portion. This condition may be permanent or intermittent, in which latter case neither the plates nor the fluoroscopic examination will show any abnormality if the examination was made during a free interval.

The fluoroscopic findings in cases of pylorospasm present more interesting features and of a greater variety than those observed on the plate. We notice first the narrowing of the pyloric portion of the stomach as described above. The peristalsis is very active above the constricted area. Toward the pyloric portion the peristaltic waves gradually become shallower. In cases where the entire pars-pylorica is involved the antrum peristalsis is absent. If one continues the fluoroscopic observation for a longer period of time one may be fortunate in seeing the constriction of the pyloric end giving way and the barium mixture entering the duodenum apparently unhindered. In these less advanced cases, the increased peristaltic action may compensate the periodical interference with the pyloric mechanism so that the gastric motility may be found to be normal. If the fluoroscopic examination is made during a free interval the findings may be entirely negative as stated above.

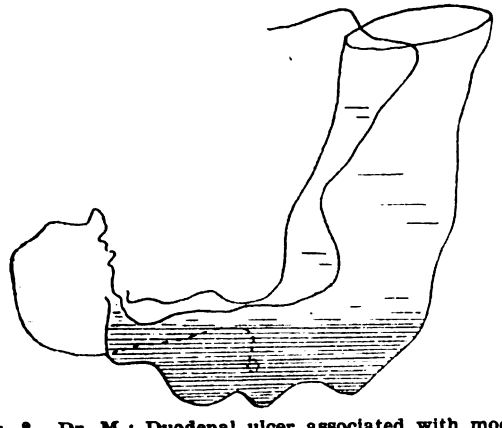

FIG. 2.—Dr. M.: Duodenal ulcer associated with moderate pylorospasm. Note irregular outline of delineator at pyloric region.

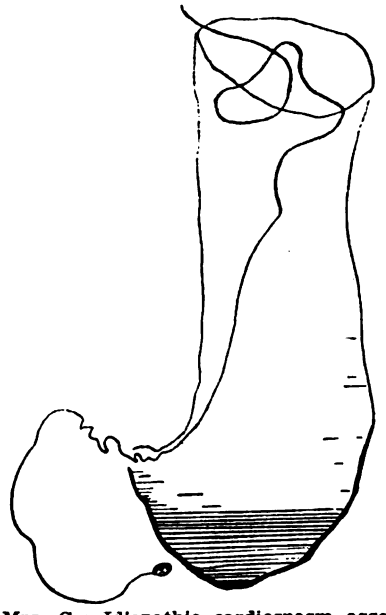

FIG. 3.—Mrs. G.: Idiopathic cardiospasm associated with marked pylorospasm. Note zigzagging of string along pylorus.

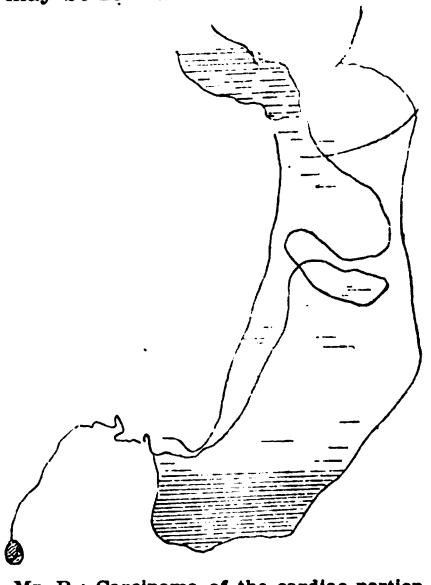

FIG. 4.—Mr. P.: Carcinoma of the cardiac portion of stomach and lower end of the esophagus associated with pylorospasm. Note abnormal course of the delineator string along the pylorus, and partial obstruction at lower end of esophagus.

In fully developed cases of pylorospasm a correct interpretation of the fluoroscopic findings is

much more difficult. One notices a more or less complete and permanent constriction of the pylorus, associated sometimes with narrowing of the entire pars pylorica. There is marked hyperperistalsis above the constricted part. Toward

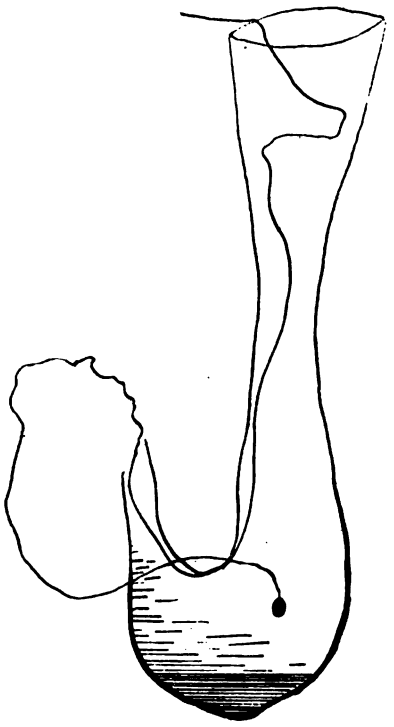

FIG. 5.—Mrs. G.: Cholecystitis with moderate pylorospasm. The uneven course of the delineator along the pylorus is definite.

the pylorus, the peristaltic waves gradually become shallower. Antrum peristalsis is greatly diminished and very often entirely absent. Notwithstanding the marked hyperperistalsis, one sees only occasionally very small amounts of the contrast meal pass into the duodenum. The six hours' examination therefore practically always shows more or less pronounced residue in the stomach. Antiperistalsis is never observed. This latter finding has never been pointed out and yet it could very well be used occasionally for differential diagnostic purposes. If one is fortunate enough in observing, during prolonged fluoroenough in observing, during prolonged fluoroscopy, a moment during which the spasticity of seen functionating normally, then the diagnosis in such a case is settled.

Roentgenologically the differential diagnosis between pylorospasm and organic pyloric stenosis is sometimes more difficult than clinically. We will understand this better if we briefly review the screen findings in fully developed cases of pylorospasm: constriction of the pyloric end sometimes associated with more or less marked narrowing of the entire pars pylorica, hyperperistalsis, tenderness over the pylorus, six hours residue. This roentgenological symptom complex almost necessarily leads to the *x*-ray diagnosis of an organic lesion at the pylorus. This explains the early desire of the roentgenologists to find some means which would aid in avoiding *x*-ray diagnostic errors in these cases. Holzknecht and Sgalitzer[4] and many others have applied antispasmodics prior to the *x*-ray examination. Holzknecht and Fujinami[5] tried to make use (fluoroscopically) of the physiological experiment, namely, that water passes unhindered through the spastic pylorus, while it is held back in cases of organic pyloric stenosis. Neither one of these methods, however, was a definite success.

During our recent studies regarding spastic conditions at the cardia and their diagnosis by means of the delineator[6] it occurred to us that the same instrument which was of such diagnostic help in cases of cardiospasm might possibly be of similar help in the diagnosis of pylorospasm. Bearing in mind the probability that the *x*-ray findings with the delineator in cases of cardiospasm will repeat themselves in cases of pylorospasm, we applied the delineator in many cases of gastrointestinal and gall-bladder lesions. It was then found that, similar to the findings in cases of cardiospasm, the string of the delineator shows an irregular course along the spastic area in pylorospasm.

We take the liberty of first presenting a few of the characteristic pictures showing the course of the delineator along the pylorus in the normal individual and then in cases of pyloropasm (Figs. 1 to 8). The underlying disease in these cases was such that spastic conditions at the pylorus could be expected.

On these plates we see the string of the delineator enter the stomach at the cardia. Then its course runs in a more curved or even looped fash-

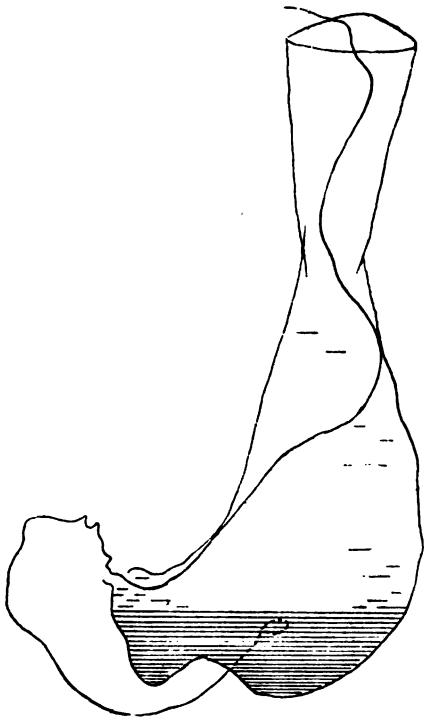

FIG. 6.—Mrs. L. G.: Appendicitis with modern pylorospasm (as proved by operation). Note irregular course of pyloric portion of the string. Roentgenological evidence (in the usual way) pointed strongly to organic lesion of the pylorus.

ion toward the lower part of the lesser curvature and along the lesser curvature through the pylorus. Afterward it follows the duodenum.

Under normal conditions the course of the string of the instrument *in situ* presents a more

or less curved line according to the individual position of the organs. This line, though curved, is even, without any irregular indentations or zigzagging. If there is a spastic condition at the pylorus, however, the course of the delineator along the spastic region becomes irregular. The degree of this irregularity corresponds to the degree of spasticity, so that one may observe the greatest variety of deformities in the course of the line of the delineator, from a fine wavy appearance to the most pronounced serrate form.

Indications.—As this our new method is usually employed for the purpose of differentiation between pylorospasm and organic pyloric stenosis, its application, as a rule, is preceded by the routine *x*-ray examination of the gastrointestinal tract. If the roentgenological findings point to a possibility of a pathological condition of the pyloric region and if the character of these findings is such that they just as well could be explained on the basis of a pylorospasm, the use of the delineator method would be indicated. If, for instance, the routine *x*-ray examination in a given case reveals evidence pointing to a pathological appendix and one finds outside of that some constriction of the pyloric end, localized tenderness over the pylorus on fluoroscopy, and moderate gastric residue 6 hours p.c., the use of the delineator will be of great help in determining the nature of the above roentgenological findings of the stomach. The findings with the delineator in cases of spasticity are so striking that it is advisable to use this new method in all those cases in which the presence of pylorospasm is suspected.

Technique.—It is best to introduce the delineator in the evening and to leave it *in situ* over night.

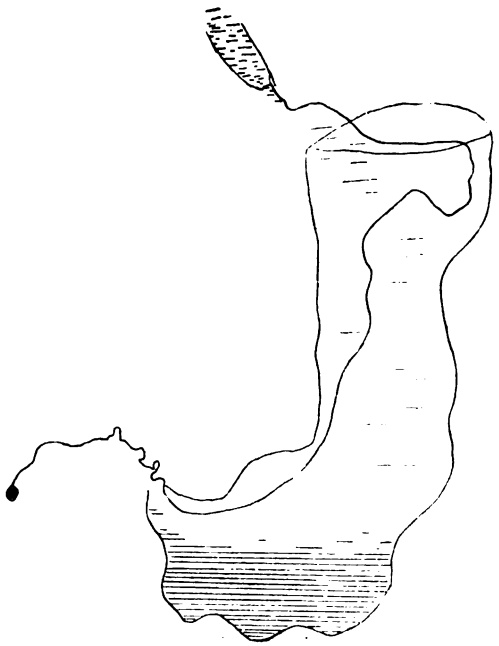

FIG. 7—Mrs. R.: Idiopathic cardiospasm with very marked pylorospasm. Note irregularity of string at the pylorus and constriction at cardiac end of esophagus.

The roentgen-ray examination then takes place on the following morning. One determines first fluoroscopically whether the metallic ball of the instrument has passed the pylorus or not. For that purpose the patient swallows a small amount of barium mixture. After the contrast mixture has reached the lowermost pole of the stomach one can very easily see whether the ball is beyond the pylorus and if so, how far it has proceeded into the duodenum. Is the patient thin,

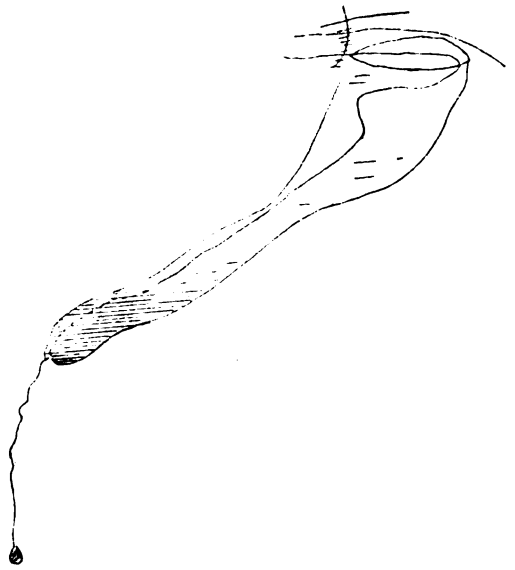

FIG. 8.—Mr. A. H.: Chronic cholecystitis with periduodenal adhesions associated with pylorospasm. The irregular course of the delineator beyond the pylorus is evidently due to the presence of periduodenal adhesions causing spasm.

one may even fluoroscopically notice the wavy course of the string along the pyloric region in case of pylorospasm, especially after light massage over the abdomen or after a slight pulling forward of the instrument. In heavier patients it is necessary to take plates in order to demonstrate the irregularities of the string. The string being very thin, the shadows on the plates are so faint that they are not favorable for reproductions.

In cases of very advanced pyloric obstruction, it is advisable to apply an antispasmodic when introducing the instrument. If on the following morning the fluoroscopic examination shows the metallic ball of the delineator still in the stomach, the obstruction evidently is of an organic nature.

Advantages of This New Method.—It can be used in any desired case without causing undue discomfort to the patient. It furnishes a much finer test regarding the tonus of the wall of the pyloric region than the barium meal, because the very thin string of the delineator reacts much more readily to changes of the tonus of the pylorus than the less yielding barium mixture. We can, therefore, by this method demonstrate those less pronounced spastic conditions of the pyloric region, which may not noticeably influence the outline of the barium shadow and yet give rise to clinical symptoms.

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6. Einhorn, M., and Scholz, Th.: *X*-Ray Findings with the Delineator in Cardiospasm, MEDICAL RECORD, November 1, 1919.

DIAGNOSTIC METHODS IN EXOPHTHALMIC GOITER, WITH SPECIAL REFERENCE TO QUININE.

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IN the presence of the four cardinal symptoms the diagnosis of exophthalmic goiter or Graves' disease is obvious. But, as in the case of such diseases as tuberculosis or carcinoma, to await the obvious in this affection is to court disaster, often to the extent of forfeiting the patient's recovery. In other words, the time elapsing between the occurrence of the prodromal symptoms of exophthalmic goiter and the frank assertion of the disease (be it weeks, months, or a year or more) through the four classical symptoms in a given case, is the period when the institution of necessary treatment does the most good. To treat early is to prevent permanent damage to vital structures and to be forearmed against morbid tissue habit; it means the maximum success in therapeutic effort. It is here that diagnosis plays a vital rôle; and the earlier the diagnosis, the more likely and speedy the cure.

The most constant symptoms occurring in exophthalmic goiter are those referable to the circulatory and nervous systems. Heart hurry, with or without palpitation, may exist many weeks before the patient is aware of it. Becoming pronounced, tachycardia is usually associated with precordial discomfort and dyspnea on slight exertion. It is for the relief of the latter two subjective symptoms that the patient applies to the physician in most instances, if he seeks medical aid early in the disease. The pulse rate is observed to vary from 90 to 120 or more per minute, and is characterized by its constancy, *i.e.*, it is not materially reduced by sleep or by the administration of digitalis even in the maximum doses. Dermographia, considered by Solomon Solis-Cohen' and others as a state of vasomotor ataxia, though a cutaneous phenomenon, is really of vascular origin, and is always present at this time.

Concomitantly with the foregoing manifestations the typical tremor may be observed. On requesting the patient to extend the arms forward and to stretch out the fingers, the tremor, in which but one or more fingers of each hand may participate, may surprise the subject by its presence. It is of the "intention" type, making eight to twelve cycles per second; tremor of the outstretched toes may coexist. The function of the central and peripheral nervous systems is quickened in varying degree, as evidenced, on the one hand, by the alert mentality, yet diminished ability for sustained attention, the emotionalism, change of disposition, and insomnia; and, on the other hand, by a heightening or increase of reflexes and the excitability of the gastrointestinal tract (as seen in the indigestion, nausea, vomiting, diarrhea), the urinary system (as observed in the polyuria), and the cutaneous system (as evidenced by hyperidrosis and the commonly observed skin lesions).

The time of occurrence of exophthalmos varies widely. While in some patients a slight stare of the eyes, lending an appearance of fright to the physiognomy, may appear quite early, in others a degree of obvious exophthalmos may occur when the disease has moderately advanced, and in still another class of patients exophthalmos occurs late in the affection or may be entirely lacking as a constituent of the syndrome. Moreover, bulging of the eyes may be unilateral, or it may be bilateral and of greater degree on one side than on the other. The various classical eye signs—Stellwag's, Von Graeffe's, Moebius', Kocher's, Dalrymple's—are nearly always associated with the exophthalmos.

The occurrence of goiter is subject to even greater variations than exophthalmos. While the first symptom to attract the attention of the patient to the neck may be a sudden mysterious tightness of the collars usually worn, although there has been a loss of bodily weight, on the other hand, demonstrable goiter may occur late in the disease, even after the circulatory and nervous phenomena and exophthalmos have been well established. Indeed, in not a small percentage of cases of extreme hyperthyroidism we find no evidences of thyroid enlargement. We may assume that in at least a fair percentage of cases of this sort there is a hyperplasia of one or more of the so-called accessory thyroids,' so often discovered at autopsy. However, definite goiter formation is observed in from 60 to 80 per cent. of cases of primary Graves' disease, occurring fairly early in the course of the affection. The thyroid swelling is of hyperplastic vascular nature, possessing characteristics which are almost pathognomonic. It is rarely massive; there is usually a moderate uniform enlargement involving the isthmus and to a lesser extent the two lobes, the right being frequently more prominently involved than the left. In the presence of marked cardiac involvement the mass is seen to throb with the cardiac cycles; it is soft and yielding, frequently somewhat tender to the touch, and a systolic thrill is usually felt. Auscultation reveals a harsh, loud systolic and occasionally also a diastolic bruit, more easily heard over the isthmus than the lobes. These evidences of extreme vascularity of the thyroid are rarely if ever present in any other form of thyroid swelling, constituting an important fact in differentiation from the simple or nontoxic forms of goiter.

As implied, to await the occurrence of goiter, exophthalmos, or both, before venturing a diagnosis in a given case is to lose valuable time for the patient. The frequency with which patients are met who, without goiter and exophthalmos, otherwise prove to be rather advanced cases of the disease, should serve to warn us against an insufficiency in diagnostic methods and procrastination in the institution of the necessary treatment. Presented with an atypical case of this sort, we must with reasonable certainty exclude the various other causes of heart hurry, tremor, dermographia and nervousness, and such conditions as neurasthenia,

hysteria and the psychoses, nervous indigestion, pulmonary tuberculosis, diabetes mellitus, paroxysmal tachycardia, chorea, and other conditions characterized by one or more symptoms which simulate clearly or vaguely any of the manifestations commonly observed in exophthalmic goiter. We must bear in mind, however, that the very conditions we are endeavoring to exclude may actually coexist with exophthalmic goiter, having asserted themselves some time prior to, concomitantly with, or during the course of the Basedowian syndrome. In such an event, the difficulties confronting the diagnostician are increased, and correct diagnosis may suffer further delay.

Of course, confronted with a patient presenting goiter as the chief complaint, it is of paramount importance to differentiate between the hyperplastic and nonhyperplastic forms of thyroid enlargement. We have already suggested in brief the local differential features. Without delving into minute details of clinical differentiation, when asked by the student to state the difference between a patient suffering with a nontoxic goiter and one with a hyperplastic or primary toxic variety, my response is: "In the absence of such complicating phenomena as pressure symptoms or carcinomatous degeneration, the former patient, excepting the disfiguring mass or goiter, is entirely well; nothing else ails her; she has had this mass for years, as a rule, and it is the only complaint. The patient with the *hyperplastic* goiter, however, complains little if at all of the neck; the thyroid swelling is of relatively recent occurrence and is slightly or moderately enlarged, it is least of all the seat of subjective symptoms; however, *the entire body* is undergoing changes incident to increased basal metabolism, and all the organs present subjective and objective phenomena incident to the existing degree and duration of thyroid toxemia."

But despite our experience and diagnostic acumen, we occasionally meet with a patient in whom a definite or final diagnosis is indeed difficult. This is especially true of (1) the so-called "fruste" or fulminating cases; (2) those presenting the Kraus or Kocher "goiter heart"; (3) the secondary toxic or "Basedowified" goiter; (4) the uncommon symptom-complex in many respects resembling Graves' disease, but in reality due to an irritation of the cervical sympathetic ganglia[3] by chemical, biological, or mechanical agencies; (5) instances (with or without nontoxic goiter) in which heart hurry, tremor, and nervousness occur on the slightest provocation, especially in the doctor's presence, and which are really congenital or acquired peculiarities of the individual. It is in these cases that we frequently resort to certain diagnostic tests, mentioned below, and though the latter are by no means infallible, their combination with historical data and careful physical examination may lead to deductions sufficiently accurate for all practical purposes.

1. It has been pointed out by Kocher[3] and others that the blood in patients suffering with Graves' disease presents a leucopenia at the expense of the neutrophile polynuclear leucocytes, and a relative increase in lymphocytes. As the blood in other thyroid affections shows the same findings, this blood picture as a diagnostic test is of only relative value.

2. The thyroid extract test has been exploited in many quarters.[4] Parenthetically it must be observed that though an exception may be noted in which an isolated case of exophthalmic goiter improves under thyroid opotherapy, we must by no means permit this to influence us in favor of thyroid extract in the treatment of the disease, nor even in its use as a diagnostic test, for obvious reasons. The administration of thyroid extract to a patient already suffering with thyroid toxemia nearly always aggravates the symptoms. It is for this reason that it has been administered in specified dosage at stated intervals during three or four days or longer, in order to observe whether existing symptoms are aggravated, or vague symptoms rendered clearer. This test is mentioned merely to be condemned, for not only is its reliability as an accurate and useful supplement in diagnosis called into question, but a hyperthyroidism formerly more or less latent may be whipped up to become very active and malignant in its course.

3. The administration of digitalis even in massive doses exerts no material influence upon the tachycardia of the disease. As a therapeutic test, in the absence of gastric irritation, this is practically devoid of harm. This test, however, is not reliable, for its data refers to the heart rate only. Moreover, digitalis administration is also futile in most instances of paroxysmal tachycardia.

4. Complement-fixation tests[5] have been described, but they are still in the experimental stage.

5. It has been shown that 100 gm. of glucose fed to a normal person does not produce hyperglycemia in one hour. A reading of over 1/10 of 1 per cent. represents a hyperglycemia when tested with a fasting stomach (McCaskey.)[6] McCaskey, Janney,[7] and others have pointed out that hyperglycemia is present in hyperthyroidism, but it can be demonstrated also in diseases of the other endocrine organs. The hyperglycemia test, then, is merely supplementary to or corroborative of deductions already reached.

6. The basal metabolism test as described by Means and Aub,[8] Tissot,[9] Boothby,[10] DuBois,[11] McCaskey,[6] Snell, Ford, Rowntree,[12] and others, is a valuable aid in diagnosis. In health, under conditions of rest of body and digestive organs, we find by calorimetry that the basal metabolism rate bears a practically constant relation to the surface area, "the rate thereby becoming mathematically a function of the body surface, while in many diseases metabolism is fundamentally deranged, the basal metabolic rate ranging far above or below normal" (Snell, Ford, and Rowntree). While variations in basal metabolism may be observed in other affections, eminently in diabetes mellitus, pituitary disease, and under the influence of caffeine, it is in diseases of the thyroid that the greatest changes are observed. Thus, the differential diagnosis between toxic and nontoxic goiters, between early cases of Graves' disease (*formes frustes*) and the neuroses, and between general endocrine imbalance and conditions not involving the endocrines, is rendered clearer than has heretofore been possible. By the basal metabolism determination we not only ascertain the severity of a case of exophthalmic goiter but we obtain some idea concerning its course. However, in order to be accurate, frequent readings are necessary, for the rate in exophthalmic goiter

often varies from day to day, and a given reading is dependable only for the time the observation is made. This test as a routine procedure is still unavailable in most quarters, as the necessary apparatus is intricate and costly, and requires the attention of an especially trained staff of individuals to make the observations."

7. If one cubic centimeter of an extract of posterior lobe of pituitary body is injected hypodermatically, there is slowing of the pulse within two minutes, passing off in seven or eight minutes. In normal persons the pulse is accelerated by this injection, attains its maximum in five or six minutes, and returns to normal within fifteen minutes. This test was first described by Bondouin and Porak (quoted by McCarrison),[14] and is fairly reliable in confirmation of diagnosis.

8. The Goetsch test[15] is easily performed and may be employed with some advantage in all cases which present an element of doubt in diagnosis. Eight minims of a 1:1,000 solution of epinephrin are diluted with an equal quantity of sterile water and injected hypodermatically into the arm. In the presence of hyperthyroidism, there is immediately formed an area of blanching around the point of injection, and about the margin of this, usually a red areola gradually shading off into the surrounding tissue. In about half an hour the center of the white area becomes bluish gray to lavender, and at the end of about one and a half to two hours the red areola takes on the bluish or lavender color, while that in the center disappears. This lavender areola remains for about four hours from the time of injection and is the most characteristic part of the test. The reaction in a normal person lasts from thirty to forty-five minutes, but in one suffering with thyroid toxemia (either primary or secondary) the phenomenon lasts from one and a half to two and one-quarter hours. Accompanying the local reaction may be an increase in pulse rate, with palpitation of the heart and an exaggeration of the tremor and nervous symptoms in general. The heart rate is increased from 10 to 50 above its former rate. In half an hour there is a moderate fall followed by a secondary rise and fall, the normal point being reached in about ninety minutes. In addition, there is a variable increase in the tremor, asthenia, throbbing, and apprehension. Vasomotor changes, such as a sudden pallor of the face, lips, and fingers, due to vasoconstriction, are followed within thirty minutes by a stage of vasodilation with flushing of the skin and sweating. A slight rise in temperature and polyuria are also observed. It can be seen that the adrenalin test depends upon an aggravation of symptoms for its interpretation. Though the Goetsch adrenalin test has been used with asserted success in many quarters, with but 5 per cent. of error, recent reports seem to diminish the value of this test in diagnosis. At the thirty-fifth annual meeting of the Association of American Physicians, Peabody, Sturgis, Tompkins, and Wearn, in a paper on this subject, remarked that the chance for error in the use of this in diagnosis is so great that it is rather dangerous to place reliance on this test. The test was positive in 14 per cent. of 28 medical students and in 48 per cent. of 103 soldiers without evidence of organic disease but with the symptom complex of "effort syndrome." Among hospital patients it was found that 17 per cent. of 17 patients with organic heart disease, and 57 per cent. of 21 patients convalescent from acute infection, gave positive reaction. On the other hand, quite a large percentage of cases of unquestionable hyperthyroidism gave negative results with this test.

9. I now propose to describe a procedure which I term the quinine test. This I have developed and employed with satisfactory results over a period extending from July, 1917, to July, 1920, inclusive, embracing a series of 160 cases, 67 of which proved to be instances of thyroid toxemia. The utility of this diagnostic measure compares very favorably with the other tests herein described, and because of its simplicity and harmlessness in application, it is perhaps the most practicable to the busy practitioner.

The peculiar tolerance to quinine by sufferers from malaria and from such febrile conditions as pneumonia, the acute tonsillar diseases and other infectious processes, must not be construed as a state of natural immunity from the effects of the drug, but as a temporarily altered condition of the bodily reactions, to return to normal on the recovery of the patient. These instances of tolerance are, of course, easily determined and need not detract from the reliability of the quinine test in hyperthyroidism.

The administration of quinine to persons otherwise normal but possessing a susceptibility to its effects, or the administration of large doses of quinine to average individuals results within from a few hours to a few days in a sensation of fullness and roaring in the head, tinnitus, and impaired hearing, with occasional impaired vision, headache, insomnia, and sometimes hematuria, purpura, erythematous areas and subdermal swellings. At times, there is seen a rash which is with difficulty distinguished from that of measles. Where extreme susceptibility exists, even minute doses of quinine give rise to uncomfortable symptoms which, in the average person, would require large doses to produce, though fatal quinine poisoning is practically unknown.

Subjects of thyrotoxemia are exceptionally tolerant to quinine administration during the course of the disease, and for a long time, usually years after the cessation of the thyrotoxemic process. In fact, this toleration to the drug in moderately large doses practically amounts to an immunity. No ample reasons for this phenomenon have been advanced. Is it because the thyroid toxin in the blood exerts a neutralizing or modifying influence on the quinine, depriving the latter of the potentiality for producing the syndrome of symptoms known as cinchonism? Is it the presence of the increased basal metabolism in thyroid toxemia that in some way produces this immunity to cinchonism? Is it because of the peculiar state of vasomotor instability and arterial relaxation in this disease that the drug is so well tolerated and usually taken with advantage? Or is it a combination of these suggested factors that obtains in explanation of this interesting fact? These and perhaps other questions with reference to this phenomenon remain to be answered conclusively; meanwhile, observation proves that doses of quinine which would almost invariably produce at least head and ear symptoms in average per-

sons are taken with impunity by patients whose thyroid output is excessive.

The technic of the test is simple, and, as implied, depends upon the immunity of subjects of hyperactive thyroid to the untoward effects of quinine administered in moderately large doses. The patient is given a dozen capsules, each containing ten grains of the neutral hydrobromide of quinine, with instructions to take one capsule four times a day, to be washed down by an ample quantity of lukewarm water, an hour or two after meals and at bedtime. By the time thirty, forty, or fifty grains have been taken by persons whose thyroid function is not excessive, there develops a sense of fulness in the head, impaired hearing with tinnitus, often dizziness and headache, and occasionally a feeling of slight gastric and bladder discomfort. Persons possessing a degree of susceptibility or idiosyncrasy will experience these symptoms after the first or second capsule; while those to a degree tolerant may not complain until sixty to one hundred grains have been taken. In the presence of a hyperactive thyroid, no symptoms develop from the daily administration of quinine hydrobromide even if given during a period of weeks or months; on the contrary, improvement in the Basedowian syndrome is frequently observed. In these patients, though gastric disturbances may constitute an element in the primary complaints, the administration of this dosage is apt only occasionally to aggravate slightly the gastric condition. If combined with proper gastric sedatives, however, this objection is overcome.

The hydrobromide is employed because it is the most acceptable of all the quinine salts and may be handled in larger doses without producing extreme discomfort in a patient whose thyroid gland does not functionate excessively. Also, the effects of this drug in negative patients wear off more promptly than other forms of quinine. In the series of cases herein mentioned, none of the untoward symptoms experienced by non-hyperthyroid patients persisted beyond several days after the discontinuance of the drug.

In this series the quinine test was employed more for the sake of determining its availability as a test than to assist in establishing the diagnosis, as in approximately 90 per cent. of the cases the nature of the affection was clearly established by means of the usual clinical methods prior to the administration of the quinine. In passing, it may be well to remark that in the performance of this test in children, smaller doses of the drug should be used. In this series, though the ages of the patient varied between 16 and 62 years, the dosage of quinine administered was uniformly ten grains four times a day. The weight of these patients varied between 94 and 205 pounds.

The cases examined were as follows:

Diagnosis.	Number of cases.
(a) Nervous indigestion, incipient pulmonary tuberculosis, hysteria and neurasthenia	16
(b) Simple adenoma of thyroid	33
(c) Cystic goiter	19
(d) Mixed adenomatous and cystic goiter	11
(e) "Goiter heart" (types of b, c, and d, chiefly substernal, with pressure symptoms)	12
(f) Malignant goiter (secondary degeneration of simple nontoxic goiter)	2
(g) Secondary Basedow or "Basedowified" goiter (toxic adenoma)	17
(h) Basedow "Fruste" (early Graves' Disease, with and without thyroid swelling)	21
(i) Well-defined exophthalmic goiter or Graves' Disease	29
Total number of cases in which quinine test was made	160

The least tolerant to quinine administration were those in (a), excepting the three patients with incipient pulmonary tuberculosis who were not troubled with head and ear symptoms until after a drachm was taken. The others in (a) were obliged to discontinue somewhere between the taking of the second and the fourth capsules (20 to 40 grains). Patients of class (b), (c), and (d) were able to take on an average of five capsules, the individual tolerance varying between 30 and 80 grains. Two showed a mild erythematous rash which disappeared soon after the discontinuance of the drug. Those of class (e) were rather less tolerant to quinine, most of them experiencing headache, tinnitus, and dizziness before the fifth capsule was taken. The two patients in class (f) were rather old, weak, and somewhat feverish, and since they were already complaining of head and ear symptoms due to pressure and induration of the neoplasm, the quinine was discontinued after the administration of the third capsule, and no deductions were made. Patients of classes (g), (h), and (i), 67 in all, each a subject of thyroid toxemia, presented no untoward symptoms after taking the twelve capsules, excepting a slight increase in gastric discomfort in a few who formerly complained of nausea and vomiting. The usual head and ear symptoms were not experienced.

CONCLUSIONS.

1. In a certain percentage of cases, the diagnosis of exophthalmic goiter is very difficult without the assistance of a reliable laboratory test.

2. The thyroid test should never be employed, for obvious reasons.

3. The Goetsch adrenalin test may be fairly reliable, though open to errors in interpretation. The danger of a flaring up of symptoms must not be ignored.

4. The basal metabolism determination is not of great value as a *diagnostic* test in exophthalmic goiter; its findings are applicable to other affections, eminently diabetes mellitus, the chronic febrile diseases, and other endocrine disturbances. It is highly useful, however, as a means of informing us of the status of metabolic equilibrium in a given patient and serves to assist with differentiation between toxic and nontoxic adenomata. As a supplement in the diagnosis of Graves' disease its value is limited to the determination of the degree of thyrotoxemia.

5. The quinine test seems valuable and quite reliable because of its simplicity in application, its harmlessness, and the fact that it does not require

an especially trained individual to make the observation. Though there may be a 5 per cent. to 10 per cent. error in its use, it is especially commendable since its interpretation does not depend upon an aggravation of the symptoms of hyperthyroidism, but there is rather an improvement of the Basedowian syndrome in many instances.

The writer is making further observations in this direction, to be detailed in a later report. He would invite others interested in this field of work to employ this test with a view to a confirmation of its virtues.

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THE PRACTICE OF MEDICINE AS A VOCATION.*

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THE present is an opportune time for calling attention to the importance of the practice of medicine as a vocation. The more thorough our understanding of the science upon which the art of medicine is based, the more satisfactory and successful will be our efforts to heal the sick. But in other domains than medicine it has certainly been demonstrated that science without art, that strength without sympathy may not only be sterile of good results, but asbolutely harmful.

The tendency at the present time is to deny all authority, to level all distinction, and to abandon all dignity. I wish to enter a word of protest against this tendency and recall to physicians some of the spirit of the early "practitioners" and even of the much reviled "medicine man." Primitive people distinguished men whom they had chosen for a special vocation by some ceremony, usually symbolic in character, designed to impress upon both the public and the candidate the fact that one was set aside for a peculiar service, with characteristic privileges and obligations, and for the rest of his life this man was marked and distinguished by some means as being chosen for a special work.

*President's address, delivered before the Washington Medical and Surgical Society.

From the time when the student receives his diploma, his aims and ideals must differ from those of other men. Even though he may live and work for material gain, service must be the master word of his policy. It is true that he may yield to the desire of an ignorant and vicious clientèle and prostitute his knowledge and talents, but if acting on this low level does not thwart his purpose, it will certainly deprive him of his richest reward, namely, the good opinion of his colleagues and the knowledge of having acting according to his higher ideals. No matter how intimately related to industry or the State, the physician's work will ever remain largely pastoral in character, that is, he will be the guide and friend of his patients. There is not a crisis in life where the touch of the wise physician is not needed.

Prenatal influence has for some time been the subject of study and investigation and the result has been shown to be beneficial to mother, child, and the race. In the prevention of infectious diseases great benefit has been achieved and the work is still in progress. The reduction of morbidity by the application of the laws of hygiene has contributed largely to the happiness and efficiency of workers. The rehabilitation of those injured in industrial life, as well as in war, is now receiving the serious attention of both Federal and State governments. The relation of crime to mental diseases is a subject which the psychiatrist has brought prominently before the jurists and the public, with the result that a much more intelligent attitude is taken with a view to the removal of the cause and the prevention of crime, rather than punishment. The relation of physical diseases to crime is equally important and I can recall more than one case of psychoneurosis and psychosis that disappeared after the removal of a focal infection.

These examples are sufficient to illustrate the fact that the function of the physician is to assist man in making an adequate adaptation to his environment at every step in life. This, obviously, consists in much more than simply relieving a physical injury. It includes guidance in overcoming a handicap of whatever kind, and this involves some understanding of the mechanism of human behavior.

I can remember that as a student I began the study of medicine in the hope that I would be led to comprehend these very problems of human nature and conduct and would not only have the personal satisfaction for myself but would be enabled to advise others in problems of the greatest importance. But with Omar Khayyam, the Tentmaker, I must say that

> "Myself, when young, did eagerly frequent
> Doctor and saint, and heard great argument
> About it and about, but evermore came out
> By the same door as in I went."

This cynical quotation does not express the spirit of medicine at the present time for, although, in the language of Gautama the Buddha, "Veil after veil will lift but there must be veil upon veil behind," the spirit of sympathetic and intelligent investigation will lead us step by step in the right direction. "Within thyself delivery must be sought. Each man his prison makes."

So, in this relation of physician to our fellowmen,

I would mention first, the principle of integrity. The old tradition of a privileged communication should be maintained. If we, as physicians, are to understand the various complex problems which our patients present to us, we must deserve their implicit confidence that their secrets will never be divulged. As the Preacher hath said, "If thou hast heard a word, let it die with thee and be bold. It will not burst thee."

As a second guiding principle I would name sympathy. I should like to remind you that the two men, Jesus and Gautama, who have influenced human action and thought to the greatest degree, both as to affecting the largest number of people and for the longest period of time, were not only wise, but acted wisely and with profound sympathy towards their less enlightened brethren. The great Prince Gautama, a founder of Buddhism, nearly 500 years B.C., when he became aware of all the pain and suffering in his kingdom, as Sir Edwin Arnold so beautifully expresses it, "wept with all his brothers' tears, his heart broken by a whole world's woe." He had wisdom and sympathy and to-day his disciples number four hundred and seventy million. It is related of him that when a young mother brought to him her dying child for treatment the great teacher replied, "Yea, Little Sister, there is that might heal thee first, and him, if thou couldst fetch the thing, for they who seek physicians bring to them what is ordained. Therefore I pray thee find black mustard seed, a tola, only mark, thou take it not from any hand or house where father, mother, child, or slave hath died." Of course the search was vain but the mother found that "bitter balm"—she realized that she grieved not alone. So, even with the modern physician, there are many ills that cannot be cured, but the dispensation may be accepted in such a manner that a cheerful readaptation may take place and the sufferer may be enabled to live and work cheerfully, though not free from suffering.

To any one who assumes direction of others in a crisis of life, as a physician often must, imperturbability is essential. Osler has well described this virtue. He says:

"Imperturbability means coolness and presence of mind under all circumstances, calmless amid storm, clearness of judgment in moments of grave peril, immobility, impassiveness or, to use an old and expressive word *phlegm*. It is the quality which is most appreciated by the laity, though often misunderstood by them; and the physician who has the misfortune to be without it, who betrays indecision and worry and who shows that he is flustered and flurried in ordinary emergencies, loses rapidly the confidence of his patients. In full development, as we see it in some of our older colleagues, imperturbability has the nature of a divine gift, a blessing to the possessor, a comfort to all who come in contact with him. You should know it well for there have been before you several striking illustrations, whose example has, I trust, made a deep impression. As imperturbability is largely a bodily endowment, I regret to say that there are those who, owing to congenital defects, may never be able to acquire it. Education, however, will do much, and with practice and experience the majority may expect to attain a fair measure. The first essential is to have your nerves well in hand. Even under the most serious circumstances the physician or surgeon who allows 'his outward action to demonstrate the native act and figure of his heart in complement extern,' who shows in his face the slightest alteration expressive of anxiety or fear, has not his medullary centers under the highest control and is liable to disaster at any moment. . . . In the second place, there is a mental equivalent to this bodily endowment which is as important in our pilgrimage as imperturbability. Let me recall to your minds an incident related of that best of men and wisest of rulers, Antonius Pius, who, as he lay dying, in his home at Lorium in Etruria, summed up the philosophy of life in the watchward *æquanimitas*. As for him about to pass *flammantia mœnia mundi* (the flaming ramparts of the world), so for you, fresh from Clotho's spindle, a calm equanimity is the desirable attitude. How difficult to attain, yet how necessary in success as in failure! Natural temperament has much to do with its development, but a clear knowledge of our relation to our fellow creatures and to the work of life is also indispensable. One of the first essentials in securing a good-natured equanimity is not to expect too much of the people among whom you dwell. 'Knowledge comes, but wisdom lingers,' and in matters medical the ordinary citizen of to-day has not one whit more sense than the old Romans, whom Lucian scourged for a credulity which made them fall easy victims to the quacks of the time, such as the notorious Alexander, whose exploits make one wish that his advent had been delayed some eighteen centuries. Deal gently, then, with this deliciously credulous old human nature in which we work, and restrain your indignation when you find your pet parson has triturates of the 1000th potentiality in his waistcoat pocket, or you discover accidentally a case of Warner's Safe Cure in the bedroom of your best patient. It must needs be that offenses of this kind come; expect them and do not be vexed."

Little of the life of the average individual is spent among the high mountains of adventure. By far the greater part of life must be on the workday level plane, but without the patience which shall enable us to perform the routine task thoroughly and completely we shall be unprepared for the high adventure when it presents itself. This is particularly true of the physician's relation to his patients. It sometimes seems as if the natural forces with which we have to deal deliberately lay snares for the careless. Without patient, persistent attention to detail we may be found treating a symptom of a single organ simply because it is the most obvious part of a clinical picture. The large number of insidious diseases that masquerade under slight symptoms are a constant menace to the man of superficial observation or incomplete investigation. We deal in every instance not with a lesion, an organ, or a system, but with a highly organized individual; and to treat the disease without considering the man who has it is to ignore the most important aspect of the problem.

The biographies of physicians are rich in examples of the reward of patient investigation. Indeed, it has been truly said that the rich nuggets in the field of medical research have been mostly removed, yet further development must be the result of pa-

tient, routine investigation, with careful valuation of the findings in the light of all that we know of physiology and pathology.

"Yet we are the bondslaves of our day,
Whom dirt and danger press—
Co-heirs of insolence, delay,
And leagued unfaithfulness—
Such is our need must seek indeed
And, having found, engage
The men who merely do the work
For which they draw the wage."
—*The Wage Slave,* KIPLING.

For such work as this practically the only reward is the "knowledge of work well done." It is rare that even our colleagues are in a position to appreciate such service or to criticize its lack. As Samuel Johnson has said, "A physician in a great city seems to be the mere plaything of fortune. His degree of reputation is, for the most part, totally casual. They that employ him know not his excellence; they that reject him know not his deficiencies." We need something even more than the philosophy of St. Paul, who wrote to the Galatians: "Let us not be weary in well doing," for perseverance is most needed when we are not doing well.

Ehrlich, who has contributed so much to our knowledge of the blood, tried several times in vain to pass his examination for medical degree; but instead of surrendering in weariness or adopting an entirely different line of work, he continued his research, with the result that through his industry and perseverance he contributed so much to science that his university was later glad to honor itself by giving him his degree of Doctor of Medicine.

There is a law in physics that there is no work done without stress. Water poured out on a level will accomplish no work. It must be confined and made to break through narrow barriers before it can serve. Music cannot be produced without tension and vibration, and even the poems and songs that cheer and uplift us voice the cry of some one who has endured spiritual stress and pain. A wonderful example of what the English physician, Hinton, called the "forward ends" of pain may be found in the life of Edward Livingston Trudeau. It is doubtful whether even Koch, whose accurate scientific work did so much to place the subject of tuberculosis on a rational basis, accomplished as much in dealing with this disease as did Trudeau, though himself a victim of its ravages. You will recall that from his student days he suffered with this malady and that his whole career was physically a series of relapses and temporary recoveries. But at the time when he retired to Paul Smith's Hotel at Saranac, he did not resign himself to invalidism or moping, but observed upon himself the effects of climate and right living on the course of his disease and so founded a system of treatment that still practically dominates the therapy of pulmonary tuberculosis. His life story—what he accomplished by perseverance under the greatest possible handicap—should be an inspiration to every physician who grows weary of the day's routine. Of his struggle and work Trudeau wrote:

"As I look back on my life, ever since that day in 1866 when my brother came to me sick at Newport, tuberculosis looms up as an ever-present and relentless foe. It robbed me of my dear ones, and brought me the first two great sorrows of my life; it shattered my health when I was young and strong and relegated me to a remote region, where ever since I have witnessed its withering blight laid upon those about me, and stood at the death-beds of many of its victims whom I had learned to love. Of late it has condemned me to years of chronic invalidism, helplessness, and physical misery and suffering. And yet the struggle with tuberculosis has brought me experiences and left me recollections which I never could have known otherwise and which I would not exchange for the wealth of the Indies! While struggling to save others, it has enabled me to make the best friends a man ever had. From my patients who have recovered I have learned much, and this contact with them has brought me rewards which are priceless to me now. To look about me on those whom I have helped in the hour of need and, even though in a very slight degree, to have been instrumental in restoring many to health and active lives of usefulness, and to feel daily their gratitude and love, is a joyful heritage indeed, which endures in a world where all else passes away, and which brings some contentment and peace in hours of physical misery and discouragement."

Such a life and such a work confirm the statement of Robert Louis Stevenson, who says: "There are men and classes of men who stand above the common herd: the soldier, the sailor, and the shepherd not infrequently; the artist rarely; more rarely still, the clergyman; the physician almost as a rule. He is the flower (such as it is) of our civilization; and when that stage of man is done with and only to be marveled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those who practise an art, never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and, what are more important, Heraclean cheerfulness and courage. So that he brings air and cheer into the sick room, and often enough, though not so often as he wishes, brings healing."

We should remember our mission in coming into the presence of the sick, and, as far as is possible, cultivate an atmosphere of cheerfulness. By this is not meant an unseemly levity such as is practised by some; but we may well remember that, however grave the condition at the moment, we practically always have the knowledge and power to improve it —if not by complete healing, certainly by some degree of alleviation. It is in just this respect that we may learn something from the more primitive "medicine man" or healer.

Our advice may be wise, but unless it is given with a wise understanding of the human nature of our patient, it may be given in vain. Our advice must be clear and explicit, not forgetting to "say the proper words." See, for example, Kim, standing on the steps of the Temple at Benares, having obtained from Lama permission to work a healing on the child of the Jat, his former traveling companion. He does not say: "One every three hours and report to me to-morrow morning." but, "Take then these six; praise the gods; boil three in milk; the other three in water. After he has drunk the

milk, give him this (which was half of a quinine pill); and wrap him warm. Give him the water of the other three, and the other half of this white pill when he wakes." This was adequate treatment for malaria and worked a cure. "Gods, what wisdom!" said the Jat. Our neglect to appreciate the viewpoint and understand the feelings of our patients often nullifies our most intelligent efforts. If we desire our patients to take fresh air we must tell them how and when. A good illustration of this is found in Kipling's "Marklake Witches," where the witch doctor, Jerry, is competing with the local leech in the treatment of the Squire's daughter, who has a very fair complexion, flushed cheeks, and a chronic cough. The witch doctor says:

"You know the names of the twelve Apostles, Dearie. You say them names, one by one, before your open window, rain or storm, wet or shine, five time a day, fasting; but mind you, 'twixt every name, you draw in your breath through your nose, right down to your pretty little toes, as long and deep as you can, and let it out, slow, through your pretty little mouth. There is virtue for your cough in these names, spoken in that way. And I'll give you something you can see, moreover. Here is a stick of maple, which is the warmest tree in the wood. It is cut one inch long for your every year, and that is sixteen inches. You set it in your window, so that it holds up the sash, and thus you keep it, rain or shine, wet or fine, day and night. I've said words over it which will have virtue on your complaints." The same people who were ready to mob Laënnec for using a stethoscope, which, they said, caused them to spit blood, would carry out faithfully these directions with regard to hygiene, provided they were given in this way.

The same men who were not above giving charms and using the conjurer's patter, were not without heroism when occasion required. Mr. Culpepper, the herb doctor, in the course of his travels, coming upon a village infested with a plague, elaborated a beautiful hypothesis in which the planet Mars, the moon, and incidentally, the rats figured in a manner as puzzling as all of the pictures in Ehrlich's side-chain theory. It led, however, to a general rat catching, with very satisfactory results.

It is related that in the Colonial days one, Toby by name, did a thriving business in the sale of Indian medicine in Philadelphia, but his belief in herbs did not prevent his leaving the safety and seclusion of the Indian village near Lancaster, to return to Philadelphia to nurse those sick with yellow fever. The spirit of those old medicine men should not be reviled or forgotten. It is well commemorated in the poem by Kipling, "Our Fathers of Old," which begins as follows:

> Excellent herbs had our fathers of old—
> Excellent herbs to ease their pain—
> Alexanders and Marigold,
> Eyebright, Orrise, and Elecampane.
> Basil, Rocket, Valerian, Rue,
> (Almost singing themselves they run)
> Vervain, Dittany, Call-me-to-you—
> Cowslip, Melilot, Rose of the Sun.
> Anything green that grew out of the mould
> Was an excellent herb to our fathers of old.

As physicians we have an immediate and a remote goal. The immediate goal is the prevention or cure of disease and the alleviation of suffering; the remote goal is something far greater. We are the modern heirs of the ancient medicine man, the wise man, and the seer. A realization of this should give us a feeling tone towards life and mankind which will lift us in our actions and sympathies above the cares and worries incident to the accomplishment of our immediate purpose. As Kempf, in his "Autonomic Functions and Personality" says: "Herbert Spencer saw in the tendency of things an automatic evolution from a stage of dull gray homogeneity to a stage of ultra-varied and brilliant heterogeneity, and then on into dull gray homogeneity, to be repeated forever without end. This depressing interpretation neglects the inspiring end of the ceaseless self-refining tendency of living things and does not consider the career of the biocosmos as a whole. One feels that surely universal activity must have a perfect process of working since it has had unlimited endurance; that is, it never had a beginning. The idea of beginning is indigenous to man's awareness of his sensations. The inference that man has a truly dignified and sacred contribution to make is supported by the economies of movement and his unavoidable regret of neglect and waste. A condition of human affairs is coming when the effective strivings of the creator and reconstructor shall alone merit the dignity and respect of men. Labor will be recognized as the only sincere and sacred tribute of man to God. Art and song and play then will be felt as having an utilitarian value for the wholesome relaxation and evolution of the personality, and parasitism, wastefulness, and profligacy will be recognized as disgusting crimes against the welfare of humanity." "The whole principle of Christianity and the mechanism of conversion may be summed up in the Renunciation of Envy. The facts that are being gathered through the analytical study of the affective struggles of the insane, the sick and deformed, the oppressed and unhappy, make it evident that from out of the dismal night humanity is unvirtuously approaching the dawn of a new social era."

Upon the physician more than upon any other man devolves the responsibility of understanding men, and therefore upon him, the physician, devolves the duty of giving guidance and conscious purpose to this natural trend to better things in the individual and in the race. He is therefore something much greater than an operator using some complex instrument with precision, or a technician applying chemistry, biology, and physics to the relief of morbid conditions. He is the learned one who must sense and comprehend this imminent spirit in nature and in man, including himself. He will then work in harmony with that divinity which doth shape our ends, of which again the Buddha said:

> "It will not be contemned of any one;
> Who thwarts it loses, and who serves it gains;
> The hidden good its pays with peace and bliss,
> The hidden ill with pains."

If we are to follow in the footsteps of our illustrious predecessors, we shall need all the help and inspiration we can find. I know of no influence more salutary than that of the active medical society.

Here we mutually teach and learn. Here our darling ideas are laid before our colleagues, perhaps for praise, if they are worthy, but also, if they are unworthy of being received, to be told, in the language of Socrates, that we "have brought forth a wind egg." Then let us take unto ourselves that part of St. Paul's Epistle to the Hebrews, in which he says: "Let us hold fast to the profession of our faith, without wavering, and let us consider one another, to provoke unto love and good works, not forsaking the assemblying of ourselves together, as the manner of some is."

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THE TREATMENT OF ALOPECIA AREATA WITH QUARTZ LAMPS (KROMAYER AND ALPINE).

REPORT OF 50 CASES.

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IN discussing a method of treatment of a self-limited disease such as alopecia areata, it is realized that great caution must be exercised before arriving at definite conclusions. The capricious nature of this affection is shown by its spontaneous cure in one case and its rebelliousness to treatment in another. In one case the hair may return in a few weeks while in another the baldness may remain for several years or even be permanent. As a rule, the last remedy that was used and the last physician consulted is given credit for effecting the cure.

Admitting the fact that in the great majority of cases of alopecia areata, the hair will eventually return spontaneously, it is generally agreed that this return can be hastened by appropriate treatment. Whatever the essential cause and rational treatment may be, the best results seem to be obtained by some form of local stimulation. Such remedies as phenol, liquor ammoniæ fortior, chrysarobin, etc., have long been used with varying degrees of success. Some of them have their disadvantages. Phenol, though often effective, cannot be used over a large surface. Chrysarobin ointment, while of value, is a very disagreeable remedy to use upon the scalp. Local stimulation of the skin may be produced by a number of agents which are rich in actinic rays. These include sunlight, the high frequency current, the Finsen, iron electrode, uviol and quartz lamps (the latter used in my cases). Of these, the Finsen lamp is impractical on account of its expense and sunlight for obvious reasons. The reaction caused by the high frequency current is too ephemeral to be of much value, while the iron electrode lamp does not appear to be powerful enough to have retained much popularity. The so-called uviol lamp (mercury vapor) is made of a special glass which emits a certain amount of actinic rays, though much fewer in amount than mercury vapor lamps made of quartz. Its ability to redden the skin is therefore proportionately less. For practical purposes the mercury vapor quartz lamps (Kromayer and Alpine types) are most satisfactory for stimulating the skin, as their action is easily controlled and their cost is not excessive.

The Kromayer lamp consists of a quartz chamber containing metallic mercury through which an electric current is passed. By tilting the lamp and "striking the arc" a light is produced, rich in actinic rays, which pass without obstruction through the quartz container. The lamp is also provided with a jacket through which a continuous stream of cold water circulates. The Alpine lamp is operated on the same principle except that it is air cooled and has a large reflector. It is suited for treating larger areas than the Kromayer lamp.

The cases described in this report were treated by either the Kromayer or the Alpine lamp, the former being used, as a rule, for localized and the latter for generalized areas of baldness. At the outset the instructions of the manufacturers were not strictly complied with, in that the skin was not cleansed with alcohol immediately before each treatment. This omission was later remedied and it became at once apparent that when alcohol was used it required much less time to produce an erythema. The patients were treated, as a rule, at intervals of one week or more according to convenience. It was aimed to produce an erythema that would remain for at least a week. At times the erythema was accompanied by vesicles or bullæ. A standard distance from lamp to skin was adopted, the time being increased later as the strength of the lamps decreased due to etching of the burner and deposit of lime and iron from the circulating water (Kromayer lamp).

My series of patients included 50 consecutive cases from private practice and the Dermatological Department of the Harlem Hospital. Of these, 33 were males and 17 females. They varied in age from four to fifty years, the majority being adults. Six of them were children of ten years or less. All were cases of alopecia areata of the scalp, no examples of the disease affecting the bearded region or eyebrows having been treated. In one patient (10) the alopecia was absolutely complete, while in five others (6, 7, 9, 22, 49) it was nearly so. One patient (30) presented, in addition to a number of patches upon the vertex, a border of alopecia extending around the scalp. Of the other cases, 14 suffered from single and 29 from multiple areas of baldness.

The duration of the disease varied, according to the patients' statements, from one week to eight years. In the majority of cases the patches were increasing in size when first seen, as shown by looseness of hairs at the borders. In the great majority of cases the hair stopped falling after one or two treatments.

Of the 50 cases treated, 27 were completely cured, a thick growth of hair entirely covering all of the bald areas. There were 12 cases classed as improved, the patches being covered by downy hair when the patients discontinued treatment (or were still under observation). Of the remaining 11 cases, which were unimproved, the majority had not been treated longer than three weeks. Four cases were still under treatment at the time of writing.

The results obtained were perhaps better than the figures would indicate. It is true that only 54 per cent. of the cases were followed until a com-

CASES OF ALOPECIA AREATA TREATED WITH QUARTZ LAMPS

No.	Name	Age	Duration of disease.	No of patches	No. of treatments before downy hair appeared.	Time before downy hair appeared.	Final result	Remarks
1.	L. D.	38	3 months	multiple	7	1 month	Cured	
2.	M. F.	23	2 months	multiple	6	7 weeks	Cured	
3.	A. V.	10	1 week	single	5	7 weeks	Cured	
4.	F. W.	26	1 month	multiple	8	10 weeks	Cured	
5.	F. H.	25	7 weeks	single	9	10 weeks	Cured	
6.	A. S.	6	2½ years	almost total	7	10 weeks	Improved	Failed to return for further treatment.
7.	W. B.	28	5 years	almost total	4	5 weeks	Cured	
8.	F. B.	22	6 weeks	multiple	5	7 weeks	Cured	
9.	R. A.	25	3 months	almost total	7	2 months	Improved	Left town.
10.	G. W.	16	1 year	total			Unimproved	After 50 treatments extending over period 4 years.
11.	F. H.	10	1 year	single			Unimproved	After 9 treatments extending over period 2½ months.
12.	M. P.	50	5 years	single	6	1 month	Cured	
13.	G. S.	23	3 days	single			Unimproved	After 3 treatments extending over period of 3 weeks.
14.	F. W.	19	2 weeks	multiple	17	4 months	Cured	
15.	M. L.	45	6 weeks	single			Unimproved	After 3 treatments. Failed to return for further treatment.
16.	C. S.	10	6 months	Very extensive	19	4½ months	Cured	
17.	G. O.	28	2 years	multiple	4	2 months	Cured	
18.	M. V.	39	2 months	multiple	4	3 weeks	Cured	
19.	C. C.	21	4 months	multiple	7	9 weeks	Cured	
20.	J. T.	20	1 year	multiple	3	3 weeks	Cured	
21.	M. W.	22	2 weeks	single	3	3 weeks	Cured	
22.	J. D.	23	2 years	almost total	3	3 weeks	Cured	
23.	B. L.	25	18 months	multiple	13	11 weeks	Cured	Later total alopecia. Eventual spontaneous cure end 2½ years.
24.	A. B.	39	3 months	multiple	4	3 weeks	Cured	
25.	M. K.	27	5 months	multiple	5	5 weeks	Cured	
26.	J. W.	31	1 week	multiple	6	1 month	Cured	
27.	A. S.	48	6 weeks	single	5	4 weeks	Improved	Failed to return for further treatment.
28.	R. G.	33	2 months	multiple	6	6 weeks	Cured	
29.	F. S.	30	5 weeks	multiple	4	1 month	Cured	
30.	D. D.	17	8 years	multiple	4	3 weeks	Improved	After 6 months treatment.
31.	L. C.	33	2 years	multiple	6	7 weeks	Improved	Failed to return for further treatment.
32.	H. M.	30	5 months	multiple	3	3 weeks	Improved	Failed to return for further treatment.
33.	B. G.	23	6 weeks	multiple	3	9 days	Improved	Failed to return for further treatment.
34.	J. R.	27	3 weeks	single	3	9 days	Improved	Failed to return for further treatment.
35.	I. B.	35	1 week	multiple	4	2 weeks	Cured	
36.	H. H.	36	4 months	multiple	3	3 weeks	Improved	Still under treatment.
37.	H. W.	27	2 months	single			Unimproved	Failed to return for further treatment.
38.	W. A.	30	4 months	single	5	7 weeks	Cured	
39.	M. O.	45	5 months	multiple	5	1 month	Cured	
40.	H. B.	23	1 year	single			Unimproved	Failed to return for further treatment.
41.	R. A.	37	2 months	multiple			Unimproved	Failed to return after first treatment.
42.	C. C.	18	7 months	multiple	10	11 weeks	Cured	
43.	R. C.	32	3 months	single			Unimproved	Failed to return for further treatment.
44.	T. C.	9	10 weeks	multiple	5	4 weeks	Improved	Still under treatment.
45.	H. N.	4	2 weeks	single	4	1 month	Improved	Failed to return for further treatment.
46.	E. G.	23	2 months	multiple	6	6 weeks	Cured	
47.	L. K.	37	8 months	multiple			Unimproved	Failed to return for further treatment.
48.	P. McC.	20	2 months	multiple			Unimproved	Failed to return for further treatment.
49.	P. R.	26	2 years	almost total			Improved	Still under treatment. Fine growth hair at beginning of treatment.
50.	T. McM.	16	6 weeks	multiple	4	4 weeks	Unimproved	Still under treatment.

plete vigorous growth of hair appeared. As a matter of fact when fine downy hair makes its appearance the battle is generally, though not always won and the patches become shortly covered with thick hair. Adding the 12 cases in which fine hair began to grow to the cases completely cured, gives a total of 78 per cent. The results were also encouraging from the fact that some of the more extensive cases (including one of almost total alopecia) were cured. In another case of total alopecia, however, in spite of fifty treatments extending over a period of four years, there was no change whatever. The average number of treatments given before a fine growth of hair was noticed was about five and the average period of time was about six weeks. After a downy growth of hair appeared, additional treatments were given on an average of once a week, until a vigorous growth of hair was obtained.

Recurrences were noted in several cases (1, 18, 23) and in a few there had also been a history of previous attacks of the disease. In one case (23)

with multiple patches, the hair was growing well after 13 treatments. A few weeks later there was a total fall of hair, including eyebrows, with spontaneous recovery two and a half years later.

A possible exciting cause of the disease was elicited in only a few cases. The most interesting case (48) was that of a man who had received a severe electric shock two weeks before the appearance of an extensive alopecia areata. One woman had recently given birth to a child and another had suffered from a "nervous breakdown." One man had "worked very hard" mentally for the preceding year. One patient was an army officer who had held a very responsible position during the war, one was a nurse who had had a very strenuous service in France, and three had recently served as enlisted men in the army.

Although the literature relating to the quartz lamps is fairly voluminous, it does not contain a great deal of precise information regarding the treatment of alopecia areata. The largest series of cases was published by Nagelschmidt[1] in his monograph "Die Lichtbehandlung des Haarausfalles." He reported in detail 104 cases treated by the Nagelschmidt type of mercury yapor quartz lamp (similar to Alpine lamp). Of his 104 cases, 80 were said to have been cured, 16 improved, and 8 unimproved. In this series, however, he omitted certain cases that were "not long enough under observation to enable us to give a positive or negative result and such who came only once and the result of whose treatment was not made known to us."

Bering[2] treated 100 cases with the Kromayer lamp and concluded that no other method of treatment could produce such "convenient rapid and sure" results. In describing the results of treatment of various dermatoses by quartz lamps, Schattmann[3] stated that by far the most favorable results were seen in alopecia areata. He treated a series of 70 cases and claimed to have attained a complete cure in most of them. He admitted complete failure in two patients with total alopecia.

Joachim,[4] who used the Nagelschmidt lamp, quotes histories of favorable cases, but does not give any statistics. He concluded that in order to obtain permanent results, it was very important to give a sufficiently long and intense course of treatment. This opinion is certainly in contrast with that of Reines[5], who appeared to fear the effect of strong reactions. In a report upon mercury vapor lamps in dermatology he stated that for alopecia areata he preferred the uviol lamp to the quartz lamp, as "with the former an overdosage (erythema dose) is not to be feared." Lederman[6] writes that his best results with quartz lamps were obtained in alopecia areata and Lüth[7] considers this disease well suited for the same treatment. Among foreign writers, most of them German, Blaschko's[8] remarks are decidedly conservative. He says in regard to alopecia areata "in view of the tendency of the majority of these cases to heal of themselves, one must guard against speaking of results when possibly the cure has been entirely spontaneous. However, there are cases where one does succeed only through the systematically applied quartz lamp in bringing about a new growth of hair."

The reports of American authors upon quartz lamps in alopecia areata are meager and based upon experience with small numbers of cases. Thus Heidingsfeld[9] reports "successful results," but adds that his observation had been "limited to a few cases and for a relatively short space of time." Clark[10] concludes from treating three cases that the Kromayer light "may be an effective means of treating alopecia areata." MacKee[11] in speaking of the Kromayer lamp, says "it is beneficial in alopecia areata." Jordan,[12] in his conclusions, mentions alopecia areata in a list of diseases in which the "Kromayer lamp (and the Alpine lamp in less degree) is serviceable." In like manner Bernstein[13] considers the Kromayer lamp "particularly adapted to the successful treatment" of a long list of dermatoses in which he included alopecia areata. "In three cases of alopecia areata," writes Wise,[14] "I failed to accomplish a cure despite the most painstaking technic." C. A. Simpson[15] says, "In alopecia areata I have had good results in more than half of my cases, which is rather a poor showing in a disease that tends to get well without treatment. I am sure I was able to hasten the growth, but that is all." A more favorable opinion is expressed by Schalek,[16] who writes, "In extensive alopecia areata I prefer it (Kromayer lamp) to any other therapeutic measure." Oliver[17] writes, "Another affection which often responds very favorably to quartz light is alopecia areata. Bald areas of long standing often show regrowth of hair after four or five exposures to this light at intervals of two or three weeks."

In conclusion I would say that the quartz lamps (Kromayer and Alpine) are cleanly and convenient agents for the treatment of alopecia areata. The results in my series of 50 cases, though not brilliant, were at least satisfactory. More than half of the patients were followed to complete recovery, while in 78 per cent. of the cases the new hair had at least begun to grow. The results were gratifying because I had never previously succeeded in following any considerable number of cases when using other methods of treatment. The patients would become discouraged too quickly and continue the usual habit of such cases of frequently changing both remedy and physician.

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THE EARLY DIAGNOSIS OF GALL-BLADDER LESIONS.*

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WHY is the early diagnosis of diseases of the gall-bladder the most desirable object to attain? Because (1) they are progressive lesions caused by infection through the blood stream, (2) early surgical treatment by cholecystectomy results in a permanent cure, (3) the mortality is thereby reduced to a minimum.

The keynote is a carefully elicited early history. It has been taught that this disease is a condition of declining years. As a matter of fact it begins early in adult life. A careful consideration of the duration of symptoms in operative cases shows that the average age when these patients were known to have gall-bladder infection was 34 years.

The prodromal symptoms of gall-bladder lesions and early stone formation are referred not to the gall-bladder but to the stomach. They are not obscure when viewed in this light.

A knowledge of the sequences of changes in gall-bladder infections is essential to correct interpretation of the inaugural picture. In a brief paper of limited scope these changes can be but sketchily portrayed. They must be intelligently correlated. The life-history of a gallstone from the original infection must be traced in so far as it is possible.

1. Infection through blood vessels: Insidious. History and location of primary focus. (*A*) Infection of gall-bladder wall or (*B*) Infection of gall-bladder contents. Infection of gall-bladder contents may be present at any stage. Unless virulent or accompanied by obstruction partial or complete, of the cystic or common duct, it may not cause symptoms other than dyspepsia. Nature by internal drainage is kind in relieving the condition mechanically when conditions permit. Hepatic and gall-bladder distress or pain increases in direct ratio to the degree of obstruction. When drainage is re-established by subsidence of inflammation and displacement of the stone, local symptoms moderate. The passage of the gall-bladder contents, bile or mucus (not stone), through the common duct may be attended with moderate pain in the region of the right iliac fossa hence the diagnosis of appendicitis may be entertained.

(*C*) Catarrh. (1) Stone forming. (2) Non calculous.

(*D*) Progressive changes eventuating in: (1) Gangrene, Perforation. (2) Hydrops, Empyema. (3) Adhesions, pericystic, etc. (4) Stone. (*A*) Quiescent. History of dyspepsia, primary focus. No present symptoms may be elicited. (*B*) Acute obstruction of cystic duct. Epigastric pain (cramp). (*C*) Prolonged obstruction of cystic duct. Epigastric pain (cramp) plus pain and soreness over gall bladder region or liver running round or through to the back. (*D*) More protracted obstruction of the cystic duct results in greater distention of the gall bladder. Referred pain at the angle of the scapula. (*E*) Permanent obstruction of the cystic duct. Hydrops or empyema develop depending upon infection of contents of gallbladder. Distress, soreness and pain over gall-bladder region and liver persist or may increase—depending upon degree of distention. Pronounced local signs and symptoms plus symptoms of general infection.

Moynihan credits Molloy with the grouping of inaugural symptoms in the phrase "gall-bladder dyspepsia." Of the surgical dyspepsias caused by lesions of the upper abdomen, gall-bladder dyspepsia is the most frequent. In this class surgery has not found such great activity because of the lack of precision in early diagnosis. Physicians have waited for the late classic picture. The old classic picture is based upon the post-mortem pathology of late complications. It is a phase of the symptomatology, improbable of failure of recognition, namely the passage of stones from the gall-bladder into the ducts, their lodgement therein, the development of jaundice, a tender tumor in the gall-bladder region, infection outside the biliary apparatus, and the occurrence of crippling adhesions.

Entirely too much stress has been laid upon gallstones. It is the infection in which we are interested. The infection may manifest itself as dyspepsia or more decided symptoms of cholecystitis.

The symptoms of these infections may be divided into two main groups. I purposely avoid "typical" and "atypical": (1) Those in which there is a more or less protracted history of symptoms referable to the stomach (gall-bladder dyspepsia). (2) Those in which the above are present for a shorter period but with added more definite symptoms referable to the gall-bladder. These mild gastric symptoms consist of distress and bloating, a sensation of upward pressure, usually after meals but also at irregular intervals, sometimes relieved by belching or regurgitation of sour material or slight vomiting. These attacks of flatulent indigestion are characteristic though mild and irregular. Some patients state they have to be careful what they eat, though the appetite is good; it may be voracious. In a somewhat more advanced stage of

*Illustrative cases from the Surgical Service, Kings County and Greenpoint Hospitals.

early gall-tract infection these patients complain of mild or severe pain in the epigastrium. It is usually dull and may be prolonged for several days when a free interval may occur.

Following these, a more or less pointed train of symptoms referable to the gall-bladder usually occur. There is prolonged mild or severe pain beneath the right costal margin, which may be diffused over the entire liver area and be sore to the touch. Pain may be referred rather indefinitely to the back or side. It is usually increased by deep breathing, exertion, or following a heavy meal. It is frequently mistaken for pleurisy and so mild as to constitute a "stitch in the side." Patients may forget to speak of the stitch in the side, as well the long history of stomach trouble extending over a period of three to six years. Patients in this stage may be particular in their diet and be more or less free from the so-called typical gallstone colic for years.

Between attacks of stomach disorder and mild pain referred to the back, side, and lower ribs, patients may be in comparatively good health. They pass through steady, prolonged, irregular attacks of distress alternating with comparative comfort.

The following selected histories from operatively demonstrated cases serve to illustrate the symptoms upon which early diagnosis may be based.

CASE I.—Serial No. 3. Cholelithiasis, 385 calculi in the gall-bladder. Cholecystectomy cure. Mrs. H., age 30, housewife, born in the United States, was admitted to the Kings County Hospital in October, 1914. The chief complaints were pain in the abdomen and back, radiating along right ribs, eructations of gas. The pain begins in the right shoulder blade, radiating to lower right ribs. Referred to right hypochondriac and epigastric region (reversal of usual picture). Temperature 97° F., pulse 70, respiration 24.

Present illness. Onset seven years ago. Six weeks following birth of her first child the patient was seized with severe pain between the shoulder blades which radiated around ribs to the front of the abdomen. She became very weak and experienced cold sweats. Pain persisted for about half an hour, when she was relieved by an injection of morphine. These attacks occurred about every six weeks for the first year and then became less frequent, occurring about four times a year. Four years ago they became more frequent, occurring every two months for a period of six or eight months. They have occurred at irregular intervals up to the present. Two attacks occurred last week. The patient states that these attacks are apparently brought on by excitement and hard work. In the intervals between attacks she feels well. She states that the pain rarely begins in the epigastric region. When it does occur first in this situation it radiates to the back. Pain has been sufficiently severe to warrant hypodermics of morphine in each attack. These relieved the pain but were invariably followed by vomiting. Fever accompanied the attacks but no jaundice was observed. Dyspepsia with frequent eructations of gas after meals and constipation have been present evanescently in moderate degree. She has consulted many physicians but without permanent relief.

November 15, wound healed by primary union, except at the upper angle. At this point there is a sinus two inches deep which discharges bile. General condition excellent. The patient was discharged and placed under care of Dr. Corwin, her physician. In report of December, 1914, stated that the wound had entirely healed and that the patient was in excellent condition.

To recapitulate: This case shows initial infection at the age of twenty-three years, the youngest in the series. The last attack six months ago followed the birth of her second child. A conspicuous feature is the initial pain between the shoulder blades, radiating forward to the lower ribs, hypochondriac and epigastric regions. An explanation may be found in the fact that this was an unusually deep lying gall bladder, though just why this fact should reverse the usual picture is difficult to appreciate. It is to be noted that, while flatulent dyspepsia was present, it was not very pronounced.

Some of my gall-bladder cases warrant the following comments:

CASE II. Serial No. VIII (abstract) common duct obstruction. Cholecystectomy.—This case records a thin, delicate, jaundiced woman of 55 who was admitted with the old classic text book symptoms. She had borne thirteen children, and first presented gastric symptoms of gall-bladder trouble at the age of forty-six, nine years before operation. This was diagnosed as gastritis, during which time she was a chronic sufferer from epigastric pain and typical flatulent gall-bladder dyspepsia. This condition apparently continued in an aggravated form for six years. The symptoms of indigestion may be properly attributed to a mild, sluggish, stone-forming catarrh. It is possible that the stone found in the common duct was originally formed in this location, but the sharp, severe pain in the gall-bladder region three years ago, followed by a slight attack of jaundice probably resulted from its passage into the duct.

Critical analysis of this case shows, then, that a probable diagnosis of gall-bladder infection could have been made years before operation, that in the six year interval which followed the onset of gall bladder dyspepsia, before severe, well localized pain in the gall region occurred, there were symptoms referable to this organ with which patient and doctor were not duly impressed. The age of the patient—forty-nine years, at that time—was sufficient indication for operation, in the face of chronic dyspepsia, of six years' duration.

CASE III. Serial No. 9. (Abstract). Stones in the gall-bladder. Perforation. Spreading peritonitis.—This case illustrates a somewhat different type in a young woman, rapid in its course, with frequently repeated, definite, acute attacks of localized pain in the gall-bladder region, without the predominating dyspepsia occurring before the initial attack, or in the interval between attacks. We observe that infection of the gall-bladder was present three years before operation, at the age of thirty-one. This patient had localized pain in the gall-bladder in all five attacks. The first attack indicated the presence of cholecystitis, the second attack in September was more severe and of longer duration. Attacks were diagnosed by her physician as acute indigestion. During the three years she presented mild, typical, intermittent symptoms of gall-bladder dyspepsia. The severe lancinating pain in the gall-bladder referred to the lower abdomen in September, was probably coincident with the slow leakage of bile and spreading peritonitis. In the last four months there were four attacks of this nature indicating chronic perforation.

CASE IV. Serial No. 7. (Abstract). Empyema of the gall bladder.—This patient showed an advanced sequel of infection in the person of an Italian woman sixty years of age. She is said to have first presented symptoms of gall-bladder dyspepsia five years before operation. There were four different attacks of increasing severity of three or four days' duration. During this period the history does not record symptoms referable to the gall bladder, but the condition might well have been suspected from the gastric symptoms, for these mild intermittent attacks, sudden and irregular, are as characteristic of gall bladder disturbance as are the so-called typic attacks which as a rule supplant them. But for the presence of heart and kidney disease in this patient, cholecystectomy would have been performed.

Stones are not formed in one attack. Repeated mild attacks of inflammation probably

result in dyspepsia, while a more severe infection manifests itself clinically as cholecystitis. There is now no doubt that the near and remote results of cholecystitis and cholelithiasis should be classed as sequels of infection. If we recognize that the initial infection of the gall-bladder (a cholecystitis) is an essential factor in the formation of stones, cholelithiasis may be considered a complication or sequel of cholecystitis, a late stage of the same infection. Pathologically, cholelithiasis is almost constantly associated with cholecystitis. It may also be said of the symptoms that clinically this is also true. Just what factors are involved in determining that infection in one case will result in one particular kind of inflammation or pericystic adhesions and in another in gallstones it is not possible to state.

About 80 per cent of cases show gastric symptoms at irregular intervals for from five to fifteen years, before the classic picture emphasized in the older text books have developed.

It is again emphasized that the late symptoms are the complications of biliary infection due to the passage of stones from the gall-bladder into the ducts—their lodgement therein, the development of hydrops, empyema of the gall-bladder, perforation and peritonitis, common duct obstruction with its attending jaundice, and the occurrence of crippling adhesions outside the biliary apparatus. It is with such findings that histories have been correlated in the past. Hesse emphasized the advanced picture drawn from the terminal pathology when he stated in 1914 that in 84 per cent of autopsy cases, gallstones had given no sign of their presence during life. Another failure to correlate early gastric disturbances with incipient lesions of the biliary tract! This, in spite of Krause's writing upon the prodromal symptoms of gallstones, in spite of Moynihan's contributions in England, of Mayo's "Innocent Gallstones, a Myth" in this country. Surely it is now time this heresy were eradicated.

Are there any pathognomonic symptoms referable to stone formation per se? No. There is no diagnostic criterion to distinguish a non-calculous from a sluggish stoneforming catarrh of the gall-bladder. There are no signs or symptoms either in gall-bladder dyspepsia or in cholecystitis which we can attribute to the manufacture of gallstones. We must therefore operate for cholecystitis if we hope to benefit these patients at an early stage. When we diagnose appendicitis, operation is accepted, but not so frequently with cholecystitis or surgical dyspepsia. Gallstones is the generally accepted diagnosis which from the lay standpoint requires operation. The public has not heard enough about cholecystitis.

Finally, in conclusion. 1. Surgical investigations have afforded opportunity for the correlation of early symptoms with incipient pathologic changes.

2. The nervous and muscular apparatus of the stomach readily respond to irritated foci near or remote from it. It may not be always possible to determine in a clouded picture the exact anatomic site of the lesion because of the intimate embryonic relations which exist between the stomach, part of the duodenum, liver biliary apparatus, and pancreas. These structures possess a common origin from the foregut, a common nerve supply and function in that they are all concerned in the process of absorption and assimilation of food. However, failing in a differential surgical diagnosis between a gall-bladder lesion, stomach, or duodenal ulcer, etc., the *x*-ray or other aids will usually clear up the doubt.

3. Viewed from the surgical standpoint the early diagnosis of gall-bladder lesions, which manifest themselves in the gastric symptoms, is not difficult if intensive individual study is accorded the patient's history.

4. Difficulty may be encountered in making patients realize the importance of operation in the early stage of gall-bladder disease. Would they prefer "to take a chance" and suffer from time to time until more urgent symptoms develop? It may be said by the laity, of the more advanced surgical mind who advocates early operation in these cases, "My goodness, Dr. So-and-So is even operating for indigestion." Little do they realize that the surgeon who diagnoses such conditions in their incipiency may be saving the patient from ten to fifteen years of distress and cancer death.

5. With the advance of education of the lay mind, patients will be willing to undergo operation for the relief of dyspepsia or early cholecystitis, and the late complications will be encountered less frequently. Gallstones only are now significant in the lay mind of a serious surgical condition. In the early diagnosis of disease of the biliary tract gallstones have no place. We should operate for cholecystitis.

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APPLIED ANATOMY OF THE PELVIC BOWEL.

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IN order to form an intelligent conception of the diseases of the colon and rectum, it will be necessary to review the anatomy of the terminal bowel—the sigmoid colon, rectum and anus.

The Sigmoid Colon.—This, sometimes called the pelvic colon, is the narrowest part of the colon; it is the continuation of the descending colon in the left iliac fossa; commencing at the crest of the ilium, it forms a loop, of variable length and position, across the front of the false pelvis and terminates in the rectum at the level of the third sacral vertebra. It fills the left inguinal region, and can be felt, in thin persons with relaxed abdominal walls, rolling under the fingers when empty, and, when distended, forming a distinct bulge. It varies in length, the average being about 16 inches. When the sigmoid is long, it crosses the median line, going even as far as the right pelvic wall, and then turns back a second time toward the middle of the sacrum, where it joins the rectum, thus making an S-shaped curve within the pelvis. When it is short, as not infrequently occurs, all its curves are abridged and it runs more or less directly backward after entering the pelvis. The sigmoid is surrounded by peritoneum, and is attached to the posterior abdominal wall by the mesosigmoid. When the sigmoid is lifted upward and to the right until the mesosigmoid is put upon the stretch, the intersigmoid fossa

is brought into view. The intersigmoid fossa is constant in the fetus and common during infancy, but usually disappears as age advances. As the sigmoid is lifted up and the left mesosigmoid exposed there will be seen a funnel-shaped recess of the peritoneum, lying on the external iliac vessels, between the psoas and iliac muscles. This is the orifice leading to the intersigmoid fossa, which lies behind the sigmoid mesocolon and in front of the parietal peritoneum. The fossa varies in size from a mere dimple to a pocket which will admit the whole index finger.

These fossæ are found in the majority of cadavers examined, although in varying frequency according to different observers (Moynihan, 70 per cent). In infants it is almost always present, but in later years it becomes less constant. Adhesions and thickenings of the mesocolon obliterate the fossa. The opening of the pouch is in the line of attachment of the sigmoid mesocolon, near the inner margin of the psoas magnus. Its orifice is round or oval, with a well defined sharp edge of peritoneum, without any evident blood vessels. The intersigmoid fossa lies behind the sigmoid mesocolon and in front of the parietal peritoneum. It results from imperfect blending or physiological adhesion taking place between the left (posterior) layer of the mescocolon and the parietal peritoneum. Hernia into the intersigmoid fossa may occur. Eve (*British Medical Journal*, June 13, 1885, p. 276) records a case of strangulated hernia into the fossa, and McAdam Eccles (St. Bartholomew's Hospital Reports, XXXI, p. 177) also reports a case. Hernia into the intersigmoid fossa may occur in a normal abdomen, without previous peritonitis or abnormality of size or position of the sigmoid flexure or any part of the intestine, or it may occur where gross congenital abnormality may have been a factor.

The sigmoid, when empty, lies in the pelvis, and in women rests upon and behind the uterus, and upon the bladder in the male. When distended, it rises into the abdomen even to the unbilicus. The pelvic mesocolon is fan-shaped, short at either extremity and long in its middle portion. When the sigmoid rises into the abdominal cavity, this mesentery is doubled upon itself. This is of special interest, from the standpoint of applied anatomy, as the long mesosigmoid permits of great mobility of the pelvic colon, and hence renders this portion of the bowel more liable to volvulus. Individuals subject to habitual constipation have an elongated and attenuated mesosigmoid. The bowel loaded with feces falls over an adjoining loop and becomes twisted. The hypertrophied or impacted sigmoid may also be responsible for retroversion or subinvolution of the uterus, leucorrhea, and many other troubles to which women are subject and for prostatic and bladder troubles in men. Such conditions are all too frequently overlooked and account for many failures to get results in the treatment of the conditions named when more intelligent efforts have been crowned with success.

At birth only the terminal part of the pelvic colon lies in the pelvis, chiefly because of the small size of the infant's pelvic cavity. Beginning at the iliac crest, the sigmoid generally arches upward and to the right across the abdomen to the right iliac fossa, where it forms one or two coils and then passes down in the right pelvis into the pelvic cavity. When, to remedy imperforate anus, it is necessary to form an artificial anus, it is important to remember that although the iliac colon is in the left iliac region, the sigmoid usually lies on the right side. The sigmoid joins the rectum at an angle which may be sharp or obtuse, and there is no way of determining this angle except by inspection.

Rectum.—The rectum is continuous with the sigmoid colon and ends below in the anal canal. It is about 5 inches long, and rests in the hollow of the sacrum, from the level of the third sacral vertebra to a little below the tip of the coccyx and just behind the apex of the prostate gland. At this point the bowel bends sharply backward and becomes the anal canal. At its upper end the rectum is narrower than the sigmoid, but toward its lower terminus it is dilated to form the rectal ampulla.

Viewed from in front the rectum is seen to be regularly folded from side to side in a zigzag fashion, which results from the arrangement of the longitudinal muscle fibers. In addition to supporting the feces, these foldings greatly increase the capacity of the rectum without unduly dilating the tube.

These lateral sacculi may be greatly modified by disease. In atony of the rectum where the organ has been greatly distended, these dilations may be true diverticuli. In other cases where chronic rectitis has existed, the organ may be contracted to a narrow tube.

The anteroposterior curvatures are very marked; backward as the rectum lies in the hollow of the sacrum, forward as it follows the sacrococcygeal curve, and finally backward again at the anal canal. Knowledge of these curves is important when introducing the finger or instruments into the rectum. The curves vary in degree in different individuals, and may be greatly increased by tumors, a displaced uterus, or pelvic adhesion. When the rectum is empty, it occupies only a small portion of the posterior division of the pelvic cavity in the median plane, and at each side, between it and the lateral wall of the pelvis, is a large fossa (the pararectal fossa), which, when the bowel is empty, contains portions of the small intestine or the sigmoid. When the rectum is filled, its lateral flexures become more marked, and the gut passes out beneath the peritoneum, obliterating the pararectal fossa, and fills the greater part of the pelvis. Sometimes at the abrupt curve at the junction of the rectum with the anal canal a knuckle like projection presents immediately above the canal, as if the bowel were doubled back upon itself at this point. A distinct pouch may dip down in front. This more commonly occurs in multipara, and is evidently due to a relaxed condition of the pelvic structures and the loss of support afforded by the perineal body to this part of the gut, and to the great capacity and shallowness of the female pelvis.

At this junction of the sigmoid and rectum is an aggregation of circular fibers on the concave surface of the gut, which fibers spread out on the sides and convexity of the bowel and have been called the third sphincter. It is said that the contracture of the fibers will constrict the gut at this point. As these fibers encircle but a part of the lumen of the bowel

and do not go entirely around, they cannot be considered as a real sphincter.

The peritoneum covers the front and sides of the upper two-thirds of the rectum, lower down the peritoneum is attached only to the anterior wall of the rectum, and is finally reflected onto the seminal vesicles in the male, forming the rectrovesical pouch, and on to the posterior vaginal wall in the female, thus forming the cul-de-sac of Douglas. The lower portion of the rectum has no peritoneal covering. The greater part of the rectum lies behind or beneath the peritoneum. The level at which the peritoneum is reflected to the anterior viscus is of considerable surgical importance in excision of the rectum. This reflection is about 3 inches from the anus in the male and about 2¼ inches in the female, so that it is not desirable to remove more than 2 inches of the entire circumference of the bowel for fear of the risk of opening the peritoneum. When however, the disease is confined to the posterior surface of the rectum, or extends farther in this direction, a greater amount of posterior wall of the gut may be removed, as the peritoneum does not extend on this surface to a lower level than 5 inches from the margin of the anus. If a more extensive operation is done, and the peritoneal cavity is necessarily opened, the opening is plugged with gauze until the operation is completed, and then the edges of the wound in the peritoneum are accurately approximated with sutures. In any rectal or perineal operation, anomalies of these cul-de-sac are to be anticipated. Tuttle reports a case where the peritoneal reflection was separated from the perineum by only the thickness of the external sphincter muscle.

The rectum is surrounded by a dense tube of the fascia endopelvina, which is fused posteriorly with the fascia of the sacrum and coccyx. This fascia surrounds the bowel like a net covers a gas balloon, and allows the viscus to distend.

In its upper portion the rectum is separated from the sacrum, and in the intervening space are the superior hemorrhoidal vessels, the left sacral plexus of nerves, and the left pyriformis muscle. Lower down the rectum is firmly attached to the sacrum by dense fascia, but it is not in contact with the bone. In the loose cellular tissues on either side of the rectum are the lateral sacral artery and the hypogastric plexus of the sympathetic. As the rectum leaves the coccyx there is an interval, the retrorectal space, which is filled with cellular tissue. The loose connective tissue around the rectum is sometimes the site of an abscess, the active focus of which may be located elsewhere. This form of abscess is above the pelvic diaphragm, but beneath the peritoneum, and is described as a superior pelvirectal abscess. The acute variety is generally due to ulceration or perforation of the bowel (possibly produced by a foreign body) above the level of the levator ani. The abscess may also occur above a stricture (simple or malignant) of the rectum, and more rarely follows abscess of the seminal vesicles. Chronic abscesses may also appear in this region from caries of the sacrum or from caseation of the presacral lymph nodes, or by downward burrowing into the pelvis of abscess from disease of the anterior surfaces of the bodies of the lumbar vertebræ.

Anal Canal.—This is the terminal portion of the bowel and begins at the tip of the coccyx, is directed downward and backward and ends at the anus. It is 1 inch to 1½ inches long. It forms an angle with the rectum. It has no peritoneal coat. It is surrounded by the internal sphincter, while the anus is surrounded by the external sphincter. These two muscles keep the lumen of the canal closed. The levator ani muscles hold the anal canal in its place in the pelvis. The anus, the lower orifice of the intestine, is formed of skin containing numerous sebaceous and sudoriparous glands and long hairs. While the anus is closed the external skin is thrown into radial folds by the contraction of the external sphincter, and appears as an anteroposterior slit.

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Medicolegal Notes.

Prescribing Families Remedies as a Business Not Authorized.—The Wisconsin Statute of 1917, section 435j, excepting from the requirements of a license to practise medicine the gratuitous prescribing and administering of family remedies, does not permit of the prescription of family remedies as a business.—State v. Till, Wisconsin Supreme Court, 177 N. W. 589.

Qualification of Expert—Report on X-Ray Picture.—In an action of trespass for assault the evidence tended to prove that the defendant assaulted the plaintiff and lamed his knee. Some one took an *x*-ray of the knee and sent the plate to an expert to be interpreted. The plate was returned with a report as to what the *x*-ray indicated. When the plaintiff offered the report in evidence, the trial court excluded it, but permitted him to inquire of a physician called by the defendant whether he had seen it. After the witness testified that he had seen the report, but that at that time the *x*-ray plate was broken, the court permitted counsel to ask him if any one objected to his taking another *x*-ray. It was held that if the report on the *x*-ray was excluded because it was hearsay, and not because it was incompetent, the questions were proper ones, for, since the witness had testified that in his opinion the plaintiff's lameness was the result of disease, it was permissible for counsel to show what investigation the witness made in order to qualify himself to give expert testimony, which appeared to be what counsel was doing when he asked the question.—Hughes v. Cavanaugh, New Hampshire Supreme Court, 109 Atl. 48.

Hysterical Blindness from Shock of Surgical Operation Compensable under Workmen's Compensation Act.—A claimant under the New York Workmen's Compensation Act had sustained an injury to his right eye, which made its removal by operation necessary. Simultaneously with the operation the sight of the left eye became affected, and ultimately was almost totally lost. No injury appeared to have been done to the eyeball, the optic nerve, or any physical thing constituting a part of the organ of sight. Yet distinguished physicians were agreed that the claimant was not simulating blindness, and in fact did not see. Dr. Neustader, chief neurologist of Bellevue Hospital, a witness for the employer, stated. "He cannot see at all." He diagnosed the trouble as "traumatic neurosis" or "hysterical blindness," and said: "This psychic shock, the surgical operation which produced the shock, was the primary means of producing that hysterical blindness." The New York Appellate Division held that the blindness was a compensable disability caused by accidental injury. The court said: "It is not important that the claimant has an uninjured physical equipment with which he should, but cannot, see. After all, a man sees with his brain, not with his eyeball or his optic nerve, and if an operation performed upon an eye so affects the mind, the nerves, or even the imagination, that a man genuinely loses vision with the other eye, then the faculty of sight has been more directly attacked than when assailed through the mechanical contrivances by which it functions."—Weber v. George Hayes Mfg. Co., 181 N. Y. Supp. 140.

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THE CRUSADE AGAINST TUBERCULOSIS.

IN the program of the National, State, and local tuberculosis associations of this country for 1921 two features of particular interest to physicians are being incorporated. The first of these relates to increased medical research on tuberculosis. The amount of research being carried on in the field of tuberculosis at the present time is apparently small as contrasted with that in other related fields. To be sure, tuberculosis research is not as interesting nor probably as likely to produce dramatic results. It is, furthermore, extremely expensive and difficult to conduct. The number of men who are able to carry on research in this field is woefully small.

The need for more research is increasingly apparent. Such problems, for example, as an exact anatomical picture of the normal lung as being studied by William Snow Miller of the University of Wisconsin must be pursued to completion before a real knowledge of the diseased lung can be appreciated. The nutrition of the tubercle bacillus as studied by Esmond Long of the University of Chicago also opens up an avenue of approach of great interest. The migrations of the tubercle bacillus within the body from its portal of entrance to its final place of lodgment reveals a field of study that must be developed before anyone can answer with a reasonable degree of exactness the question of what translates tuberculous infection into disease. The whole field of chemotherapy is largely in the making, to say nothing of the field of immunology as it relates to tuberculosis. To further research along these and other lines the National Tuberculosis Association will from its own funds appropriate money and offer service in conjunction with experiments being carried on in laboratories in various parts of the country. Local and State organizations will also stimulate medical research in sanatoria, universities, and elsewhere.

The second problem to which the National Association will address itself this coming year is that of stimulating interest in tuberculosis both on the part of the general practitioner and in the medical schools. To put tuberculosis back into the curriculum of the medical schools and to give it the prominence that the mortality and morbidity of the disease warrants, is not an easy task. It involves overcoming in full the phthisiophobia engendered during the last two generations and it involves also the securing of proper institutional and other facilities in conjunction with teaching centers for clinical use of students and professors. To interest the general practitioner in tuberculosis and to improve his technique and knowledge of the disease as it relates to both diagnosis and treatment is a prodigious task.

Distinct efforts along both of these lines, however, are being made. The increasing development of special classes of students on tuberculosis such as the most recent one at the University of Virginia under the direction of Walter C. Klotz, and the increasing popularity of the tuberculosis consultant growing out of the experience of P. C. Bartlett of Framingham, Mass., are both contributions to the desired end. The traveling clinic and the ever-increasing number of tuberculosis and public health nurses are also bringing their influence to bear upon this problem.

While tuberculosis always will remain to some extent a specialty in medicine, the need for greater skill in early diagnosis of chest diseases on the part of the general practitioner is becoming daily more and more apparent. As another step in meeting this need the success of the opening session of the Colorado School of Tuberculosis modeled after the now famous Trudeau School for Tuberculosis augurs well for the establishment of similar courses of study in other parts of the country. The National Tuberculosis Association and the many State and local tuberculosis associations are addressing themselves actively to this problem. From December 1 to 11 the National, State, and local antituberculosis associations of the country will appeal to the medical profession and the public in general for support through the sale of Tuberculosis Christmas Seals and Health Bonds, and we are sure the public will, as heretofore, respond liberally to the call.

THE PATHOLOGY OF TRAUMATIC JOINT LESIONS.

BESIDES the lesions of the bones and ligaments which are variable and special in kind, joint pathology—and consequently treatment—should have in view two elements against which the synovial serosa must offer a defense, namely, blood and infection. Whether the condition is a simple traumatism or an open wound, an injury to a joint usually produces an extravasation of blood in the synovial sac. At present it can no longer be doubted that the blood resulting from the hemorrhage coagulates in the serosa. Of the products of coagulation some become completely absorbed without leaving any trace; these are the serum and blood-corpuscles. The fibrin in the form of either a red or white clot undergoes fibrinolysis, which is facilitated by the reactional exudate of the synovial membrane. If fibrinolysis is complete, no trace of the hemorrhage will remain, but if incomplete the fibrinous false membranes become organized, forming a permanent fibrous cicatricial membrane. These pathological products are of a nature that will disturb the func-

tions of the joint and they are probably the most frequent cause of chronic or relapsing hydarthroses following hemarthrosis.

The pathological data furnish a practical indication for treatment, and that is that every intra-articular post-traumatic collection of blood should be completely evacuated, and the most important of all is to rid the joint of the solid products of coagulation, namely, the fibrin. In closed traumatisms, particularly in hemarthrosis, a fine aspirating needle will not give exit to these products; therefore puncture of the joint with a small knife is the proper method. In open traumatisms closing of the joint should not be done until after perfect hemostasis and free irrigation of the synovial sac with a warm physiological salt solution. The successful results obtained by immediate suture of joint wounds from projectiles in war has led some to conclude that the synovial membrane defends itself particularly well against infection, better even than the soft structures. The process of local defense is, in its essence, identical in both the soft parts and joint serosa; in both the essential agent of defense is the serous exudate—the lymphorrhea. The plasma of the lymph is capable of keeping the wound sterile by preventing the growth of infectious bacteria. If this defense is more efficacious in a wound of a joint than in one of the soft parts, it is because the reactional exudate is retained in a closed synovial sac and finds in the qualities of the synovial membrane ideal conditions for retaining its fluid state; therefore its defensive properties, because the latter certainly appear to be related to the fluidity of the exudate. If for some surgical reason the joint cannot be entirely closed by sutures, an infection of the synovial membrane need not necessarily occur—on the condition, however, that surgical drainage has not been established. Every type of drainage—glass or rubber tubes, etc.—will almost invariably bring about infection of the joint serosa.

Following penetrating wounds of the knee-joint where total suture has been found impossible, the joint may be left open for days or even weeks without infection of the synovial membrane taking place; the serous exudate of the joint continually flows off and prevents the infection of the external wound from traveling into the joint. A wound of the soft parts will never act like that. If a joint defends itself efficaciously, it is on account of the abundance of the exudate and its fluidity. Such an evolution is possible only if the microbic variety will allow it and if the endoarticular structures have suffered little. When a bone has been injured the dirt incrusted within it may very readily escape the curette or chisel; minute bits of bone and acicular splinters undergo necrobiosis and become foci of bacterial growth against which the articular exudate may be powerless. Therefore, the chances of infection increase in direct proportion to the extent of the osseous lesion. The conclusion to be drawn from these data is that in osteo-articular wounds a successful outcome of the case will depend upon the thoroughness of the toilet of the wound, and whenever circumstances permit the bone focus should be excluded from the cavity of the joint.

TYPHUS FEVER.

THE severe epidemic of typhus fever now raging in Poland and Galicia must be regarded as an international danger, and there can be very little doubt that if it is not checked in the new stricken areas it will spread westward. It has been conclusively shown that the infection is carried by lice. The principal carrier is the body-louse, which anchors itself on the underclothing next to the skin and feeds twice a day. These lice can carry infection, of course, only when they have fed upon human beings already infected by typhus and have transferred themselves to a healthy human host. Whether the head-louse also transports typhus is not yet clear, but it is known to carry other types of fever. The recent activities of medical officers in London have shown a widespread prevalence of head-lice among school-children, but the cleansing of the heads does not remove the far greater potential danger arising from *Pediculus vestimenti*. The only remedy against this parasite is the immediate baking or disinfection of clothing.

Cases of typhus are uncommon in Great Britain but a few instances occur annually. The disease was endemic in Ireland until quite recently and a considerable number of cases still occur there every year. The Western regions of the Continent of Europe have long been practically free from typhus, though the disease has always been endemic in Western Russia, and to a much more limited extent in Galicia and Poland, as well as in certain areas of Eastern Germany.

Typhus fever has always been associated with war, chiefly owing to the inability of the troops to change their clothing, with the consequence that *P. vestimenti* is able to breed freely in their undergarments. Yet there has been no typhus worth mentioning as an accompaniment of war in Western Europe since the Napoleonic era. It is now considered doubtful whether the supposed outbreak during the siege of Metz in 1870 was really typhus at all. The heritage of disease left by the Franco-German War was chiefly smallpox. Typhus raged in the war zone during the Russo-Turkish War of 1877-78, but hardly a case was reported on either side during the Russo-Japanese War in 1904-5. The British troops suffered in a slight degree from typhus during the Crimean War and are believed to have brought the infection to England, thus leading to the last serious epidemics there. The worst year was 1858, when 1,062 patients were admitted to the London Fever Hospital. Central Europe has not suffered greatly from typhus since 1812-14, when there occurred the terrible epidemics resulting from the Napoleonic wars, though there was a fairly widespread prevalence of the disease again in 1846-47.

Typhus is essentially a winter disease and occurs most frequently in temperate climates, the obvious explanation being that its development is enhanced by overcrowding, bad ventilation, and close contact in dwellings. The mortality is almost invariably high among doctors and nurses. Our greatest safeguard is that typhus is now thoroughly understood, while precautions can be applied without difficulty.

PROPHYLAXIS AND TREATMENT OF RUPTURE OF THE UTERUS DURING LABOR.

RUPTURE of the pregnant uterus takes place in two circumstances. Sometimes on account of tension or an extreme thinness, the lower segment of the organ gives way, either spontaneously or from some adjuvant influence, such as the application of the forceps, but above all when attempts at version are essayed. At other times, the lower segment of the uterus ruptures as a result of operative traumatism in tentatives at rapid dilatation of the cervix or the delivery of the child through an incompletely dilated os. Uterine cicatrices, the result of former tears or operative interference, and particularly the cesarean operation, naturally create a predisposition to rupture.

Should rupture appear to be on the point of occurring, version is to be proscribed and in its stead forceps or the cesarean are to be resorted to according to circumstances. The indications for cesarean section are becoming more numerous and at the present time this operation should unhesitatingly be done in every case where rupture of the uterus appears to be practically unavoidable during attempts at extraction through the cervix. All this immediate prophylaxis is itself dominated by a more distant prophylaxis which consists in maintaining watch over pregnant women during the latter months of gestation and at the beginning of labor in order to resort to proper measures in good time, such as version in shoulder presentations. In order to avoid rupture from forced dilatation of the cervix, this procedure should be carried out with prudence and then only in properly selected cases, that is to say, in multiparous women with a yielding cervix already somewhat dilated, and extraction of the infant should not be attempted until dilatation is complete. Particular care must be exercised in cases of former tears of the cervix, which are susceptible of being the starting-point of a new laceration.

Should rupture have occurred there are three conditions to be feared, namely, shock, hemorrhage, and infection, which are to be dealt with according to the principles of modern surgery. When the rupture is complete the child and placenta are to be extracted without delay, the best procedure being laparotomy, especially if the fetus has escaped into the abdominal cavity. All other procedures are either dangerous or inefficient. Abdominal hysterectomy is unquestionably the method of choice. If the rupture is subperitoneal the fetus may occasionally be removed by the vaginal route (version must never be attempted), and this may be followed, in simple cases, by plugging with sterile gauze. But laparotomy remains the only proper procedure when the hemorrhage is in any amount or there is indication of infection, even if very slight.

Finally, there are uterine ruptures which are complicated by a tear in the bladder or by hernia of an intestinal loop through the rupture. These conditions are to be dealt with according to rational indications.

THE THERAPEUTIC USE OF METHYLENE BLUE.

IT is somewhat to be regretted that methylene blue in therapeutics has been neglected of late, although it is evident that the very numerous uses to which this drug has been put have met with varying success. It is evident that renewed researches are required in many circumstances, as for example the exhibition of this hydrocarbon in the treatment of the acute stages of nephritis, certain forms of pulmonary tuberculosis, tuberculous adenitis, hyperchlorhydria, gastralgia, etc. In these morbid processes the cases published have been too few and not sufficiently conclusive to settle the question of the efficacy of methylene blue, but it must be admitted that further assays would be highly interesting and merit being pursued. The question is quite different in those affections in which methylene blue has been used as an analgesic, antiseptic, or antimalarial. In painful diseases the good effects of the drug are unquestioned and as an anti-malarial sufficient testimony has been forthcoming to show that—although it is not a specific—its effects are sometimes equal to those of quinine. As an antiseptic this medicament has shown itself potent, and the results obtained in urethral and vaginal gonorrhea, purulent cystitis, and ocular affections are proof of this, likewise the coloring affinity of the drug for the majority of pathogenic bacteria. Therefore, it can be distinctly regarded as an excellent analgesic, antiseptic, and antimalarial. Methylene blue possesses an evident action on neoplastic tissue, but it cannot be regarded as by any means specific. In these circumstances its antiseptic action favors tissue repair and, perhaps—but this is merely an hypothesis—a special trophic action on the nerve endings allowing the epithelial structures to assume a normal growth and vitality. Thanks to this action—although as yet unexplained—methylene blue combined with curettage of the morbid structures may result in durable cure of cutaneous epitheliomata. When combined with radium application in recent cases a rapid cure may be looked for, while in old cases, with extensive tissue destruction the drug may still be preferred to excision or it can be used as preparatory to excision, which is unquestionably the procedure of choice when feasible. In cases of palpebral epithelioma with invasion of the angles of the eye, especially the internal angle, the treatment becomes a more delicate matter; it lasts longer, but the ultimate outcome is generally quite as good. Nothing is less known than the action of methylene blue on malignant neoplastic tissue, and this applies to all drugs so long as the pathogenesis of cancer remains an unknown quantity. But although this action is unknown the therapeutic results obtained can be appreciated.

LEAD POISONING FROM BULLET WOUNDS.

THERE was but little if any literature on this subject during the great war, although it is generally understood that old carriers of lead projectiles run some risk of developing plumbism. This silence may be explained in various ways. Doubtless the great majority of projectiles have been extracted or encysted, or the time may not have been sufficient for the development of plumbism, or the belated character of many journal articles, some of which

were really written long before the war closed, may have been a factor. In an article by Curschmann in a German periodical abstracted in *La Presse Médicale* for Sept. 15, 1920, xxviii, 66, it is stated that evidences of plumbism have been one of the indications for the removal of old projectiles. But a case is given which shows that such intervention may be highly meddlesome. The soldier in question was wounded in the hip in March, 1918. Eleven months later he complained of lumbar pain and was found to have albuminuria. It was found to be due to colibacillary pyelitis, but this was found later to mask a nephritis ascribed to lead poisoning. Although the ball was promptly extracted the patient died of lead encephalopathy. It was believed that the operation had mobilized fine particles of lead which had been swept into the circulation. In such a dilemma the medical man is veritably "up against it." Curschmann therefore put the matter up to the biochemist Straub, who suggested infiltration of the operative field with sulphate or bicarbonate of sodium, which should cause the solution and elimination of the lead by the urine and thereby spare the nervous system. The internal use of potassium iodide is mentioned as having the same effect, although it is not recommended in these cases, for if this salt could do the work the local soda injections would not be required.

Chemotherapy and Acid-Fast Bacilli.

Lindemberg and Pestana report in the *Brazil-Medico* for Sept. 11, 1920, xxxiv, 37, the results of experiments inspired doubtless by the curative effects of chalmoogra oil and its gynocardic acid in leprosy. The unneutralized acid in the oil seems able to inhibit the multiplication of the acid-fast Hansen's bacillus. It is thought that the rationale of the action of codliver oil in tuberculosis is the same. It has hitherto been taught that these oils act by stimulating the leucocytes in the defence of the economy, or that they are simply tonics; but such views will probably have to give way to the chemotropic or bacteriotropic hypothesis, especially as the same action is shown *in vitro*. We cannot generalize by stating that all unsaturated acids have similar properties—in other words the behavior of the acids in question is quasi-specific. We can, however, test other acids in this connection. Of interest were some experiments in which chalmoogra oil was tested in tuberculous subjects in a parallel series with codliver oil. With both drugs a reaction occurred comparable to that which follows tuberculin injections. Not the oils as such, but the acids which they contain were injected. The reaction is attributed to the death of the bacilli and liberation of toxic products. From this viewpoint the greater the number of bacilli the more pronounced should be the reaction. But in the clinic the best effects of codliver oil are seen where but few bacilli are in evidence (scrofula). In tubercular leprosy, in which vast numbers of bacilli are present, the clinical results are notably good, for the bacilli are destroyed without any evidence of toxemia. In this respect tuberculosis and leprosy show pronounced differences from the viewpoint of chemotherapy, and neither of the oils gives any promise for the future of the first named disease.

Coffee and Vitamines.

Mattei contributes an article with this title to *Il Policlinico*, Sept. 13, 1920, xxvii, 37. He sketches briefly the conception of the vitamines. Many classes of substances seem to possess vitaminic activities and among them certain derivatives of pyridine, pyrimidine, and xanthine. In experiments on pigeons infusion of coffee appears to benefit the polyneuritis of these animals. But while vitamines are destroyed by a heat of 115° C., coffee withstands a temperature near 250° C. which carbonizes it. The author found that 8 c.c. of an infusion of mocha of 5 per cent. strength were enough to suppress pigeon paralysis within a few hours' time. The weight did not improve but otherwise the animals were completely restored to health. Persistent use of coffee also seemed able to prevent the development of the disease in animals fed only on polished rice. The result was rather deceptive, however, for in from 4 to 6 weeks after apparent cure the symptoms rapidly returned and the animals perished, with symptoms of paralysis and cerebral complications. Coffee had only arrested the progress of the malady. Experiments with caffeine showed that it did not represent the full action of the coffee infusion. Other ingredients, formed probably in roasting the berry, were also active. Some of these, as methylamine, hydroquinone, pyrrol, caffeol, and furfurol are known, while others are doubtless associated with these. The active principle as stated cannot be an ordinary vitamine because of its much greater thermostability and also because it does not cause increased weight of the animals. The author fed pigeons on wheat bran as a substance rich in ordinary vitamines, giving this exclusively. The result was a steady loss of weight and it became necessary to add a few grams of rice daily in order to maintain life. Hence vitamines in excess cannot compensate for lack of ordinary combustible food.

Etiology of Senile Hypertrophy of the Prostate.

Gori gives a digest of our knowledge of this affection in the *Annali di medicina navale e coloniale* for July-August, 1920, xxvi, ii, 1-2. The affection is peculiar to old age but is not physiological, as has been claimed. Of alleged causes are venous congestion, horseback riding, sedentary life, constipation, alcoholic excesses, repeated attacks of gonorrhea, stricture (Hunter), and stone in the bladder. Zappala believed that in old age the bladder changed from a pelvic to an abdominal organ so that a kind of compensatory hypertrophy resulted which, originating in the trigonal region, later extended to the prostate. Other alleged causes are prostatitis, acute or chronic, heredity and familial tendency, arteriosclerosis, chronic affections such as gout and tubercle, and the stimulation of some hormone. It is easier to state what it is not. There is no evidence of an infection or previous inflammation and the antecedents of the victims show the greatest variation—it attacks equally gluttons and light eaters, married and single, subjects with and without venereal contamination, and is independent of the sexual life. Technically it is a fibroepithelial tumor—a mixed tumor, in fact. It is known that in adenoma there may be a tendency to form a fibrous stroma but the author turns this about by making

the fibrous formation come first as a sort of "post-climacteric" phenomenon, while the origin of the adenomatous component is unknown. However, a similar process is seen in two other sexual organs, the uterus and the breast, a fact which has some suggestiveness.

News of the Week.

Chinese Relief Work.—It is estimated that there are 20,000,000 of famine sufferers in the four Chinese provinces where the crops failed this year. Relief work has been undertaken by both Chinese and foreign organizations. The American committee to raise and distribute famine funds, organized on the initiative of the American Minister, Charles R. Crane, is directed by H. C. Faxon of the American Chamber of Commerce in Peking. H. C. Emery, formerly of New York and Washington, now in China, is treasurer of the American committee. French and British committees are being organized. The Chinese Ministries of Finance, Agriculture and the Interior have appointed a commission to dispense a $1,000,000 fund to be raised by means of a short-term loan. According to reports from Shanghai another fund of $1,800,000 has been undertaken by seven provinces at the instigation of Tang Shao-yi, the chief southern peace delegate.

Jewish Relief Agents to Russia Safe.—It was reported recently that American relief workers in Russia had been imprisoned by the Reds and their goods confiscated. Dr. Frank Rosenblatt, now in Moscow, Soviet Russia, as the representative of the Joint Distribution Committee of the American Funds for Jewish War Sufferers, sends refutation of this report. He cables that there has been no interference with the activities of American Jewish relief workers upon the part of the Soviet government.

Delegates to International Sanitary Conference. Surgeon General Cumming of the United States Public Health Service has appointed Assistant Surgeon General H. J. White and Senior Surgeon G. N. Guiteras as delegates to represent the United States at the sixth international sanitary conference to be held at Montivedeo, Uruguay, Dec. 19 and 20.

Need of Aid for Russian Refugees.—The French have estimated that 50,000 refugees from the Crimea have arrived in Constantinople, which is already crowded with thousands of refugees from Asia Minor, and that 50,000 more are on the way. Conditions on the vessels which are transporting Russian soldiers as well as those carrying refugees are said to be terrible. Food, already high, has reached famine prices, and the supply is woefully inadequate. Cable dispatches say that unless America will come in on a large scale, either officially or through the Red Cross or other voluntary associations, the situation of the refugees from South Russia will be one of the most tragic and fatal of the World War.

Dispensary for United States Employees.—The formal opening has been announced by Surgeon General Cumming of the United States Public Health Service of the public health dispensary in building "C," Seventh and B Streets, Washington, D. C. Dr. S. H. Christian is in charge. With the establishment of the dispensary in its new home the staff is prepared to furnish medical assistance to all persons injured in line of duty in any of the government departments, civilian employees of the Army and Navy, members of the police and fire departments of the District, the coast guard, the Mississippi River commission and other allied government commissions, war risk insurance patients and men under training by the federal board for vocational education.

Coal Issued on Doctor's Prescription.—When the recent cold wave struck Buffalo, N. Y., there was a shortage of coal and gas, and the stocks of oil heaters of all kinds soon became depleted. Physicians then began issuing prescriptions—so the story goes—for coal, charging one dollar per prescription. The remaining small supply of coal was going fast until the health department issued a warning against the issuance of coal prescriptions except in case of illness or for other special and valid reason.

Tribute to Florence Nightingale.—Under the auspices of the American Red Cross, France, Italy, Great Britain and the United States joined recently in paying tribute to the memory of the "Lady of the Lamp." Exercises were held at the base of the Statue of Liberty on Bedloe's Island.

Tuberculosis "Cures" Expensive.—Figures compiled by the National Tuberculosis Association show that a sum approximating $2,000,000 is spent each year by residents of New York City for fake tuberculosis "cures," and that the perpetrators of these frauds throughout the country take from their confiding victims between $15,000,000 and $25,000,000 annually. The sum extracted from residents of this city alone is six times the $350,000 which the New York and Brooklyn Tuberculosis Associations hope to raise through the sale of Christmas seals, for fighting the disease in the five boroughs.

United Hospital Fund Drive Opened.—The forty-first annual drive for the United Hospital Fund started November 15, the goal being $1,500,000. The campaign closes November 29.

State Hospitals Crowded.—In its annual report the State Charities Aid Association announces a condition of serious crowding in the State hospitals. In those near New York City the following overcrowding exists: Brooklyn, 209; Central Islip, 1,227; King's Park, 683; Manhattan, 430. Appropriations for new construction at the State hospitals passed by the Legislature last year and approved by the Governor amounted to $3,675,000, and additional construction amounting to $1,461,750 was authorized. The chief new construction of State hospitals now in progress is at the Marcy Division of the Utica State Hospital, where the State owns about 1,000 acres of farm land and is developing what will virtually be a new State institution.

Recruiting Nurses.—Owing to the impending lack of trained nurses to staff the new hospitals that are being opened by the United States Public Health Service the superintendent of nurses will make an effort during her pending tour of inspection to obtain recruits to fill the vacancies. Public Health Service hospitals exist in all parts of the country and offer opportunities for patriotic service in the care of disabled soldiers of the great war.

Tuberculosis Hospitals.—It is announced that

several of the largest general hospitals of the United States Public Health Service are being provided with special facilities for the diagnosis of tuberculosis and for the study of patients to determine which Public Health Service hospital is best suited to their needs. These hospitals will become clearing houses for the diagnosis and placement of tuberculosis patients in their vicinity, especially for those with doubtful diagnosis or with complications requiring expert care. At each of them physicians skilled in this specialty will be on duty and the most modern methods will be in use. All Public Health Service hospitals, however, are open to tuberculosis cases; and admission is never denied because of lack of special facilities. Special centers are already functioning in the Public Health Service hospitals at Fort McHenry, Baltimore, Md.; Fox Hills, Staten Island, New York; and Hospital 35, St. Louis, Mo. Other centers will be organized as soon as possible.

Ban on Whiskey Prescriptions Lifted in Chicago.—Chicago doctors who can show "reasonable cause" may now have as many whiskey prescription blanks as desired. The regulation limiting the number allowed has been withdrawn by the Government.

The Medical Society of the County of New York, at its annual meeting held at the New York Academy of Medicine, Nov. 22, 1920, elected the following officers for the ensuing year: *President,* Dr. George Gray Ward, Jr.; *First Vice-President,* Dr. Orrin S. Wightman; *Second Vice-President,* Dr. Arthur F. Chace; *Secretary,* Dr. Daniel S. Dougherty; *Assistant Secretary,* J. Milton Mabbott; *Treasurer,* James Pedersen; *Censors for three years,* Drs. Edward M. Colie, Gustav G. Fisch, Dewitt Stetten.

Second Child Health Station Opened.—The Red Cross formally opened the second of a series of child health stations to he established in the congested sections of New York City.

Drug Cache in Dingy Flat.—Narcotic drugs of the estimated value of $200,000 were discovered by detectives recently in a downtown flat in New York City. The find included two million grains of morphine, cocaine and heroin, which was secreted in tins, preserve jars, kettles, teapots and various receptacles.

Cardiac Disease Statistics.—The Federal Bureau of Vital Statistics have announced that organic diseases of the heart resulted in more deaths than any other one cause during 1919.

Weekly Health Index.—As a health index the Bureau of the Census is publishing each week mortality reports from the largest cities in the United States. There are given for each city the total number of deaths reported (stillbirths excluded), the death rate, the number of deaths under one year of age, and the proportion of infant deaths to total deaths. Where the data are obtainable for the previous five years, averages for the corresponding weeks are given for each city.

Prohibition and Coffee.—The secretary of the National Coffee Roasters' Association, which held its tenth annual meeting in St. Louis early this month, is authority for the statement that sixteen billions more cups of coffee have been consumed so far in 1920 than during the entire year of 1919. The increased consumption is attributed to prohibition.

The New York State Civil Service Commission announces, among examinations to be held Dec. 4, the following: Assistant *x*-ray operator, State Department of Health, at a salary of $1,500 to $1,800; chemist, Bureau of Food Standardization, Division of Foods and Markets, Department of Farms and markets, salary $2,150; Director, After-Care Service, State Industrial Commission, salary $2,400; Field Agent for After-Care Service, State Industrial Commission, salary $1,500; Field Agent, State Commission for Mental Defectives, salary $1,500.

The Tri-State Medical Association of the Carolinas and Virginia will hold its next annual meeting at Spartanburg, S. C., on Feb. 16 and 17, 1921, under the presidency of Dr. J. P. Munroe of Charlotte.

Dr. Morton in the Hall of Fame.—At the recent election the Hall of Fame at last made place for the name of a representative of the medical profession, Dr. William Thomas Green Morton, who first demonstrated to the world the possibilities of surgical anesthesia, being the first physician so honored.

Dr. John P. Wright has removed his office to 327 East Fifty-eighth Street.

Dr. Otto V. Huffman has removed his office to 25 East Sixty-fourth Street, New York City.

Death Rate Falls.—Statistics issued by the Census Bureau show the 1919 death rate in the death registration area of continental United States, which embraces 81 per cent. of the total population, to be the lowest recorded for any one year. The rate of 12.9 per 1,000 of population showed a drop of 5.1 per 1,000 from the unusually high rate of 1918 resulting from the epidemic of influenza. The total number of deaths in 1919 was 1,096,436, of which 111,579, or 10.2 per cent. were caused by heart disease, while tuberculosis resulted in 106,985, or 9.8 per cent., the statistics showed. Deaths attributed to pneumonia totaled 105,218, influenza 84,113, nephritis and Bright's disease 75,000 and cancer and other malignant tumors 68,551.

Obituary Notes.—DR. ROBERT C. JAMES, for twenty years a practitioner in New York City, died suddenly at his home in Lexington, Ky., Nov. 13, at the age of fifty-five. He was graduated from the College of Physicians and Surgeons, New York City, specializing in obstetrics. For many years Dr. James was on the staffs of Bellevue and Lying-In hospitals, and he was formerly an instructor in the medical department of New York University. In 1915 he returned to Lexington on account of ill health, but came back to New York a few months later to help in the emergency created by the war, ill health finally causing his retirement to his home in Kentucky. Dr. James was a member of the American Medical Association and of the New York Pathological Society.

DR. WALTER B. CHASE of Brooklyn, N. Y., gynecologist and pioneer in radium therapy, died Nov. 14, at the age of seventy-eight. He was graduated from the Medical School of Maine in 1867. He was a fellow of the American College of Surgeons and of Brooklyn Gynecological Society.

DR. DANIEL T. CONDICT, County Physician and for many years physician for the Erie Railroad, died at his home in Goshen, N. Y., Nov. 18, from effects of ivy poisoning. He was sixty-seven years old. He was graduated from Albany Medical College in 1874.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, October 29.

Strikes and Health.—There is obviously a quite intimate relationship between strikes and health. A strike on a scale such as that now proceeding in Great Britain, exerts a most injurious effect on the national health and, unfortunately, this effect is most markedly felt by the child population, that part least able to bear privations and whose value to the nation is incalculable, especially to a nation like Great Britain. With regard to this aspect of the situation, it may be remarked that strikes always fall most heavily on innocent women and children, and it is an instructive sign of the times that the women in the mining regions, speaking generally, were averse to a strike. Now that women of this country not only wield great influence but great political power, it seems reasonable to suppose that they may use this power to prevent strikes which play havoc with prosperity and which have a most adverse effect upon the health of the rising generation.

The League of Nations and the Health of the Peoples.—Professor F. F. Roget of Geneva delivered before the Chadwick Trust at the Surveyors' Institution, Westminster, on October 18, a lecture which was the first of three dealing with the Cannes Conference, and the program laid down by the Medical Department of the League of Nations. The lecturer gave a résumé of the progress made during 1919-20 in the formation of the League of Red Cross Societies, as also an account of the work to be done by the League of Health working under its direction. The lecturer said in part that the horrors of the last war had given the various Red Cross societies a great opportunity to extend their beneficent work in wartime, and in times of peace it would include promotion of the health and welfare of the peoples, the control and prevention of disease, and the mitigation of suffering throughout the world. Moreover, an effort was being made to secure humanitarian conditions of labor for men, women, and children. These benefits to humanity could be secured only by uniformity in work and by the standardization of remedies. The League of Health would create a moral bond of fellowship among all nations which Christian charity had failed to do. In the history of mankind the war spirit of the male was dominant, but it was the duty of women to destroy this idea of destruction, and women must play their part in the work of the League. An agreement was reached at Cannes that a uniform standard should be applied to the solving of the health problems of the world and that the various sections should form a central bureau of public health. The preventive section alone was composed of 22 members, America sending 5, Great Britain 6, France 4, Italy 5 and Japan 2. There were also sections dealing with child welfare, tuberculosis, venereal complaints, malaria, nursing, and statistics, all composed on an international basis. The conference, at the head of which was an executive council, met twelve times, and was now crystallized in the office of the Red Cross Society in Geneva. By its aid the health official of any town would be able to obtain all the information he would require as to cost and plans for giving to that town the best public health organization, and such a town would reap all the benefits which standardization could supply. There was also a moral and educative side in the direction of peace on earth in the combined work of the League of Nations and the League of Health. These bodies could supply information as to the evil effects of war, which would be at the disposal of all legislators, while the strict neutrality of the League would tend to dispel the prejudices fostered by national misunderstandings. Professor Roget said that the Cannes conference had initiated a Universal Health League designed to embrace all civil life in its world activities of law, charity, and science.

***X*-ray Department Opened at the Bethlem Hospital.**—The Hospital is one of the oldest charitable foundations of London and the Brothers of Bethlem were the most ancient of all the old religous orders. It is believed that in very early times they migrated westward from Bethlem itself and came to England, their mission being to look after those who were insane and who in those days were thought to be possessed of the devil. It is, perhaps, needless to say that the harsh term "Bedlam," a synonym for madhouse, which in a less understanding and sympathetic age was applied to institutions for the insane, was a corruption of "Bethlem." On October 22 the Lord Mayor of London visited the hospital for the purpose of inaugurating the installation of the apparatus for the *x*-ray department given by Sir Charles Wakefield, a London alderman and president of the institution. Dr. Porter-Phillips, the medical superintendent, gave an outline of the work which the hospital is carrying out and mentioned that the good work inaugurated by Simon Fitzmary had been continuously carried out since A.D. 1247. In the course of his interesting speech he said that with the inauguration of the hospital, or department for nervous diseases in 1919, the dawn of a new era in the history of the hospital had been heralded. A means had been thus provided which would enable the sister sciences of neurology and psychiatry to flourish side by side, which, in the field of medicine, hitherto had been studied quite apart from each other. He referred to the gift of Sir William Wakefield of one of the best and most modern installations of *x*-ray apparatus to be found in London as the coping stone of the institution.

Woman's Intuition and the Thyroid Gland.—Although the intuition of woman or rather remarks thereon, hardly comes within the scope of a London Letter which I imagine is mainly written with the object of recording medical and surgical facts, yet as intuition certainly is a phase of psychology, or the innermost workings of the human mind, it is not altogether outside the province of medicine. Sir James Barr, at the opening of the winter session of the Liverpool Literary and Philosophical Society in the Royal Institution, Liverpool, on October 6, as president, discussed the Philosophy of Immanuel Kant. He pointed out that intuition had a practical utility which Kant did not appear

to fully understand since he seemed to place the human form of it much higher than the instinct of other animals. Sir James Barr observed that intuition directed us to conceptions of life and consciousness as something more than mere functions of organized matter and yet the interdependence of life and those functions must not be overlooked. The intelligence of many human beings was improved and their lives prolonged by judicious use of the sheep's thyroid. Women were often more sharp-witted than men because their thyroid glands, as a rule, were more active.

The Menace of Typhoid in Europe.—A large number of men, women, and children have crossed and are crossing the Russian frontier on their way to Lettish territory. They are the first fruits of an agreement between Soviet Russia and the Lithuanian Government for the repatriation of 300,000 Letts within the space of two years. According to newspaper accounts most of them are swarming with vermin, and as Russia is being swept from end to end with typhus and recurrent fever, stringent measures must be put into force to prevent such returning Letts from becoming centers of infection in the districts in which they settle. So when the railway trains steam into the Lettish stations, and into Reschitza in particular, its passengers are herded into a long barrack at the entrance of the quarantine station, which has been established and equipped there by the American Red Cross Commission. They are first subjected to thorough disinfection, new clothing is issued by the Red Cross officials, and the old garments, which have stood the ordeal of disinfection, are handed over to their owners. Then they are well fed and receive blankets for use in the dormitories, where they are sheltered during the five days of their quarantine. Those in need of medical treatment are taken to the hospital. At the end of five days, if no symptoms of typhus or other diseases have shown themselves the refugees are free to rejoin their friends. About 500 persons pass through Reschitza station every twenty-four hours. Elaborate measures of this nature are essential if a desolating epidemic of typhus is to be prevented from sweeping across Western Europe during the coming winter. All along the western frontiers of Russia refugees and returned prisoners are streaming back to their own countries in a similar condition to that of the Letts. It is urged that in order to render the situation yet more secure the same kind of stations be established at all the main crossing places between Esthonia and Roumania. While the League of Red Cross Societies can procure the men and material necessary for this preventive and curative campaign, it must be borne in mind that such a sanitary cordon requires large sums of money to maintain it in efficient working order. To this end the league has entrusted an appeal throughout the British Empire to the Imperial War Relief Fund. It must be a source of pride to Americans that the American Red Cross Commission is doing the spade work necessary to preserve Europe from the awful results of an epidemic of typhus, and no doubt money enough to do the work thoroughly will be forthcoming. The health conditions in Russia point the moral that if for this cause alone, the utmost endeavors should be put forth to bring peace to that unhappy country. At present Russia is a menace to civilization from all points of view.

The Call for an Improved Milk Supply in Great Britain.—The meeting of the National Association for the Prevention of Tuberculosis which took place at Liverpool recently and which was referred to and quoted from in previous letters, brought at least one fact into desirable prominence, that is, that the milk supply of the country is in a very unsatisfactory condition. In a letter contributed to the *Lancet* October 23 last, Professor R. Stenhouse Williams discusses certain features of the milk question. He points out that the dairy farmers have formed a representative council, known as the Associated Milk Producers' Council, which has already brought forward a valuable scheme for the improvement of the milk supply. Two of the essentials of the scheme are that the dairy farmers shall band themselves together in districts, be paid for their milk according to its quality, including cleanliness, and have persons in their own employ competent to go in and out of the dairy farms and advise upon improvement of methods. In association with this scheme an attempt is being made at the present time to link up the producer, wholesaler and retailer, so that their interests in the fate of the milk may be one. All these events represent a great upheaval for the improvement of the milk supply from within the industry. Everyone interested in public health, especially in infant welfare, will welcome this movement with enthusiasm. The only matter for wonder is that steps in this direction were not taken years ago.

First Annual Report of the Ministry of Health.—This report has been issued recently and is a really remarkable document. Even if the magnificent schemes evolved from the brains of the members of the Ministry of Health never come to full fruition, a consummation, by the way, which cannot be expected, the very fact that they have been suggested is for good. This tends to educate the people and pave the way for health reforms. The masses are beginning to understand that their salvation does not lie in glib-tongue politicians, but rather with those who seek to improve the national health and thus render each individual more happy and prosperous. Sir George Newman, chief medical officer of the Ministry, is responsible for the editing of the report, which is distinctive throughout, both as regards the information it contains and its literary merits. In succeeding letters I shall refer to the report in detail.

OUR LETTER FROM GENEVA.

(From Our Own Correspondent.)

GENEVA, November 1, 1920.

Syphilis in Nurslings.—The Pediatric Society of France has recently had a highly important discussion on the subject of the proper treatment of syphilis in nurslings, and whether or not the arsenical products should be used for them. The opinion was unanimously in favor of this practice. The discussion was opened by Cassoute and Teis-

sonnière of Marseilles, who had treated some twenty infants by injections of novarsenobenzol in the epicranial veins, which they regard as preferable to the jugular veins for this purpose, as suggested by Blechmann. The doses given were one centigram per kilogram of the infant's weight at the time of the first injection and from one and a half to two centigrams for the following injections, with a maximum of ten centigrams which should never be exceeded. Their results obtained certainly speak in favor of this method.

Renault injects the arsenical product indifferently into the jugular or epicranial veins. He believes that the proper dose is one and one-third centigram of novarasenobenzol per kilogram of the infant's weight, a dose that he has invariably employed from the onset of the treatment and with which he has never observed any accidents. As to the results of this treatment that Renault has employed during the past four years in a total of one hundred nurslings, thirty of whom were a few days to three months old, they can be regarded as very satisfactory. He noted that after the second or third injection—that is to say, in from twelve to fifteen days—the cutaneous or mucous lesions disappeared, but five or six weeks and five to six injections—are required for a cure of the visceral accidents—hepatic and splenic. When the infant can be followed for a sufficient length of time, it will be found that the evolution is normal and that the cure will be definitely established if the treatment is continued long enough.

Babonneix prefers the jugulars for the injections because these veins swell when the infant cries, while Lesué considers that it is better to give the arsenical preparation in the form of rectal suppositories. The latter are hollow and the powder is put in them at the time of use in order to avoid any decomposition of the product taking place. He advises the dose of one centigram per kilogram of the infant's weight and this is given two or three times a week. The suppository is inserted immediately after the infant has been to stool.

Institute of Legal Medicine in Geneva.—The Faculty of Medicine of Geneva is to have a new Institute of Legal Medicine, which, it is expected, will be inaugurated this month. The new building is a model of its kind. In the basement are the frigorific machines for preserving cadavers for as long a time as necessary. An elevator transports the body directly from the frigorific apparatus to the autopsy room. There are four mortuary rooms and a small crematory for anatomical débris. Next a large room which will probably be used for Roentgen ray work, a room for disinfecting, etc. On the first floor is a room for expert work, the private office and laboratory of the professor of legal medicine and another for the first assistant. There is a mortuary room in which the cadavers are exposed for identification. Next, there is the autopsy room, a room for photography, and an amphitheater with seats for one hundred students. A chemical and bacteriological laboratory, a library and pathological museum are also on this floor. And lastly, there is to be a museum containing all the articles, clothes, weapons, etc., pertaining to crimes, suicides, etc., the collection being started with all the material collected by Professor Megevaud during the past twenty-five years.

Swiss Quarantine Stations.—The conditions resulting from the war and the geographical situation of Switzerland have compelled the Federal health authorities to establish quarantine stations at several places on the Swiss frontiers for the control and detention of certain categories of travelers entering the country, and of these demobilized soldiers are the most to be feared for the spread of disease. The measures taken are directed especially against the plague, cholera, and above all typhus fever, which latter disease still ravages Oriental Europe. Up to date typhus has not developed in Switzerland, thanks to the destruction of lice by the health departments of each canton, and a strict control of boarding houses and furnished rooms. The latter is maintained, as it is in these places that the floating population lodges, among which are to be found individuals susceptible of carrying contagion or of contracting diseases. Therefore a periodical disinfection of these establishments, with destruction of lice, bedbugs, etc., is carried out.

Cholera and plague have so far remained localized to Oriental Europe and the countries directly bordering on Switzerland have not reported a single case of either of these diseases for some time past. Certain countries have been declared to be contaminated with these diseases by the Swiss Federal Council, and travelers arriving from these regions are submitted to medical observation for the necessary lapse of time.

The last disease over which quarantine control is exercised is epidemic dysentery, which still exists in an endemic state in Germany and Italy more than in other countries. According to the most recent reports received by the Federal Board of Health, this disease shows a recrudescence at present in these two countries, as is usually the case at this time of the year. Although this recrudescence is for the time being less marked than in the last few years, the affection has been placed upon the list of diseases requiring notification to the sanitary department by the attending physician.

Progress of Medical Science.

Boston Medical and Surgical Journal.

November 11, 1920, clxxxiii, 20.

1. Review of Untoward Effects Following Arsphenamine and Its Derivatives. William P. Boardman.
2. Argyrol. Walter P. Lancaster.
3. The Relation of Food to Infantile Eczema. Edward Scott O'Keefe.
4. Observations of an Anesthetist. Boris Rapoport.
5. Longings of the Pregnant, Viewed in Light from the East. Alfred Ela.

1. Review of Untoward Effects Following Arsphenamine and Its Derivatives.—William P. Boardman considers arsphenamine a very powerful drug in the treatment of syphilis, but one which may cause most serious lesions, especially of the skin, gastroenteric, nervous and cardiovascular systems, sometimes leading to death. Although some of these disturbances are unavoidable, it would seem that many of them might be averted by care in the administration and careful judgment in regard to the dosage, the intervals between the doses and the total amount given.

3. The Relation of Food to Infantile Eczema.—Edward Scott O'Keefe bases this communication upon

seventy cases of eczema as influenced by diet. The majority of these cases were seen first at the Dermatological Out-Patient Department of the Massachusetts General Hospital and referred to the Children's Medical Out-Patient, where they were studied and their feeding regulated. The cases were then treated jointly by the two departments mentioned. The plan followed included first, a general physical examination, then a careful consideration of the child's diet, or of the mother's diet in the breast fed infants, and finally, cutaneous food tests. The dietary history afforded an opportunity for the regulation of the feeding in general and also frequently gave suggestions as to possible offending proteins. In making the cutaneous tests linear scarifications were used. Only those tests showing a well defined erythema and wheal were considered positive. It was found more practicable to do the tests upon the back than upon the forearm, as is usually done in adults. All the children were under four years, and the majority were under two years of age. Of the 70 cases 41 per cent. gave a positive reaction to one or more of the food tests, 12 per cent. showed a doubtful reaction, and the remainder were negative to any of the food proteins tried. Egg proteins gave a positive reaction in 30 per cent. of the cases upon which they were used, potato in 20 per cent., casein in 16 per cent., codfish in 12 per cent., lactalbumin in 11 per cent., wheat in 9 per cent., and corn in 5 per cent. of the cases upon which they were used. The mother in no instance showed sensitization to the protein to which her child reacted. Ten nurslings were negative to the proteins of human milk. Nearly 20 per cent. of the series gave a history of asthma, eczema, or urticaria in some other member of the family. In several of the families one child after another developed eczema as soon as it was weaned. An exacerbation of the eczema was in many instances coincident with the eruption of a tooth. In the treatment each child was placed upon a diet suitable for its age. The nursing intervals and diet of the mother were adjusted in the breast fed. This included the elimination or reduction of any article in the maternal diet to which the infant was found sensitized. In the case of the other children the offending protein was eliminated from the diet if practicable. This could not be done in the instances where milk was the main or sole article of diet. Here an attempt was made to modify the milk in order to secure the most easily digestible mixture for the particular case. The intimate relationship shown to exist between food and eczema in so large a percentage of these cases justifies the conclusion that dietary regulation is essential in the treatment of this condition.

New York Medical Journal.

November 13, 1920, cxii, 20.

1. The Placental Gland and Placental Extract. Samuel W. Bandler.
2. New Aspects of Menstruation. James Oliver.
3. Differential Diagnosis Between Disorders of the Pelvic Organs in Women and of the Abdominal Viscera. E. E. Montgomery.
4. Recent Advances in Obstetric Practice. John Osborn Polak.
5. The Complete Forceps Operation. Edward P. Davis.
6. Severe Pelvic Infection Following Hysterectomy. Francis Ward Langstroth, Jr.
7. Treatment of Persistent Vomiting of Pregnancy. Mrs. Kellgren-Cyriax.
8. Treatment of Puerperal Infection. Charles Greene Cumston.
9. The Importance of Prenatal Care. Moses Lobsenz.
10. Prenatal Care from the Viewpoint of the Hospital. Lida Stewart-Cogill.
11. The Early Diagnosis of Pregnancy. David Lazarus.
12. The Diagnosis of Pregnancy. Manly B. Root.
13. Ileocecal Tuberculosis. Abraham O. Wilensky.

1. The Placental Gland and Placental Extract.—Samuel W. Bandler, among other phases of the subject, discusses the therapeutic uses of placental extract. The therapeutic test is supplied by the results obtained. Studying the effect of placental extract on menstruation, he found that, as a rule, the normal rhythmical menstruation function is delayed thereby several days. This action is likewise evidenced in many individuals whose menstruation, while regular, comes on at periods three to five days before the normal interval is reached. Going further into the field of pathology and considering cases of menorrhagia or even metrorrhagia, it is found that placental extract tends to diminish bleeding. Therefore, judging from his own experience, the writer takes it that placental extract not only inhibits those regular processes whereby blood is lost from the uterus, but does so likewise in many conditions simulating menstruation, even though the flow is profuse or the interval shorter than normal. Placental extract has an effect only second to mammary extract in diminishing excessive menstruation, though it lacks entirely the power often evidenced by mammary extract, of diminishing the size of the uterus, as in myomata, and it does not have a like influence in aiding involution. Carrying the therapeutic effect over into the field of pregnancy, he found that threatened early miscarriage or abortion is often averted by the administration of placental extract and thyroid extract. The various processes going on in the uterus, which are typical of normal menstruation, are practically the steps which occur in many miscarriages. Therefore, placental extract, by inhibiting these processes, furnishes added proof that it delays or inhibits the processes tending to menstruation. During pregnancy many patients are sleepy, drowsy and tired, without a suggestion of nausea, and it is presupposed that the placenta has put the posterior pituitary to sleep. Judging from the quieting effects of placental extract in those cases where the symptoms are seemingly due to pituitary overactivity, Bandler translated his observations to the realm of that phase of human instinct called the libido sexualis. Placental extract is, so far as he knows, the most valuable of the endocrines administered for the purpose of controlling or modifying this human instinct. He has no proof that placental extract in any way alters pressure within the cerebrospinal canal, either raising or lowering; but the very gratifying relief of many of the typical headaches makes him lean to the notion that it probably diminishes pressure. The writer suggests, finally, that the important factor concerning placental extract is its ability to influence the posterior pituitary and to stimulate the anterior pituitary and the adrenal cortex.

2. New Aspects of Menstruation.—James Oliver bases his discussion of menstruation on an analysis of the menstrual fluid obtained from a girl of eighteen who had never seen her menses because the hymen was imperforate. A crucial incision was made through the imperforate hymen and seventy ounces of menstrual fluid collected. The fluid as it flowed through the incised hymen presented from first to last the same appearance and was throughout of a uniform consistency. Quantitative examination disclosed the following: specific gravity 1031; water, 87.13 per cent.; solids, 12.87 per cent., consisting of organic material 95.02 per cent. and ash 4.98 per cent. Further analysis showed: serum albumin, 12.49 per cent.; serum globulin, 16.56 per cent.; mucin, 3.37 per cent., and fat, 0.0051 per cent. From his study of this menstrual fluid the writer holds that there is clearly no justification for clinging to the belief that menstrual fluid is purely and simply blood poured out by vessels which have been opened into in consequence of a degeneration and disintegration of the mucous lining of the uterus. On a secretory hypothesis alone it is possible to account for the great variation in the amount and physical characters of the menstrual fluid, and not only in different individuals but in the same individual at different times and even during the same menstrual period.

Journal of the American Medical Association.

November 13, 1920, lxxv, 20.

1. The Treatment of Pyelitis in Infancy and Childhood. Herman L. Kretschmer and Henry F. Helmholz.
2. Occluded Renal Tuberculosis. W. F. Braasch.
3. Standardized vs. Unstandardized Splints of the American Army. H. R. Allen.
4. Late Results in Treatment of Gunshot Fractures of the Mandible with Special Reference to Various Methods of Bone Grafting. Robert H. Ivy.
5. Many Orthopedic Deformities Due to Calcium Deficiency: A Direct Result of Sterilized and Pasteurized Food. Frank E. Peckham.
6. Early Active Motion in Intra-Articular Fractures. Robert D. Schrock.
7. The Pharmacology of Chelidonin, a Neglected Alkaloid of Chelidonium, or Tetterwort. Paul J. Hanzlik.
8. The Treatment of Gonorrhea of the Male Urethra. Edward L. Keyes, Jr.
9. Duodenal Diverticulum with Pyloric Ulcer. David R. Murchison.

10. A Case of Diabetes Mellitus and Myelogenous Leukemia. Reginald Fitz.
11. The Precipitin Test for Globulin in the Arachnoid Fluid in General Paralysis. Ludvig Hektoen and Clarence A. Neymann.
12. Accuracy of the Schick Reaction: Influence of Variations in Diphtheria Toxin Content in Schick Outfits. Abraham Zingher.
13. Transfusion of Duodenal Content. Rose Donk.
14. Insomnia Following Acute Epidemic (Lethargic) Encephalitis in Children. William M. Happ and Kenneth D. Blackfan.
15. Further Studies on the Specificity of Streptococci. Ruth Tunnicliff.

1. The Treatment of Pyelitis in Infancy and Childhood.—Kretchmer and Helmholz base this preliminary discussion on a series of eleven cases treated by pelvic lavage with silver nitrate. In boys, because of anatomic considerations, cystoscopy and ureteral catheterization cannot be carried out as early as it can in girls, although one of the writers has repeatedy performed cystoscopy on boy babies of 14 months. The value of routine roentgen-ray examination cannot be overemphasized. Doubtless in some of the cases that are diagnosed as pyelitis and in which pelvic lavage fails to produce a cure, there are factors present which explain the failure, such as the presence of calculi, tuberculosis of the kidney, and stricture of the ureter. In order not to overlook a possible renal tuberculosis, routine examination for tubercle bacilli were made, including guinea-pig inoculations from urine obtained from each kidney and bladder. In the series under consideration no evidence of renal tuberculosis was found. The youngest patient treated was 7 months of age. In this case the two ureters were catheterized simultaneously, and both renal pelves were treated with silver nitrate. The oldest child was 10½ years old. Between these the following ages were recorded: one, 1½ years old; one, 2 years old; two, 2½ years old; one, 5 years old; one, 7 years old, and two, 8½ years old. All cases occurred in girls. There were no untoward results or reactions following instrumentation and treatment. The object of treatment was to render the urine free from pus and sterile. Pelvic lavage with solutions of silver nitrate rendered the urine sterile and free from pus in nine cases in this series. All of the cases treated in this way had resisted all other forms of treatment.

5. Many Orthopedic Deformities Due to Calcium Deficiency.—Frank E. Peckham, after recalling the important part played by calcium in the human economy, states that when calcium metabolism is interfered with, there may result a deficiency, in which case the bones, muscles, nerves and ligaments are deprived of the requisite calcium. Under these conditions there may directly result scoliosis, knock-knees, bow-legs, flat feet, and other orthopedic deformities. In many of these cases there is found the history of an artificially fed baby. This usually means that the food was sterilized or pasteurized, or both. When this is done, the vitamin substance is destroyed or partially destroyed, and no substitute is as good as the real thing in fresh, uncooked milk. In this way, the writer contends, many babies are handicapped at the very beginning of life, and specialists in infant feeding persist in believing that this is the thing to do. The vitamin substance is an essential in calcium metabolism. If fresh uncooked milk, orange juice, and in many cases, thyroid extract, are administered, the difference in the result obtainable is often remarkable. The addition of lime water to all milk given is important. All milk should be tested with litmus and sufficient lime water added to render it alkaline.

7. The Pharmacology of Chelidonin, a Neglected Alkaloid of Chelidonium, or Tetterwort.—Paul J. Hanzlik calls attention to the activity and usefulness of chelidonine, an alkaloid obtained from tetterwort or chelidonium, which was formerly official in the U. S. Pharmacopeia. The actions of chelidonine resemble those of papaverine and the benzyl esters, but differ from morphine in several particulars. It possesses a relatively low toxicity. It causes depression and narcosis without subsequent excitation of the central nervous system, differing in this respect from morphine. It slows the pulse and lowers the blood pressure, owing to cardiac depression, relaxes smooth muscle in all regions, and depresses skeletal muscle without influencing the nervous connections. Therapeutically, chelidonine is indicated in hypertonus, angina pectoris, bronchial asthma, intestinal, ureteral, and uterine colic, or spasm of smooth muscle anywhere. Being obtained from a weed growing extensively in the United States, and which can also be easily cultivated, chelidonine offers a distinct economic advantage over papaverine which, at present, is virtually unobtainable. It is also more palatable than the benzyl esters.

11. The Precipitin Test for Globulin in the Arachnoid Fluid in General Paralysis.—Hektoen and Newman found, from the study of arachnoid fluids from various sources—general paralysis, epilepsy, insanity, epidemic poliomyelitis, normal persons, etc.—with antialbumin and antiglobulin serums, prepared as outlined in the paper, that in the fluid of general paralysis both albumin and globulin are increased, but principally the globulins, while in the fluid of epilepsy the increase in protein noted in their first contribution to the subject seems to be in the albumin. Antiglobulin serum obtained either by injections of human globulins or of paralytic arachnoid fluids has caused precipitates in paralytic fluids diluted from 16 to 512 times with salt solution and even higher, while in fluids from other sources it caused precipitates only in lower dilutions, dilutions of from two to eight or sixteen times, the only exceptions encountered so far being fluids from frankly inflammatory conditions. This statement covers the testing of about fifty different arachnoid fluids from undoubted cases of general paralysis, and a large number of fluids from other conditions. The writers have had no opportunity to study the arachnoid fluid of locomotor ataxia, cerebral syphilis in the usual sense, multiple sclerosis, etc. The general character of the results with different kinds of antiserum is illustrated in a table, which shows also that the most striking results, so far as general paralysis is concerned, have been obtained with the serum of rabbits injected with the arachnoid fluid from general paralytics. On account of its simplicity the test, the details of which will be published later, is well adapted to routine use.

The Lancet.

October 23, 1920, cxcix, 17.

1. The Harveian Oration on the Birth and Growth of Science in Medicine. Sir Frederick W. Andrewes.
2. An Address on the Causes of Nervous Diseases. Ernest S. Reynolds.
3. The Medical Requirements for Air Navigation. Martin Flack.
4. Some Remarks on Food Values in Tuberculosis. H. de Carl Woodcock and Arthur G. Ruston.
5. Symptoms Resembling Tabes Dorsalis Arising after Antityphoid Inoculation. Judson S. Bury.
6. Surgical Treatment of Malignant Disease of Lip and Jaw. Percival P. Cole.
7. Senecio Disease, or Cirrhosis of the Liver Due to Senecio Poisoning. Fredk. C. Willmot and George W. Robertson.
8. Malthus and the Poor-law. John Glaister.

2. An Address on the Causes of Nervous Diseases.—Ernest S. Reynolds reiterates the classification of causes of disease given in his Bradshaw lecture delivered in 1917, as follows: 1. Injury. 2. Food and feeding. 3. Poisons. 4. Occupation. 5. Stress. 6. Abnormal metabolism. 7. Abnormal age-changes. 8. Neoplasms. 9. Parasites, including microorganisms. 10. Heredity. In the present contribution he uses this classification to study the causes of nervous diseases, to estimate roughly their frequency in a busy industrial area, and to emphasize special points as they arise. The writer confesses to finding much difficulty in allotting to each causation group its proper value as a causative factor, partly owing to the fact that there are no tables of morbidity to which to refer, and partly because his classification is not truly logical as the groups are not watertight compartments. For instance, cerebral arteriosclerosis is partly due to abnormal old age and partly due to stress; some occupation diseases are due to stress and some to poisons and so on. But trying to look from a large viewpoint at such nervous disease as he has seen, he would place heredity as the chief cause of nervous disease, including, of course, insanity, which to his mind is just as much a nervous disease as is epilepsy or locomotor ataxia. Then would come abnormal old-age changes and stress, and about this level, injuries. The remaining classes he could not value accurately. Food would be low in the list, as would also

be poisons, but either of these classes would be raised according to whether one included alcohol as a food or as a poison. Neoplasms are rare, especially tumors of the cord, but those of the brain commoner than he used to suppose. Metabolism and occupation pure and simple are probably lowest in the list.

4. Some Remarks on Food Values in Tuberculosis.—Woodcock and Ruston summarize their observations as follows: (1) Tuberculous patients require more food than the average amount needed by the ordinary laborer outside. The minimum for patients in Gateforth Sanatorium (where careful records were kept) contains 3,500 calories, the patients being almost invariably adults. (2) The diet must be rich in protein and fat—protein, 4 to 4½ oz. per head per day; fat, 4 oz. per head per day. The fat should be largely animal fat, particularly in the form of milk and milk products. If margarine is used it should be as oleo-margarine and not made from vegetable fats. (3) Eggs should be in the dietary, and when they are not supplied their place should be taken by an extra amount of meat given according to accurate calculation. (4) Whole-meal bread, beans, peas, and lentils should always be used, together with a plentiful supply of fresh fruits and vegetables grown in the sanatorium grounds. (5) Two pints of milk per day is the amount suggested for each patient. Raw-meat feeding has not been carried out at Gateforth, although it is sometimes prescribed in the sister institution at Armley. Again, in the very few cases of hemoptysis met with at Gateforth, diet has been reduced to the traditional drastic minimum of hospital practice, the sufferers being transferred as soon as possible to a more suitable institution.

British Medical Journal.

October 23, 1920, ii, 3121.

1. Harveian Oration on the Birth and Growth of Science in Medicine. Sir Frederick Andrewes.
2. The Defensive Value of Normal Mucus Formation, and the Theory of Catarrh. F. G. Crookshank.
3. A Case of Encephalitis Lethargica Treated by Hexamine. Samuel Crawshaw.
4. Two Cases of Intestinal Tumor: Operation; Recovery. W. Balgarnie.
5. Sects in Psychotherapy. T. A. Ross.
6. The Neuroses and Psychoses. Aldren Turner.
7. The Functional Element in Disease. A. F. Hurst.
8. Freud's Method. Bernard Hart.
9. Repression. H. Crichton Miller.
10. The Aim of Psychotherapy. Tom A. Williams.
11. Ab-Reaction and Autognosis. William Brown.

2. The Defensive Value of Normal Mucus Formation, and the Theory of Catarrh.—F. G. Crookshank states that the normal function of mucus must be regarded as physiological and purposive. What is its purpose, and what are the consequences of failure in its due performance? It seems pretty clear that a layer of mucoid matter must, in the first place, protect the delicately vascular underlying membrane from the direct action of atmospheric changes—changes in temperature, humidity, composition, and the like—as well as from the no less direct action—mechanical or chemical—of solids and liquids in contact with it. It has been suggested by Benians that the mucoid layer may not only prevent the absorption and inhibit the action of bacterial ferments and toxins by and on the mucous membrane, but may actually prevent invasion of the body by the organisms themselves. If this hypothesis be well founded, the maintenance of a proper state of mucus formation becomes of great importance; and interference with such a proper state constitutes an etiological factor that cannot be neglected when discussing the origins of certain forms of ill health. The customary view is that interference with mucus production is a result of bacterial or protozoal attack; Benians suggested that when from one or another cause—whether vasomotor, hormonic, or nervous—mucus production is seriously disturbed, not only may mechanical, chemical, and other agents do harm, but scope may be given to the activities of organisms which are habitual, occasional, or accidental denizens of the "mucoid layer." There are not a few clinical facts which seem to Crookshank to support this view. The protective effect of mucus in the intestines and in the genital organs of both men and women is important. It is, however, perhaps the state of the respiratory mucous membranes that is, in most respects, of greatest interest. In the light of the hypothesis of the protective importance of the mucoid layer, the rationale of some old-fashioned clinical methods seems clear. He refers to the use of demulcents and of mucilaginous preparations generally, in the acute stages of a catarrh; to the administration, first of medication directed towards the loosening and later towards the diminution, of mucoid secretion; and to the care necessary to avoid premature inhibition, by opiates, of its secretion and removal.

New Orleans Medical and Surgical Journal.

November, 1920, lxxiii, 5.

1. Importance of Early Diagnosis of Rectal Diseases. A. G. Heath.
2. Return of Chronic Urethritis. Alex. Renault. (Translated by Charles Chassaignac.)
3. Science and Practice in the Fight against Malaria. B. Gosio.
4. Notes on Tropical Diseases—Plague. Lodilla Ambrose.

3. Science and Practice in the Fight Against Malaria.—B. Gosio holds that the mania for short cuts in antimalaria work has led to doubts of its scientific principles. He calls for a return to the main roads, with more constancy, more means, and more willingness to face the vicissitudes and sacrifices incident to all long and difficult labors.

Southern Medical Journal.

November, 1920, xiii, 11.

1. Differential Diagnosis of Tuberculosis and Hyperthyroidism: Preliminary Report on a Study of the Goetsch Test. R. McBrayer.
2. An Early Case of Cerebrospinal Syphilis. Daniel D. V. Stuart.
3. Pulmonary Syphilis. J. H. Gibbes.
4. Gummatous Epididymitis and Gummatous Osteoperiostitis of the Humerus. Lewellys F. Barker and James Alto Ward.
5. Infant Feeding. J. H. Mason Knox, Jr.
6. Relation of the Physician to the Health Department. Charles E. Lowe.
7. The Termination of Pregnancy for Therapeutic Reasons. F. Webb Griffith.
8. Surgical Intervention in Acute Intracranial Injuries. Young C. Lott.
9. Removal of the Parotid Gland for Malignant Growth. M. J. Payne.
10. Goiter: Observations Drawn from 240 Operated and 82 Unoperated Cases. Addison Brenizer.
11. Surgery of the Inguinal Region with Special Reference to Local Anesthesia. D. C. Donald.
12. Chronic Suppurative Otitis Media. Wade H. Brannon.

1. Differential Diagnosis of Tuberculosis and Hyperthyroidism.—R. McBrayer, in this preliminary report on a study of the Goetsch test, first reviews this adrenalin hypersensitiveness test and gives the technique thereof. He then takes the following list of symptoms and signs of hyperthyroidism and classifies the findings in each case under the following headings: systolic blood pressure, diastolic blood pressure, pulse rate and quality, tremor, nervousness, palpitation, diuresis, temperature, respiration, pupillary changes, apprehension, vasomotor changes in face, hands and feet, and sugar in the urine. From this study the following conclusions are drawn: If future studies substantiate the findings given, the differential diagnosis of tuberculosis and hyperthyroidism will be made easier for the general practitioner when, after the subcutaneous injection of adrenalin, he finds, between fifteen minutes and one hour and thirty minutes after the injection, the following: 1. A systolic blood pressure rising ten or more points and remaining above normal for fifty-five minutes or more. 2. Increased pulse rate of ten or more points per minute proportionate to the systolic rise. 3. An increase of pulse pressure of thirty-five or more points. 4. Pulse irregular and varying in volume. 5. An increase in respiratory rate of four or more points per minute. 6. Varying pupillary changes.

Hypersecretion of Cerumen in Paralysis of the Cervical Sympathetic.—Cornil found that a number of wounded who presented unilateral symptoms of paralysis of the cervical sympathetic, due to injury of the nerve, complained of loss of hearing on the affected side. Examination revealed in each case a large plug of cerumen in the ear of the side involved, the other ear not presenting evidence of this hypersecretion.—*Gazette des Hôpitaux.*

Book Reviews.

HANDBOOK DER SPEZIELLEN CHIRURGIE DES OHRES UND DER OBEREN LUFTWEGE. Herausgegeben von DR. L. KATZ, Spezialarzt für Ohren-, Nasen- und Halskrankheiten in Ludwigshafen a Rh., und PROF. DR. F. BLUMENFELD, Arzt für Nasen-, Hals- und Lungenkrankheiten in Wiesbaden. II Band, Lieferung 4, Preis: M. 14.40; Lieferung 5, Preis: M. 25. Leipzig und Würzburg: Verlag von Curt Kabitzsch, 1919, 1920.

AFTER an interruption of four years the publication of this work has been resumed and with the appearance of the present two numbers is nearing completion. Part 4 comprises an article by Preysing on acute suppurative otitis and paracentesis of the drum membrane, including a series of fine colored plates particularly those illustrating the appearances of the tympanic membrane in middle-ear disease. Part 5 includes an article by Jurasz on the surgery of the faucial tonsils exclusive of tonsillectomy, one by Henke on tonsillectomy, and one by Imhofer on the surgery of the pharyngeal tonsil, all of which articles are accompanied by a series of colored plates. Both of the present numbers maintain the pre-war standard of this work in the comprehensive handling of its subject-matter and in its artistic features.

LEHRBUCH DER VOLKSERNAHRUNG. By Prof. Dr. C. VON PIRQUET and Dr. E. MAYERHOFER in conjunction with Drs. J. HEUSSLER, E. MAYERHOFER, Frau R. MIARI, E. NOBEL, Fr. OBERLEITNER, R. SCHNEEWEIS, and R. WAGNER, Vienna. With 32 illustrations. Vienna and Berlin, 1920: Urban & Schwarzenberg, 1920.

DURING the war Von Pirquet elaborated a new method of calculating the relative value of various food elements based on a standard which is milk. He regards milk as the standard food and compares the relative values of sugar, fat, butter, bread, flour, and other food products by comparison with milk. He designates this as the "Nem" System (*Nutritionis Elementum Milch.*) In figuring the food value he says 1 gram of milk equals 1 nem, 1 gram of sugar equals 6 nem; therefore 180 grams of milk equals 30 nem of sugar. One gram of butter equals 12 nem; 1 gram of flour equals 5 nem; 1 gram of pork equals 10 nem; 1 gram of black bread equals 3 nem. Another interesting point in the method adopted by Pirquet is that he estimates the daily requirement of food according to the height of the body taken in a sitting posture, from the buttocks to the head. A similar method of calculating the food requirement was advised by Voit and Rubner. This new system has many adherents and was the subject of discussion at a recent meeting of the Berlin Medical Society in which a large number of Pediatrists participated. While some opposition was encountered the majority of the speakers seemed to favor the practicability and utility of this system.

THE MECHANISM AND GRAPHIC REGISTRATION OF THE HEART BEAT. By THOMAS LEWIS, M.D., F.R.S., F.R.C.P., D.Sc., Honorary Consulting Physician, Ministry of Pensions; Late Consulting Physician in Diseases of the Heart (Eastern Command); Physician to the Staff of the Royal Medical Research Committee; Physician and Lecturer in Cardiac Pathology, University College Hospital, London; Fellow of University College, London. New York: Paul B. Hoeber, 1920.

THIS is the most important work so far published dealing with the new science of electrocardiography. It is really a new edition, though greatly amplified, of the author's work on "The Mechanism of the Heart Beat," and contains an account of all the knowledge of this intricate subject that has been acquired during the interval since the appearance of that work eight years ago. The following are the titles of the chapters which will give the reader an idea of the completeness with which the subject is covered: Special anatomy; Mechanical records of the heart beat with especial reference to intra-auricular pressure curves and venous records; Galvanometric method; The broad features and time-relations of the normal electrocardiogram and certain principles of interpretation; The normal pacemaker of the mammalian heart; Function of the *A-V* bundle and curves resulting from lesion of its two divisions; Spread of the excitation wave in auricle and ventricle; The meaning of certain ventricular deflections; Aberrant contractions and the electrocardiograms of hypertrophy, etc.; The analysis of disordered mechanism: (*a*) arterial pulse curves, (*b*) venous curves, (*c*) electrocardiographic curves; Experimental heart block; Clinical heart block; New rhythm centers; (*a*) atrioventricular rhythm, (*b*) idioventricular rhythm, etc.; Ventricular extrasystoles; Auricular extrasystoles; Premature beats arising in the junctival tissues, retrograde beats; premature beats disturbing new rhythms, etc.; Paroxysmal tachycardia of supraventricular origin; Paroxysmal tachycardia in which the ventricular systoles are abnormal; Auricular flutter; Auricular fibrillation; Ventricular fibrillation; The heterogenetic impulse and the interrelation of extrasystole, paroxysmal tachycardia, and fibrillation; Observations upon the nature of paroxysmal tachycardia, flutter, and fibrillation; Causes determining extrasystoles and allied disorders; Sino-auricula block, so-called; Cardiac syncope and unexpected death; The vagus; Alternation; Bibliography and author index, the latter containing 801 titles. There is also a glossary of terms as used in the book.

HEART TROUBLES: THEIR PREVENTION AND RELIEF. By Louis Faugères Bishop, M.A., M.D., Sc.D., F.A.C.P. Professor of the Heart and Circulatory Diseases, Fordham University, School of Medicine, New York City; President of the Good Samaritan Dispensary; Physician to the Lincoln Hospital; Chairman of the Section of Historical Medicine of the New York Academy of Medicine; Member of the American Medical Association, of the Medical Veterans of the World War, of the American Therapeutic Society, of the New York Pathological Society, of the Society for the Prevention and Relief of Heart Disease, and of the Alumni Association, St. Luke's Hospital; author of Arteriosclerosis and Heart Disease and Blood Pressure. With illustrations. New York and London: Funk and Wagnalls Company, 1920.

PROCEEDING upon the premise that the time has passed when much that pertains to the nature of a sick person's illness can be concealed from him, the author of this interesting and valuable addition to the literature of modern cardiology addresses those who are suffering from heart troubles or are interested in the subject, and also "those who are willing to dispense with all disguise and to see things as they really are." Those who prefer not to know that their hearts are disordered when they are, and who would rather be told that the whole trouble is "indigestion," "nervousness," or something else, are not the ones to be benefited by Dr. Bishop's book. The family or immediate relatives of those who suffer from heart disease, especially nurses in attendance upon these patients, may well give careful heed to the suggestions contained therein. The intelligent layman, whether a "cardiac" or not, will find in this volume much that is interesting and instructive, and the physician who has not specialized in the study of cardiovascular disease may discover in it refreshing reminders of much that he is in danger of forgetting. Part I, which deals with matters of physiological and symptomatic import, contains chapters on consciousness of the action of the heart; the heart as an engine; the circulation of the blood; the pulse; disturbances of the circulation; what is meant by hardening of the arteries; causes and symptoms of heart disease; the passage of the blood through the heart; the irregular heart; the nature of the disorder of the heart beat; the examination of the heart patient. Part II, which deals with therapeutic matters, contains chapters relating to foxglove or digitalis; nitroglycerin and how to use it; heart troubles and the cure resort; blood-letting in heart disease; how to meet emergencies; the care of the heart; the animal proteins; reconstruction in heart disease; the heart and the kidneys; health—how remedies should be given to keep it; tea, coffee, and tobacco; the danger of the heart from antifat treatment; the care of the heart during pregnancy; nursing in heart troubles.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON SURGERY.

Stated Meeting, Held October 1, 1920.

Dr. SEWARD ERDMAN in the Chair.

Filaria with Hydrocele (Two Cases).—Dr. CHARLES EVERETT FARR presented these cases. He stated that both of these patients had been citizens of South or Central America, one having been born there and the other having lived there for some years. The condition was one with which we were not familiar in the United States, but with the rapid growth of business relations with the South American countries filaria was being met with more frequently. During the past year he had met with five cases, in four of which filaria was diagnosed in the course of operative treatment for something else. The first patient, a young man, presented himself because of a femoral hernia and a large mass of femoral nodes. It was thought that possibly the condition was a lymphangioma. On examination of a section of these nodes an adult worm was discovered. This was a very unusual finding, as it was an extremely rare occurrence to find a worm in an external node. The patient gave a history of having had occasional attacks of fever and chills which laid him up for a few days or weeks, and he had an enlargement of the nodes in the femoral region and an abscess on the thigh. After the operation the wounds healed up and he made an apparently perfect recovery. He also had a small hydrocele which was presumably of filarial origin. Shortly after his discharge from the hospital the patient noticed a swelling on his thigh and he was found to have a high fever and leucocyte count. He was then kept in the hospital for a few weeks, during which time he passed through a crisis but finally recovered, and at present was in excellent health. The second patient had a large hydrocele and a small mass of nodes. The speaker operated on the hydrocele and took the nodes for diagnostic purposes, but was not lucky enough to find an adult worm, nor could they have expected this in view of the rarity of such a finding. The patient made a good recovery, though there was some thickening of one side of the scrotum and enlarged nodes. They knew and he knew himself that he harbored the filaria organism, and might have other attacks but at present he had no symptoms. In speaking of the treatment of relief, Dr. Farr stated that surgical procedures were merely for the relief of symptoms, and that no treatment had yet been found successful in eliminating the parasite. Salvarsan had given relief in some instances but it was a question whether it killed the worms. Usually symptoms were caused by the adult worm blocking a blood vessel and causing a thrombosis and on this a mild streptococcus infection was frequently imposed. In one of the cases presented they had found a streptococcus infection at one time, but the actual progress of the lesions was obscure. He had been given the impression that usually there were only one or two adult worms in the body and if one could eliminate them the patient would be cured.

Dr. EDWARD WALLACE LEE said he regretted that he had not arrived in time to hear all that Dr. Farr said about filaria and hydrocele. During his war experiences in Porto Rico he had seen a great many hydrocele patients in whom the hydrocele was accompanied by elephantiasis of the scrotum which was said to be due to filaria. He had operated on a number of these hydroceles and there was very little bleeding but a milky exudate resulting from the disease, which was so abundant that you could easily see it. To the real pathology or bacteriology of these conditions Dr. Lee said he had not paid much attention but in Porto Rico the hydrocele and elephantiasis were attributed to the filaria.

Dr. SEWARD ERDMAN asked Dr. Farr if he could not tell them more of the life history of the filaria. It would be interesting to know this in view of the fact that they were likely to see more of these cases as our business relations with South America increased. He would like to have Dr. Farr tell them why he supposed there were only one or two adult parasites in the body.

Dr. FARR said filaria was said to be somewhat like malaria in that it went through a cycle in the host, but the worms did not go on to reproduction in the host. It used to be thought that infection occurred through drinking water, and that the embryo burrowed through the bowel and multiplied, but that always there would be only one or two worms.

Dr. EDWARD WALLACE LEE said that in Porto Rico the infection was supposed to be due to the mosquito. The embryo parasites are said to be found in the peripheral vessels only at night, but not during the day. He had tried to demonstrate them at night but had not succeeded.

Ostitis Cystica Fibrosa of the Ulna.—Dr. CHARLES EVERETT FARR presented this patient, a woman 32 years of age, who had had perfect health until May of this year, when she fell and sustained a number of fractures, one of the humerus, one of the ulna and one of the os calcis. The ulna and radius, as shown by the roetgenograms, were thickened and a curious condition was present which they had disagnosed as ostitis cystica fibrosa. The Wassermann was negative, but the patient was given mixed treatment. Opinions of men experienced in bone surgery were that the condition was tuberculous or ostitis cystica fibrosa. The patient was operated on and a growth found in the upper end of the ulna, not quite like ostitis cystica fibrosa. The pathological examination, however, showed this condition to be present. A graft from the tibia was fitted in but the lower end was not yet firm, making manipulation unsafe at the present time. The lower end of the graft was not inlaid as it broke while being put in, and it was not deemed wise to prolong the operation. It was deemed wise to remove the growth as it might go on to malignant disease. Ostitis cystica fibrosa had been assigned to various causes but nobody seemed to know the exact etiology.

Dr. WALTER M. BRICKNER asked whether roentgenograms had been made of the other bones of the body, and especially of the bones that had been fractured. The *x*-ray picture indicated that there was also disease of the humerus and of the entire shaft of the ulna, and it was well known that ostitis cystica fibrosa was often a multiple bone involvement.

Dr. FRED H. ALBEE mentioned that he had seen quite a number of such cases and that they came to the surgeon largely because of fractures through the involved area. In his experience he had seen a number of cases in which this condition was limited to one bone and were not multiple. It would have been better in this case if the upper portion of the graft had been inlaid, for where a graft was put into a marrow cavity one was not so likely to get union. Dr. Albee stated that he had obtained good results in several instances where he had inlaid strong grafts right through the tumor without the removal of the shaft of the bone.

Dr. ERDMAN asked whether the trauma was sufficient to account for the condition.

Dr. FARR replied that the trauma was very severe, though the fractures were of the ordinary type. Roentgenograms had been made of other bones which showed nothing except the condition at the lower end of the humerus which they had all observed. There was complete degeneration of the ulna, but at the time of the operation the disease was not apparent in the humerus. In reply to Dr. Albee's remark about the advantage of an inlay instead of an intramedullary contact, in describing the case he had mentioned that he had been unfortunate in breaking the graft and it had not seemed wise to prolong the operation further.

Mouth Diagnosis from a Dentist's Viewpoint.—Dr. H. J. KAUFFER made this presentation which was illustrated by lantern slides and moulages. He expressed the hope that he would make his hearers feel as he did—that the dentist should recognize pathology which came within the radius of his observation. The dentist's practice was limited to the care of the teeth for which he had accustomed his patients to present themselves once a year. His object this evening, he stated, was to show that the wide-awake dentist would frequently find conditions requiring medical and surgical attention, and by doing so the treatment of these conditions would often be started before the patient was conscious of disease. In regard to focal infection this was the same in the mouth as elsewhere in the body,

unless it responded favorably to the treatment it must be removed. There was a becoming tendency in dentistry to place reliance on the comparative blood count and streptococci complement fixation test in determining the patient's resistance to apical abscesses. In his experience these were of relatively negative value, due to the fact that in periapical abscesses, the organisms are encapsulated and do not produce a leucocytosis. He found that most information could be gained by making a mouth examination in a dark room, using direct illumination for the external examination of the mucous membranes and teeth, and transillumination for the teeth. It was well known that a small contracted tonsil was frequently more infected than a large tonsil, and when the dentist observed this pathology, he should refer the patient to the rhinolaryngologist. Any tissue enlargement in the mouth or throat which was persistent should be regarded with apprehension unless one was positive that it was benign. The decision in this respect, however, he did not believe belonged to the dentist. The case should be referred to the surgeon for diagnosis. As regarded the examination of the teeth by transillumination, any opacity in infected teeth was caused by the disintegration of organic tissue, so that an infected pulpless tooth gave a blue-gray color under transillumination. The maxillary sinuses should also be transilluminated, and if they did not transilluminate clearly the patient should be referred to a nose and throat specialist. To test the vitality of a tooth, from one to forty volts with five milliamperes of electricity might be used upon the teeth. But since individuals varied greatly as to their tolerance of electricity, the negative pole should first be applied to the patient's lips to determine his tolerance. Occasionally the patient would tolerate a very high voltage of electricity. Tabetics had been found not to respond to 30 or 40 volts. When a patient was found whose tolerance to electricity was high he should be referred to the neurologist and some pathology might be found by a man familiar with that work. Dr. Kauffer described the technique of testing for devitalized teeth, illustrating it by lantern slides and exhibited a chart which enabled one to tabulate all the findings in such a way that they would be evident at a glance. In the detection of infected and devitalized teeth the *x*-ray not always an infallible guide. Exostosis of the roots of teeth not accounted for by trauma such as produced by irritation due to an ill-fitting cap or malapposed tooth were due to systemic disturbance. In examining 100 luetics 31 were found to have exostosis of tooth roots. Among 1000 patients without a blood history of the case, the *x*-ray showed only 5 per cent. of exostosis of the tooth roots. Of the 100 known luetics examined a budding of the periosteum in 29 cases was observed, which phenomenon, he stated, had been reported by other investigators. Where there was relative radio-density of the exostosis, radio-density was usually found in the bone tissues of the hand and a radio-lucent exostosis usually accompanied radio-lucent bone tissues of the hand. Slides of cases of acne vulgaris were shown in which the same organism was isolated from the apical abscesses and skin lesions, though this finding was by no means uniform in all cases. A series of slides were then shown, illustrating such lesions as—chancre, recurrent luetic sores, erythemas, geographical tongue, lichen planus, epithelioma and a case of angioneurotic edema as a result of reflex nerve disturbance caused by an impacted tooth. All such conditions the dentist should recognize and refer to the appropriate specialist for treatment.

Dr. KAUFFER, in reply to the question as to whether he had observed instances in which a positive Wassermann had become negative following the elimination of mouth infection, said he had not observed this—but had noticed the opposite. It was known that toxins influenced the Wassermann reaction. It had been his experience that when a luetic's infected teeth were cleared up and infection eliminated a negative Wassermann reaction became positive, but he could recall no instance in which a positive Wassermann had become negative after the removal of infected teeth, although he could understand how the rapid absorption of toxins, which always follows the extraction of infected teeth, might temporarily influence a Wassermann reaction and be responsible for the negative findings of which the doctor spoke.

Certain Fundamentals in the Treatment of Shoulder and Hip.—Dr. FRED. H. ALBEE made this presentation, which consisted in a lantern slide and motion picture demonstration. He described certain features of the fracture-orthopedic table which he had devised to meet the fundamental mechanical principles involved in the treatment of certain hip and shoulder conditions which were not met by other apparatus. The speaker emphasized the importance of such an apparatus which allowed the accurate control of both upper and lower extremities, both as to desired amount of traction and posture in all fractures and orthopedic conditions. It was an indispensable part of the surgeon's armamentarium in the treatment of all such conditions. This table provided for the control of both upper and lower extremities as no other table did. The upper end of the traction arm was adjusted by merely turning a crank, and could be adjusted in each individual case, so that it came immediately beneath the hip joint or to the inner or outeer side of it as was indicated. This was a distinct advantage, as it was extremely important in many types of cases, as, for instance, in comminuted fracture of the floor of the acetabulum with displacement into the pelvis, that traction should not only be maintained, but increased during the reduction of the dislocated hip by swinging the limb into a posture of physiological abduction. No other apparatus provided for the constant maintenance of traction while the limb was changed from adduction to abduction except the Bradford apparatus for reduction of congenital dislocation of the hip, which could not be adjusted to any fine degree. In the case of the fracture of the floor of the acetabulum, the modus operandi of reduction when the table was used was as follows: The posture of abduction brings the tip of the great trochanter as a fulcrum against the side of the pelvis just above the rim of the acetabulum, and when this abduction was forcibly increased to physiological limits or more, the femoral head with a portion of the bone fragments of the floor of the acetabulum was levered out of the pelvis. This reduction was much enhanced if the traction on the limb increased as the limb was forced out into increased abduction. This was brought about by adjusting so that the upper end of the traction arm was outside of the center of the hip joint. In the application of Whitman's abduction treatment of fracture of the neck of the femur by plaster spica, this fracture table had been found to be of the greatest service as also in the postoperative fixation following a bone peg-graft operation for non-union of the neck of the femur. In this instance it was also very important that a change in the degree of abduction during the operation should not destroy the table traction. In cases of ankylosed hip with abduction deformity, one did a circular osteotomy and then swung the lower fragment of the femur out on its upper fragment and the pelvis, and fixed it at an obtuse angle with the lateral axis of the pelvis, and in this way the leg could be made practically two or three inches longer. When using the speaker's table in this procedure, the danger of lower fragment sliding by the upper fragment was much lessened by the maintenance of full traction throughout. In tuberculosis arthritis, or where there was luxation of the head of the femur upward from a disintegrating arthritis, it was desirable to maintain constant traction, as the limb was swung outward into abduction during the process of reduction, or it might be advantageous to increase the traction; this apparatus permitted of perfect control of the degree of traction, so that it could be increased or diminished as the limb was swung into abduction or adduction, whereas with all other apparatus it was impossible to make any such adjustment whatsoever. Dr. Albee stated he had always emphasized the importance of posture in the treatment of all juxta joint fractures. Posture was most important in the treatment of epiphyseal separation of the hip, such as occurred in obese adolescent patients either from slight trauma or sometimes without any trauma whatever. In such cases one never needed an internal fixation agent; all that was necessary was to get the parts in position and keep them there by the posture of the limb and the pelvis. In fresh fracture of this type the ideal method

of reduction and fixation was to pull the lower fragment down by traction table traction until the limbs were of equal length, and then strongly rotate the limb internally until the toes pointed upward which brought the fractured surfaces in contact with each other. The next step, and a most important one, was to abduct the limb to the physiological limit while the traction on the limb remained constant. This brought the point of fracture (the fragments of which had been completely reduced) into the acetabulum, the roof of which acted as an internal splint and absolutely prevented redisplacement as long as this posture of inward rotation and abduction was maintained. A long plaster of paris spica served as an ideal retention splint. In old cases of this type where mal-union had taken place, an open operation was indicated, for the purpose of separating the mal-union by osteotome. The method of reduction and fixation was then precisely the same as described above for freshly fractured cases.

In old cases of fracture of the neck of the femur when the capital fragment had become much shortened by erosion, the speaker has employed for several years the following operation: Through the Sprengel or Smith-Peterson approach to the hip joint the head of the femur was removed. The tip of the trochanter and a strip of the cortex on the outer aspect trochanter and shaft of the femur about three inches long was removed *en masse* with attached short abductor muscles. The stump of the neck of the femur and the top of the trochanter were then rounded and by swinging the limb into strong abduction were then inserted into the acetabulum. The parts were held in this position by the posture of extreme abduction and careful moulding of the plaster. The result was a stable, painless hip with a good amount of motion. The advantage of such a fracture table in this procedure was apparent. The position of abduction held the trochanter fragment at an acute angle with the femoral shaft while union took place, thus forming a lever by which the attached abductors were able to restore to a varying degree the function of abduction. Dr. Albee then demonstrated the management of injuries of the upper extremity, especially those involving the complete loss of the head and portion of the shaft of the humerus and soft parts about the shoulder joint. These injuries he considered under two headings, those in which both masculature and upper end of humerus were absent to such a degree that the possibility of restoring shoulder joint motion was *nil*, and the object was to ankylose the joint by the same tibial grafts which restored the less of the humeral bone with the arm in a posture of anterior elevation, and those in which the musculature has been so far preserved that shoulder joint mobility might be restored, in which case the upper end of the humeral shaft and head are restored by using the upper portion of the fibula. The case of a pianist was reported where 5 inches of the humerus, including the head, was lost as the result of comminuted fracture. The function was so far restored by transplanting about 6½ inches of the upper end of the fibula that the patient was able to resume her profession and was at the present time not only giving piano lessons, but appearing in concerts before the public. The posture of anterior elevation of the upper arm with rotation upward so the hand came in front of the chin gave the best function in ankylosis of the shoulder whether from operation or disease, as in this posture of humerus to the scapula the scapular thoracic motion compensates for loss of motion at the shoulder joint. Among the motion picture films was one showing the method of dealing with a case in which four inches of the humerus was missing resulting in a flail joint. A ten-inch incision was made dissecting out all scar tissue and preserving the musculospiral nerve. A graft eight and one-half inches long was then taken from the tibia and inserted into the humerus. *X*-rays taken at intervals up to six months were shown, demonstrating almost a complete restoration of diameters of humeral shaft. Almost complete restoration of shoulder and arm function was also shown in the moving picture. In bone grafting Dr. Albee stated that he found bone slivers with marrow on one side and periosteum on the other of more value in promoting osteogenesis than merely small bone fragments or the osteo-periosteal graft. He emphasized the value of the motion picture as an aid in teaching surgical technique, particularly to undergraduate students.

Dr. W. M. SILLECK questioned whether the position in which Dr. Albee placed the arm did not abduct it too much. He said Sir Robert Jones advocated the anterior elevated position but abducted the arm to such an extent that the patient could bring his hand to his mouth or head. He though this position was better than that in which the arm was in practically complete abduction.

Dr. Albee, in closing, stated he had especially endeavored to give Dr. Whitman due credit for what he had taught in regard to the abduction treatment of fracture of the hip. In reference to the implantation of the trochanter into the acetabulum after the removal of the femoral head following old fracture of the neck with extreme erosion of the capital fragment, Dr. Albee stated that he had published this operation several years ago in the Journal of Orthopedic Surgery and that he had secured many very satisfactory results. As to ankylosing the upper arm, whether by grafts in restoring loss of bone at upper end of humerus or by a plastic operation on the shoulder joint, in a posture of anterior-elevation to the trunk, or in the laterally abducted position, the speaker said he had had an exceptional opportunity to observe the relative merits of the two and found that the anterior-elevated posture was the one which gave a much more efficient arm. This was especially true since the most difficult things for a patient with a stiff shoulder to do were the bringing of the hand to the hair, the neck tie, and to the face for the purpose of feeding himself, and other similar functions. It was remarkable how well the arm functionated in this posture.

SECTION ON PEDIATRICS.

Stated Meeting, Held October 8, 1920.

DR. CHARLES HENDEE SMITH IN THE CHAIR.

The Psychology of the Cardiac and the Doctor.—Dr. ROBERT HURTIN HALSEY presented this communication, in which he stated that children with heart disease had varying degrees of specific deviation from the normal, and frequently certain general, acquired mental, social, educational, and environmental differences. They frequently showed a lack of initiative, a disinclination to associate with others; often a moderate grade of school knowledge, and a certain eager readiness to attribute their backwardness and inefficiency to heart disease. It seemed that these general deviations were derived from three sources, namely, the family, friends and teachers, others with heart disease, and the family physician. There was a popular tradition that "heart disease" connoted the possibility of sudden death. Unfortunately popular tradition made and knew no distinction in degrees or forms of the disease. The doctor was frequently responsible for unnecessary medicine and undue restrictions because the patient was not thoroughly studied, and his limitations determined, but rather all cardiacs were treated as hopeless cases with the expectation of imminent early death. Since primarily the physician must instruct family, teachers, and cardiac, it seemed to the writer that the means of modifying these various mental influences which increased the introspection of the cardiac, increased his hopelessness and retarded his physical and mental development, were worthy of their attention. The child could and would adjust itself to restrictions if it had some substitute method of occupying its physical energies as well as satisfying its mental desires. The cardiac child reacted to environment and was stimulated by group work to rapid development, mentally and physically. A wholesome mental atmosphere was created by encouraging active, useful recreation work, and the pursuit of some vocational training suitable to the creed, race, and social status of the child. The physician could obtain better results and perform a greater service by a more careful study of the individual cardiac and the social problems involved. Physical exercises properly directed in games, dancing, and occupations would help to improve the cardiac muscle and the mental attitude or temperament of the child. Gathering cardiac children in groups did not produce

hypochondriac depression, but rather stimulated a rational cheerfulness. The individuals learned to discriminate and differentiate between the severity of their conditions. The individual improvements were noted, and the whole group derived encouragement. Where there was better understanding of the restrictions, there was better co-operation, and better co-operation meant better results in a longer and more productive life.

Syphilis in Children of School Age with Heart Disease.—Dr. BLAKE F. DONALDSON presented this paper by invitation. He stated that during the last school year, 28,000 children were on the register in a district of seventeen schools, located in New York's lower East Side, assigned to the Cardiac Clinic of the Post Graduate Hospital. All the new children in these schools, together with such of the other children as were suspected of having diseases of any kind, were examined by school medical inspectors of the Department of Health. Seven hundred children were thought worthy of note because of some cardiac abnormality. These selected cases were then passed upon by Dr. Robert Halsey and a staff of assistants. Of these cases 167 were found to have organic heart disease—forceful sounds, reduplications, high pulse rates, and accidental murmurs accounting for the rest. The Department of Health of New York City reported that the incidence of heart disease among school children, as noted by its medical inspection, in 1918 was 1.6 per cent. In their group of 167 organic cases, there were 13 cases of organic insufficiency, and five of pulmonic insufficiency, in combination with either mitral stenosis or mitral insufficiency. Of these children, 84 were selected for medical observation in a special class connected with Public School No. 64. The work was in the nature of an experiment to determine the wisdom of segregating school children with heart disease. The comparatively large number of aortic cases (8 per cent.) in their series was rather a surprise. In the aortic cases the diastolic murmurs were best made out with the patients in the erect position after forced expiration. One hundred and three Wassermann reactions were made on the 84 children registered and on the mothers and other available relatives of the children with aortic insufficiency. A positive Wassermann was obtained in only one child. This was a well compensated case of aortic insufficiency with a history of frequent attacks of tonsillitis and one severe attack of acute rheumatic fever. The mother's reaction was four plus. Neither the mother nor the child showed any other evidence of syphilis. One case of potential heart disease was of special interest. This was a child with a marked anemia of the pernicious type, with a high color index and many nucleated red cells, a marked enlargement of the spleen and liver and slight generalized icterus. Out of a family of eleven people eight members were affected in almost the same manner. They all had the primary type of anemia with splenic enlargement. The aortic cases noted all had definite histories of acute rheumatic fever, save one who had only had diphtheria. In children one expected to find aortic disease as the consequence of rheumatism, syphilis, or some extraordinary strain. Of late years, perhaps because of improved diagnostic methods, syphilis as a causative factor, especially in children had been over-emphasized. Abbott stated that by far the chief cause of aortic disease in persons under middle age was rheumatic fever. Statistics were quoted from a report of Poynton, Aggazzis and Taylor on 250 autopsies on children who died of rheumatism showing the different types of cardiac involvement found. It might be concluded from this limited number of cases that syphilis was not a very great factor in the causation of heart disease in children.

Circulatory Reactions to Test Exercises in Children with Heart Disease.—Dr. MAY G. WILSON made this presentation, which was a preliminary report having for its objects: (1) To increase the number of observations of a previous study on the circulatory reactions after test exercises in normal children; (2) to compare the circulatory reactions after test exercises in the cardiac group with those obtained in the normal group; and (3) to study the exercise tolerance of children with heart disease to standard test exercises. These investigations were conducted upon a group of average normal girls ten to fifteen years of age, and upon a group of 65 children with cardiac disturbances, including all manifestations of organic heart lesions, congenital and acquired, as well as possible and potential heart disease. The test exercises used were: (1) Swinging one or two iron dumb-bells (2-3-4-5-7 and 10 pounds each); (2) stairclimbing tests, two and four flights (20 to 60 steps) a rise of fifteen and thirty feet, taken in 20 to 30 seconds; (3) jumping rop 100 times in 100 seconds; (4) setting-up exercises, thirty minute drill daily for six weeks. The circulatory reactions following these test exercises in the group of normal girls, and in the cardiac group confirmed the results obtained in the earlier investigation. The circulatory reactions following the stair-case test and the rope-jumping test were similar to those obtained in the dumb-bell test. A working table was formulated of standard test exercises followed by normal systolic blood pressure curves, without symptoms of dyspnea and fatigue. It was standardized from an analysis of reactions of an average group of 35 normal children, according to age, weight, and height. The degree of distress and type of systolic blood pressure curve following standard test exercises was used as a gauge in estimating the exercise tolerance of children with heart disease. Of the 40 children having definite organic heart disease, without symptoms of insufficiency, approximately two-thirds had a normal tolerance for standard test exercises, and one-third had a fair tolerance. An analysis of the case histories of the cardiac group showed that in 90 per cent. the children were excused from school exercises; in 75 per cent. free play had been interdicted by either physician or parent, but nevertheless 61 per cent. admitted ability to tolerate stairs and games equally well with playmates. Five illustrative cases were cited.

The Place of Tonsillectomy in the Management of Cardiac Disease in Children.—Dr. WILLIAM ST. LAWRENCE made this contribution, which consisted in an analysis of a series of 85 children, each of whom had present one or several of the rheumatic manifestations before the tonsils were completely removed and all of whom were observed during an average period of three and one-half years after the operation was performed. The tonsils were markedly hypertrophied in 13 per cent. of the cases, and not enlarged in 18 per cent. of the cases. They were the site of recurrent inflammation before the tonsils were removed in 73 per cent. of the cases. "Sore throat" recurred after removal of the tonsils in 7 per cent. of these. At least two operations were necessary before the tonsils were completely removed in at least 22 per cent. of the cases. The tonsillar lymph nodes were enlarged in 100 per cent. of the cases before the operation was performed, while in 59 per cent. of the cases they were impalpable afterward. One or more attacks of acute rheumatic fever had occurred in 42 cases before the tonsils were removed. After tonsillectomy there were no more recurrences in 35 cases, or 84 per cent. One or more attacks of chorea had occurred before the removal of the tonsils in 40 cases, and there were no recurrences of the chorea in 20 of these cases, or 50 per cent. Sixty-one cases showed myositis and bone or joint pains before operation was performed, and there was no recurrence in 47 cases, or 77 per cent. Fifty-eight cases of organic disease of the heart were present in the series. Twelve of these patients had suffered at least one attack of cardiac failure before the tonsils were removed. One patient suffered one attack afterward. The exercise tolerance seemed to be favorably influenced by tonsillectomy in the cases of cardiac disease in the instances in which indications existed for the removal of the tonsils. Nutrition and general health were improved, and intercurrent disease was less frequent after the tonsils were removed. Tonsillectomy (complete removal of the tonsils) would seem to be the most important measure at present available for the prevention of acute rheumatic fever and the allied rheumatic manifestations.

Dr. THEODORE B. BARRINGER, JR., said he thought Dr. Wilson had presented a very important piece of work because it furnished the groundwork for the intelligent treatment of heart disease in children by exercise. Of course, it might be assumed with much reason that children would respond to exercise treatment in the

same way that adults did, yet the actual proof had been lacking until now. The speaker stated that he had been watching Dr. Wilson's work on a number of occasions and was impressed by the careful and conscientious technic she used. As regards her results it was quite interesting to see how rapidly the pulse returned to normal, almost invariably inside of two minutes. This return to normal was of no value in children as a criterion of their exercise tolerance and really of but little value in adults. The effects of exercise upon the blood pressure curve showed the same types as in adults. The term exercise tolerance Dr. Wilson used very frequently. He felt that we should be very clear in our minds as to the significance of that term. The term exercise tolerance simply put before us the conception that the best way of judging of a heart's capacity was by the way the person tolerated exercise. That was a valid conception, because the best way of ascertaining any organ's capability was by setting it doing its own particular work, and basing our judgment on the result of such experiments. Whether a person tolerated exercise depended essentially upon the heart's reserve power, assuming that the lungs and muscles were functioning in a normal way. Dr. Wilson qualified the term by specifying the amount and kind of exercise and that was a very necessary qualification, because the term exercise tolerance might mean very different things. One person might tolerate walking on the level very easily, but would be distinctly overtaxed by climbing stairs. One point brought out was that 90 per cent. of cardiac children did not take exercise in the public schools because it was interdicted. That was a striking commentary on the way these children were being treated. Exercise undoubtedly increased the resistance to general infections in those children exactly as it did in normal children, and also in all probability increased the resistance of the heart itself to reinfections. Dr. Wilson had made a very valuable contribution because she had provided a sound experimental and physiological basis for the treatment of heart disease in childhood by physical exercise.

Dr. L. E. La Fetra said the important lesson to be drawn from the papers was that as physicians we should foster a more cheerful sentiment among the laity with regard to heart disease; we should excise the varicose vein of gloom.

Dr. Henry Heiman, referring to Dr. Halsey's paper, said it was extremely difficult to tell what the future was going to show when a child had his first and primary attack of heart disease, whether this was going to recur or not. He believed they were not in a position to say whether there would be a recurrence. He agreed with Dr. Donaldson that in every aortic cardiac case the Wassermann test should be made, but in very few would a positive Wassermann be found. He also agreed with Dr. Barringer that Dr. Wilson had given them a valuable contribution. She had given a test for the physiological heart and for the pathological heart, so that one could test practically and accurately what a patient could do. It recalled Hertel's work in mountain climbing for adults with heart disease. As to Dr. Lawrence's view in reference to tonsillectomies, that a great many men gave merely opinions on the subject. What we needed was broader clinical observation. He thought they were all agreed that there must be definite indications for the removal of the tonsils. These indications were: (1) Hypertrophy with marked obstruction. (2) Infection. (3) Repeated attacks of tonsillitis. (4) Enlarged adjacent lymphatics. Of course, when the tonsils were removed the child no longer had repeated attacks of tonsillitis, but there might be manifestations of systemic infection. Many of these children previously diagnosed as having tonsillitis, after the tonsils were removed might develop a pharyngitis, a faucitis, or an adenitis, lasting three or four days. This was often diagnosed as a cold. or, if there were symptoms referable to the stomach, as stomach trouble. The systemic disease that would have caused tonsillitis if the tonsils were not removed was still present and might manifest itself in other ways. One should never promise that a tonsillectomy would prevent a cold, and it should be recommended only in cases in which it was definitely indicated.

Dr. Herbert B. Wilcox expressed gratification in that Dr. Halsey had emphasized the importance of the mental reaction of these young patients to the limitations which their infirmity placed upon them, and its possible exaggeration by the attitude of the parents, friends, and particularly the physician, who alone often initiated this attitude, or was in the best condition to control it. There was no important element in determining the degree of effect which the lesion was to produce on the child's life, than the failure of success of those in control to produce in the child a proper attitude toward his physical condition. This important factor had been largely neglected. In regard to the role of the tonsils as a portal of entry, and a seat of elaboration of toxins, Dr. St. Lawrence's experience and belief must be those of all of us. Children who had asthma, those who suffered from chronic digestive disturbance with periodic exacerbations resulting in all the evidences of acute gastrointestinal disturbances with toxemia; those who presented repeated attacks of vomiting without apparent cause; each of these types seemed to divide itself etiologically into two groups, the one depending upon the continued absorption of the products of bacterial activity from a known or unknown source, the other depending upon the constant absorption of toxic material due to the disturbance of the chemistry of digestion. These two causative factors were about equal in importance, and of the former the tonsils were at fault in the majority of cases. Regrowth of the tonsil might occur more or less frequently according to age, and according to the completeness of its enucleation, and if recurring might cause a repetition of the former poisoning. There could be no doubt that the lingual tonsil was quite as important as the faucial tonsils in causing cough as a result of mechanical irritation of the throat, and in increasing the susceptibility of the upper respiratory tract to infection. How much the lingual tonsil was responsible for symptoms due to absorption was less certain. However, it should be considered in each case, and if it was abnormal it should be as carefully removed as the contents of the tonsillar fossa.

Dr. Louis Faugères Bishop said he liked the idea of taking gloom out of heart disease. There was nothing greater came to the man dealing with heart disease than the satisfaction derived from the restoration of confidence. He had seen these children with cardiac disease who were practically invalids after they had learned that they could exercise come back at the end of a year cheerful and bright, doing everything within reason, and in every way different beings, all because somebody used the experimental method and the child was allowed to do everything it could do without objective or subjective discomfort. There was no rule as to the amount of exercise that should be permitted. The old-fashioned method of putting children with cardiac trouble to bed for prolonged periods of time was very foolish. When the period of infection had passed there was certainly no reason for keeping the child in bed. After a certain time the hypertrophy was no greater if the child was allowed to be about than if it was kept quiet. There was another important point in the prognosis and that was with reference to the effect of diet. These children, especially those with aortic involvement, had a strong tendency to develop kidney complications; such complications were much less likely to happen if the child was kept on a lacto-vegetarian diet. The fatal termination was indefinitely postponed in some of the worst cases by strict attention to diet. Also the question of resistance needed emphasis. These children were less likely to have infections if they were kept in good health. However, the doctrine of the experimental determination of the limits of exercise must be applied also to those with failing compensation, and those who did not respond must be duly restricted. They had given the exercise pendulum such a push that it was sure to go too far in unskilled hands.

Dr. Roger H. Dennett said he understood Dr. St. Lawrence to say that he advocated the removal of the tonsils in 90 per cent. of the children with cardiac disease. He did not see why Dr. St. Lawrence did not say 100 per cent. of cardiac cases, in a child with good compensation. It was perfectly obvious that we did not know what was at the bottom of a tonsil by looking at the outside. He said that Dr. Wilcox spoke of many

cases of periodical vomiting and cyclic vomiting, and said that many of these cases were due to the tonsils. He thought that in the list of those conditions in which the tonsils should be removed nephritis should be included, and that the tonsils should be removed in 100 per cent. of nephritis cases. Here was something that could be done in a curative way and in a very definite way, so why not do it every time? With reference to Dr. Wilson's tests, he wondered whether she had ever felt that the tests had ever done any harm, that was in giving the severe tests.

Dr. WILLIAM ROSENSON thought the psychological effect on the patient and the patient's parents could not be emphasized too strongly. We should not make a diagnosis of cardiac disease, as often occurred, from simple auscultation of a cardiac murmur. We so frequently saw cases diagnosed as cardiac disease by school physicians and general practitioners simply because a cardiac murmur was present. He had seen several such cases in which there were loud, rough, blowing murmurs transmitted to the left which were observed for some time and had entirely disappeared. The electrocardiograms, however, were normal, the *x*-ray showed no enlargement, and there was perfectly good function. He had seen also a number of cases, about 10 per cent. among 200 at Mount Sinai Hospital, in which aortic insufficiency was associated with mitral disease, and he did not think that aortic disease was as rare as was once believed. In one case in which there was a definite aneurysm the Wassermann was positive. Dr. Rosenson asked if there were any direful effects from the strain of the tests. He had seen two cases of mitral stenosis without attacks of decompensation, both of which developed definite auricular fibrillation, and went down hill rapidly. These came on after moderately severe exertion.

Dr. BARRINGER said he was interested in the question Dr. Rosenson had brought up in reference to the result of physical over-exertion in cardiac cases. His experience had been quite negative in this respect. Some years ago he had had three cases that showed decompensation after exertion, which required two or three days in bed with the administration of digitalis. Since then he had seen no such case of decompensation due to over-exertion. It was extremely unusual to have decompensation due to over-exertion. As a rule if the attack did not come on two or three hours after the exertion it was due to reinfection. In angina, however, recurrences were often the result of over-exertion.

Dr. L. E. LAFETRA said that although it was a rare occurrence, sudden excessive physical exertion did produce decompensation, and it was important to bear that fact in mind. These cases reported as being subjected to tests were under the supervision of a physician, and in these circumstances there was no danger. There were, however, children who, if they walked rapidly up two or three flights of stairs, would develop acute dilatation at once from cardiac strain. Dr. LaFetra cited such a case, in which the child ran up two flights of stairs and following the exertion an acute dilatation developed, followed by auricular fibrillation, and later by a recrudescence of the cardiac infection, so severe that she died after about three weeks.

Dr. CHARLES HENDEE SMITH confirmed Dr. LaFetra's experience, citing a somewhat similar case. He said he felt sure Dr. Wilson and Dr. Barringer did not give the exercise tests to hearts really organically affected, and he did not believe any damage could result from the exercises as he had seen them given and tried them himself. There had been some criticism of the cardiac classes. It was said that they were making these cardiac children neurasthenics by putting them in classes by themselves. The organic cardiac case was in a class by himself, and the sooner he learned what he could do and what he could not do the better for him. He could be made perfectly cheerful, but he must learn his lesson, and the sooner he learned it the better his chance for a long life. A cardiac class was no more gloomy than a nutritional or any other class. As to the tonsils, he had seen cases in which the tonsils were removed and within three and a half years there was a regrowth of tonsillar tissue.

Dr. HALSEY, in closing, called attention to one great advantage of physical exercise in cardiac cases, that was the effect it produced on their psychology, making these patients more optimistic. The old mental attitude toward heart disease was still practically the rule, and it was only since exercise had been begun in these cases that the mental attitude toward cardiac cases was changed. He wished the confidence of physicians in physical exercise to become such that they would feel safe in going ahead and prescribing exercise, remembering always that there must be a differentiation between individuals with different conditions of the heart muscle. The danger was that in their enthusiasm over the application of exercise in the treatment of heart disease differentiation would not be made, and they would have patients doing twenty pounds of work when they should be doing only two or three pounds, in which case results such as Dr. LaFetra had just related would ensue. The lesson was to be very careful until the patient learned the capacity of his own heart muscle. Children who had been shut out of games and exercise, and who spent their time in bed, improved rapidly when they found they were no longer shut out from all activity. Exercise improved the psychology as well as the physiology.

Dr. MAY G. WILSON, in closing, said she appreciated the question raised by the gentlemen as to the danger of any harm resulting from the exercise tests. She had felt the same way about a year ago, and for this reason first investigated the reactions of normal children. As Lewis advised, she proceeded slowly with cardiacs, first giving simple tests that were not strenuous, and then gradually working up. She did not wish to give the impression that cardiacs had been given test exercises that produced distress. The initial test exercise was always much below the tolerance of the child, and was gradually increased. Of course, it was understood that one did not need to give an exercise tolerance test to a child with cardiac failure; that child belonged in bed.

Dr. WILLIAM ST. LAWRENCE said he thought Dr. Dennett was right and he wished he had had the courage to take out the tonsils in 100 per cent. of the cardiac cases. With reference to Dr. LaFetra's case of heart failure following over-exertion, Dr. St. Lawrence said he had had 25 cardiac children who had been exercising for three or four years, and he had never seen any ill effects from exercise within reason and with moderation. It would be interesting to know whether in the case Dr. LaFetra cited there was any other infection, and whether the child had a temperature before the exertion. It was their custom to take the temperature before allowing exercise, and if the child showed an elevation of temperature it was excused from exercise.

Dr. LAFETRA replied that the temperature was not taken before the child went up stairs. On the other hand, the child had not been showing any elevation of temperature and was being inspected each day. Emphasis should be placed on the fact that these test exercises were given under the supervision of a physician. The cases of heart failure from over-exertion occurred when the children were not under such supervision. He quite agreed that cases of heart failure from over-exertion were rare in children unless there was infection, but they did happen.

AMERICAN ELECTROTHERAPEUTIC ASSOCIATION.

Thirtieth Annual Meeting, Held in Atlantic City, September 14-17, 1920.

THE PRESIDENT, DR. WILLIAM MARTIN OF ATLANTIC CITY, IN THE CHAIR.

(*Concluded from page* 877.)

The Treatment of Hemorrhoids by Electrolysis.—Dr. H. W. SIGMOND of Crawfordville, Ind., read this paper. After discussing the history, varieties and causes of hemorrhoids, he stated that he could remove external hemorrhoids, or those situated below or upon the distal side of the mucocutanous line, surgically under local anesthesia without much difficulty, and quicker than he could by electrolysis. Internal hemorrhoids were located above the mucocutaneous line and in dealing with these their electrical treatment was the treatment of

choice. He had tried several methods of treating hemorrhoids by electricity but preferred the positive pole, using the needle. The cambric needle was specially prepared by insulating it by winding silk thread around it for one-fourth inch from the point. The point of the needle was then stuck into a cork for about an eighth of an inch leaving one-eighth of an inch of the needle above the cork. The needle was then shellacked from the upper end of the thread down to the cork, thus leaving the part above the thread unshellacked and uninsulated to fit into the needle holder. The part in the cork was also uninsulated. After the shellac had dried the needles could be removed from the cork and were ready for use. For local anesthesia he used quinine and urea hydrochloride or novocaine. After injecting the pile and waiting a few minutes for the anesthesia to take effect, the negative pole was attached to a large moist pad and strapped to the abdomen so as to make and keep good contact. The positive pole was attached to the needle which was inserted into the pile, carrying the needle in up to the thread. The idea of the thread was to make a shoulder to prevent the needle penetrating too deeply. The current was thus carried directly into the pile. Ten or fifteen milliamperes were used until the pile became decidedly blanched in appearance. The pile should be punctured as nearly the top as possible. For about two days there would be no change in the patient but on the third day relief would come. Each pile was treated separately, using a new needle, because the positive pole caused the needle to roughen and deteriorate so that it might break off when used a second time. This was not a panacea for all rectal troubles, but for all internal piles that were not of the fibrous variety, one could assure the patient of relief by this method.

Report on Phototherapy.—Dr. T. HOWARD PLANK of Chicago presented this report, which was read by Captain Sampson. The writer stated that during the last year much progress had been made in acquainting the profession at large with the benefits to be derived from the use of phototherapy in maintaining and regaining health. They had learned that Rollier's treatment was being used, and apparently with success, at the Adam Memorial Hospital at Prysburg, N. Y. Though Rollier spoke of an analgesic, a bactericidal and sclerogenic action of the solar rays, a clear understanding of the theoretic side concerning the influence of the sun's rays upon the human body had not yet been reached. The sun's rays were divided into two classes, long-waved and short-waved ones. To the latter group belonged the ultra-violet rays. This portion of the spectrum of the sunlight was the therapeutic active one. No doubt it would be taking another great step ahead in the treatment of surgical tuberculosis to establish numerous institutions in our country where Rollier's sun treatment could be used intelligently. But, granted we had the advantages of such institutions there would always be patients who could not spend a year and a half to three years in such institutions waiting for definite cure. All the good results of heliotherapy could be duplicated by the use of phototherapy, actinotherapy being the active portion of the spectrum needed to be used with some caution and should always be preceded by a radiant light treatment for the purpose of increasing the circulation and bringing the blood to the surface. This report reviewed the literature of the past year on the subject of phototherapy and discussed the advantages and disadvantages of the new phototherapeutic apparatus recently placed on the market.

Actinic Rays.—Dr. T. HOWARD PLANK of Chicago presented this paper which was read by Captain Sampson. The writer stated that concentrated actinic rays were little known a decade ago and most of the medical profession did not know of them to-day notwithstanding that they had a definite fixed value in the treatment of many diseases, both local and constitutional. Actinic rays were incapable of inflicting permanent danger even if ever so improperly used, and even the beginner could obtain decided benefit with them, while one who understood the proper technique could get some really marvelous results, and this with a minimum of expense and energy. To the dermatologist they were invaluable; to the internist they meant a decided increase in his success; to the tuberculosis expert they were a great ally, while the genitourinary specialist and the surgeon should not be without them. Actinic rays should not be used alone in most cases but as an adjuvant treatment. The bacteriologists told us that disease germs could not live in these rays, therefore we should use them to help fight germs and win the struggle for existence by the simplest possible natural means. Experiments showed that the rays of the quartz mercury vapor lamp had a greater bacterial effect upon the cocci than upon the bacilli. It was positively known that the rays would destroy streptococci and staphylococci, and they knew from actual use that they would destroy diphtheria bacilli as well as less virulent types of bacteria. All treatments with actinic rays were limited to minutes; many required but one to five minutes and some only one-quarter to one-half a minute to be followed by a definite beneficial result. On the other hand these results were very much more permanent than the length of time of the application would indicate. This measure would remove a port-wine birthmark in a half dozen treatments and remove it never to return. It would stop the itching of eczema in a few minutes. Many cases of tuberculosis began to improve after five to ten treatments, while the pain of an active osteomyelitis was often relieved by a single treatment of ten minutes' duration. Simple prostatitis was likewise frequently relieved by a single treatment of ten minutes' duration. These treatments should be given three times a week. These rays were the best single remedy that the dermatologist possessed for the treatment of psoriasis. Post-influential conditions could be remedied more quickly by the aid of actinic rays than with any other single measure. All these treatments should be preceded by at least a ten minute application of radiant light, given for the purpose of dilating the surface capillaries in order to furnish a greater volume of blood for the absorption of these rays.

Ultra Violet Light as a Medical Adjuvant.—Dr. DONALD MCCASKEY of New York presented this paper, which was read by Captain Sampson. He stated that some very remarkable surgical results had been obtained by the use of ultra violet light, particularly in local infections such as boils, carbuncles, and bacterial ulcerations. Recently it had been shown by the work of Captain Sampson and Captain Hirsh at the Fox Hills Military Base Hospital that the influence of ultra violet light on abnormal prostatic cases was very beneficial. Underlying the question of ultra violet light, however, it was necessary to take a broader view of the medical problems as they presented themselves before us. First and foremost in the analysis of a patient's problem was the blood chemical data, including the blood plasma and carbon dioxide percentage. In the chemistry of the urine was the ratio of the total nitrogen to urea nitrogen and the percentage of ammonia nitrogen which revealed the oxidation index of the patient's motor. Armed with these vital facts, we could then regulate the food intake to act as a medicine, and with the ultra violet light as an adjuvant we could stimulate the anabolic and katabolic cycles of the tissue cells, thus raising the standard of protoplasm resistance and efficiency.

The Continuous Current in Inflammatory Conditions.—Dr. CORA SMITH KING made this presentation in which she spoke more particularly of inflammatory conditions of the sigmoid, bladder, uterine endometrium, and the cervical and vaginal membranes. The sinusoidal current was used with one pad under the sacrum and the other over the abdomen as strong as the patient could comfortably bear it. When the muscles were well synchronized, with the bulb in the rectum but without a rectal tube, a bland soapsuds enema was given. With the proper posture gravity would carry the fluid to the transverse colon. After the patient had evacuated the enema, she was placed in the knee-chest position and two drams of argyrol, 25 per cent., were introduced into the rectum. If there was trouble in the colon, there was usually trouble with the endometrium and cervix. When there was trouble with the uterus, the cases when not of Neisserian origin were mostly due to extensions of colon trouble. The uterus was then tamponed with 25 per cent argyrol and if there was bladder trouble argyrol was introduced into the bladder. The patient was then placed in the dorsal decubitus and large pads were placed across the pelvis, low down over

the pubic bone. The galvanic current was then passed to easy tolerance, three to five milliamperes, gradually raised to ten milliamperes, in the course of 18 to 20 minutes. Under this treatment the patients made remarkable improvement. Dr. King said she had used argyrol alone and the galvanic current alone, but neither alone gave the results that were obtained by this combination. She asked whether these results were, in the opinion of the members, due to ionization.

Dr. FRED H. MORSE of Boston explained why he believed the good results of this treatment were due to ionization. Argyrol in itself was beneficial and the current aided its diffusion through the tissues by ionization. In addition to this there were the other beneficial effects of electrical treatment.

The Adams-Stokes Syndrome.—Dr. J. E. TALLEY of Philadelphia read this paper, in which he said that the prominent symptoms known as the Adams-Stokes syndrome were a sudden marked slowing of the usual pulse rate of the individual, accompanied by attacks of unconsciousness with or without convulsions. Heart block and Adams-Stokes syndrome were not synonymous, for any grade of heart block might persist throughout the patient's life without developing the syndrome. The cause of the seizures, whether they be confined to unconsciousness or also accompanied by fits, was sudden cerebral anemia, due to the abrupt slowing of the ventricular rate. These attacks might be mild or severe. Mild attacks were marked by vertigo, faintness, pallor, loss of consciousness and absence of ventricular beat. Severe seizures arose where the ventricular standstill lasted fifteen minutes or more. Here venous engorgement caused pallor to give away to cyanosis; to unconsciousness was added twitching of the face, or an arm, and occasionally the fits might become generalized. In these attacks the patients did not pass urine or bite the tongue. In the mild cases breathing might be normal; in the severe attacks stertorous and apneic. The only suggestion of an aura was that at times the patient was aware of the slowing of the ventricular rate, with varying pauses between beats, from a normal rate to one of 30 per minute. A single period of ventricular standstill of from three to seven seconds would usually cause unconsciousness, fifteen seconds or more caused convulsions in addition. The seizures occurred most frequently in subjects suffering from permanent progressive complete heart block. They also occurred in incomplete dissociation with a permanent ideo-ventricular rhythm well established. The immediate cause of the seizures might usually be traced to some unusual physical activity. The outlook depended upon the extent of the myocardial degeneration and the frequency and severity of the fits. Sudden death in a first attack was rare. The majority of these patients died of progressive heart failure finally without cerebral symptoms. This fact should not make one underestimate the gravity of these seizures. Even a mild attack of unconsciousness called for a period of absolute rest in bed. A single injection of atropine sulphate, 1/50 of a grain, might be tried. To prolong the effect 1/100 of a grain of atropine sulphate by mouth to physiological effect was worthy of a trial. Heart stimulants such as digitalis and strophanthin were mostly contraindicated. Electrocardiograms from various cases of heart block illustrated the paper.

Vaccine and Gland Therapy as an Aid in Our Practice During the Past Twenty Months.—Dr. J. W. TORBETT of Marlin, Texas, presented this communication, in which he stated that in a series of 4686 mostly chronic cases of all kinds treated in their institution during the past twenty months 27.7 per cent. gave a history of having had influenza as one possible cause of their trouble. Many still had a leucocyte count of less than 5000—often as low as 3500. Such a count was seen in both influenzal and malarial cases. Many more, with them 23 per cent. last year and 27 per cent. this year at the Battle Creek Sanitarium, had the polymorphonuclears less than 60 per cent.; at times as low as 31 to 45 per cent. Of all their post-influenzal cases, 25 per cent. showed a peculiar lung haziness by the fluoroscope which was confirmed by the *x*-ray. Many more infected tonsils and sinuses were found than in previous years. The mixed influenza and pneumococci vaccine (Rosenow's) greatly aided other means in restoring health in all cases with leucopenia or polymorphopenia, when a reaction was secured. If no reaction was secured phylacogens were given carefully in the veins, with three-grain doses of sodium cacodylate in the chronic anemic cases. One or more of the seven types of rational therapy were always used: (1) If possible, all foci of infection were found and removed. (2) Elimination should be promoted through the lungs, skin, bowels, and kidneys by physiotherapy and other means. (3) Nutrition should be cared for by balanced ration with a slight excess of alkaline bases. (4) Immunity should be conferred by vaccines, if possible (5) Specific chemotherapy should be employed in cases of lues, malaria, diphtheria, and deficient gland action. (6) There should be alternate exercise, rest, and sleep. (7) Psychotherapy should be employed in any form to arouse hope and optimism. Thyroid extract greatly helped those with dry skins, dry, falling hair, slow speech, lowered tolerance for cold and meats. Mammary gland was indicated for menorrhagic girls with poorly developed breasts and for menorrhagic women at the menopause, with pituitrin added if constipation was present, or if the muscles were flabby or beginning fibroid was suspected. Ovarion substance was indicated for amenorrhea and cystic ovaries, tincture of iodine being painted over the ovaries twice daily.

Treatment of Fractured Patella; Diathermy.—Dr. DOUGLAS A. CATER of New Jersey read this paper, in which he related the case of a young man, about 35 years of age, who stepped off his back stoop in the dark and fell, striking his knee on the flagstone and fracturing his patella. An *x*-ray of the knee showed the patella broken into four distinct pieces. After reducing the swelling by firm strapping and employing daily massage by an experienced masseuse, it was found that the fragments could be coapted by suitable splints and adhesive plaster. After eight weeks in bed with the leg raised on an inclined plane, all apparatus was removed and good union was found to have taken place. There was considerable atrophy of the thigh and to a less extent of the calf This atrophy he had tried to forestall by having the splints removed every day for two weeks for massage, but stopped the massage for fear of disturbing the approximation of the fragments. The knee was also very stiff, there being a range of motion of only about 10 degrees. Treatment by diathermy was instituted, lasting at first twenty minutes and then thirty and forty minutes. This was followed by the statis wave with glass vacuum electrode to the thigh and leg muscles for five minutes. The diathermy technique was substantially that used by Captain Sampson at the Government Hospital at Fox Hills, and consisted of two block tin electrodes, moistened with soapy water, about two inches wide, one encircling the thigh above the knee and a similar one below the knee. These were held in place by elastic mesh bandages to allow for swelling of the limb. The current strength was up to 1,500 milliamperes. This was supplemented by daily active and passive motion. Improvement began at once and at the end of a week flexion had increased to above 20 degrees. After three treatments a week for six weeks 35 degrees flexion was obtained. After consultation with Dr. Price the treatments were given every day for a time. Improvement was steady until the patient could flex his knee at right angles. Eleven months after the accident both extension and flexion were normal. This case was of interest in showing that good bony union could sometimes be obtained in fracture of the patella without operation and because it showed what diathermy would do in breaking up stiff adhesions and doing it painlessly.

The following papers were read by title: "Results of Physical Modalities in the Treatment of Pulmonary Tuberculosis," by Dr. J. D. Gibson of Denver, Col.; "Exophthalmic Goiter Successfully Treated by Physical Measures," by Dr. A. Brustad of San Antonio, Tex.; "Treatment of Some Chronic Diseases by the Elicitation of the Spinal Reflexes with the Sinusoidal Current," by Dr. L. C. Sammons, Shelbyville, Ind.; "The X-Ray in Uterine Hemorrhage and Allied Conditions," by Dr. George I. Forbes of Burlington, Vt.; "X-Rays and Radium in Gynecology," by Dr. Foveau deCourmelles, Paris, France; "The Technique and Interpretations of Radiographs of the Nasal Accessory Sinuses," by Dr. W. H. Mick of Omaha, Neb.; "Experiences in

Treating Hay Fever with High Frequency Current," by Dr. William T. Lewi of Albany, N. Y.; "Information Our Patients Should Have, with Special Reference to Radiodiagnosis," by Dr. Sinclair Tousey of New York; "Cooperation Between Surgeons and Physiotherapists," by Dr. G. E. Deering of Worcester, Mass.; "Summary of Reasons for the Need of Securing Structural Poise—Equilibration—Stabilization," by Dr. J. Madison Taylor of Philadelphia; "Peripheral Facial Paralysis—Bell's Palsy; Its Treatment by Electrotherapeutic Measures," by Dr. J. Irwin Swain of Erie, Pa.

Miscellany.

The "Sign of the Tongue" in Verminosis.—Couillaud has described a phenomenon said to occur in ascarides and oxyuris diseases. The fungiform papillæ in the hosts to these worms are hypertrophic and if one examine the base of the tongue he will behold the scattered red points which are also diffused along the sides and at the tip. The rationale of the phenomenon is obscure, but the author insists that it is to be seen only in certain halminthiases.—*La Presse Médicale.*

Seaplane Ambulance.—The following incident illustrating the efficient service of the Navy Medical Corps and of the Naval Air Service received editorial comment in the Pittsburgh *Chronicle-Telegraph* of August 2. A pharmacist's mate, the only man among the eighteen sailors stationed there having any medical knowledge, was stricken with appendicitis. The station is some 200 miles from the naval base at Hampton Roads, is utterly isolated, distant from routes of travel by rail or water, and quite out of reach of ordinary medical aid. To send a motor boat or other water conveyance for a doctor would mean a long journey and much delay. A radio message was therefore sent to the commanding officer at Hampton Roads, reporting the situation. Capt. James C. Pryor, U. S. N., commanding the naval hospital there, explained the case to Rear Admiral A. F. Fechteler, U. S. N., and Lieut. (T) William Moore, Medical Corps, U. S. N. R. F., was ordered to Cape Hatteras in a seaplane. The machine arrived there at 1.15 o'clock in the afternoon, Lieutenant Moore diagnosed the case as one of acute appendicitis. The patient was placed in the seaplane, which arrived at Hampton Roads at 6.45 o'clock, the voyage of 400 miles having been made in five and one-half hours. The patient was at once taken to the hospital and at last accounts was recovering from the operation.—*Army and Navy Journal.*

Work of the Institute of Radiology at Monte-Video.—The official report of this institution for the year 1919 shows to what extent these methods of diagnosis and therapeutics are extending over the habitable globe. The institute began its activities in 1914 and in the six years following the total number of patients was over 20,000, the number increasing from 1,493 in 1914 to 5,232 in 1919. The special service was as follows for the expired year: Radioscopies, 3,233; radiographies, 2,307; applications of *x*-rays, 2,965; applications of radium, 5,090, and applications of phototherapy, 699. The money disbursed for the six years for installation and operating expenses is nearly $65,000; and presumably because the installation is now fairly complete the expenses for 1919 were about $7,500 only. During 1919 the following subjects were given special attention: radiodiagnosis of the spondyloses; radiodiagnosis of rheumatic gout; radium therapy of exophthalmic goiter; radium therapy of certain affections of the eye, nose, etc.; phototherapy of leucoplakia vulvæ; investigation of the national minerals for radioactivity. A museum department is well under way. The director of the institute is C. Butler.—*Anales de la Facultad de Medicina de Montevideo.*

Anthrax Mistaken for Erysipelas.—A case of this sort is reported by Bouwmeester in the *Nederlandsch Tijdschrift voor Geneeskunde* for June 26, 1920, lxiv, 1, 26. The patient was 51 years old, who summoned medical aid on March 29. Four days before, the affection began on the right side of the neck. The diagnosis was eryispelas. At the hospital the patient was seen to have a sick look and a temperature of 39° C. He confessed to being an alcoholic. The parts were red and swollen and the continuous area with the neck participated in the process. About midway over the sternomastoid muscle and in the center of the swelling was a special necrotic lesion that suggested the possibility of anthrax. It was noted that the swelling was hard and brawny. Anthrax bacilli were cultivated from the secretion of the sore, a platinum loop having been passed into a slight incision. The patient was at once placed upon anthrax serum and improved slowly, being discharged cured on May 22, after having spent nearly two months in the institution. He had been exposed to several suspicious objects. He had cut his neck while shaving and had used at that time a new shaving brush. This was submitted to an intensive bacteriological analysis, but nothing was found to show that it harbored anthrax germs or spores. The incubation period after inoculation with anthrax germs is never more than three days, so that a history of exposure to sheep and hides at a somewhat remote period was regarded as of no moment and the brush was adjudged guilty despite the negative finds.

"Domestic Measures."—H. O. Gunewardene makes a plea for compulsory restraint on the use of "domestic measures" in the administration of medicine. He made observations on spoons supplied to him by different people and his findings were that spoons fall mainly into three different groups: (*a*) Size A, half a drachm to one drachm when just full; 2. Size B, one drachm when just full; 3. Size C, equivalent to twice size B, or equal to two drachms, when just full; with some occasionally varying in size and capacity between A, B and C. (*b*) Tablespoons. 1. Size A1 just full, equivalent to half an ounce; 2. Size B1, equivalent to twice A1 just full, equivalent to one ounce. (*c*) Dessertspoons. 1. Size A2 just full, equivalent to two drachms; 2. Size B2, equivalent to twice A2 just full, equivalent to half an ounce. By just full, is meant only so full that the spoon can be held by an average person without any overflowing. The use of spoons of capacity equivalent to the dose prescribed, of marked bottles, and the tolerance to bigger doses than are prescribed, as well as the taking of smaller quantities than are advised, have prevented more noticeable ill-effects; but ill-effects do occur, which are not only very unpleasant but sometimes even dangerous or disastrous.—*The Practitioner.*

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THE ANXIETY NEUROSIS.

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NEW YORK.

ESPECIALLY valuable for medicine has been Freud's sharp differentiation of the symptom complex of the anxiety neurosis from the clinical picture of neurasthenia. The name anxiety neurosis arises from the fact that the various components of this symptom complex are grouped around the cardinal symptom of anxiety to which each individual symptom shows a definite relationship.

Clinical Symptomatology.—The clinical picture of the anxiety neurosis comprises the following symptoms:

1. General irritability and irritation: A special point of value is the expression of this heightened irritability through a hyperesthesia for visual impressions, but especially through a hyperesthesia for sounds, hypersensitiveness to noises. This is also frequently the cause of sleeplessness of which more than one form belongs to the anxiety neurosis.

2. Anxious expectation: This condition can be best illustrated by example. A lady, for example, who is suffering from anxious expectation, thinks of pneumonia every time her husband, who has catarrh, has an attack of coughing and sees in her mind his funeral passing by. If on her way home, she sees two persons standing together in front of the door, she cannot help thinking that one of her children may have fallen out of the window; when she hears the bell ring, some one is bringing bad news, etc., while in all these cases there is no especial occasion to strengthen such a mere possibility. For one form of anxious expectation, that in respect to the person's own health, one cannot avoid the old name, hypochondria.

A further expression of anxious expectation is the frequent tendency to anxiety for certainty found in persons of great moral scrupulousness, which likewise varies from the normal up to scepticism.

The anxious expectation is the nuclear symptom of the neurosis; in it may plainly be seen a part of the theory of the same. It can be said that there is here a quantity of free-floating fear (angst) at hand which in the expectation rules the choice of ideas and is always ready to attach itself to any passing idea.

3. The anxiousness which is constantly present can, however, also break through into consciousness suddenly, without being awakened by the course of ideas thus causing an attack of anxiety. Such an anxiety attack may consist either of an anxious feeling without any associated idea or of the idea of impending death or of a stroke or some paresthesia may be mixed with the anxious feeling, or finally, with the feeling of anxiety may come a disturbance of one or more of the bodily functions, the respiration, circulation, vasomotor innervation, glandular functions, etc. Out of this combination, the patient emphasizes now one, now another factor; he complains of heart cramp, dyspnea, sweating, ravenous appetite, etc., and in his representation the anxious feeling frequently becomes obscured or becomes really unrecognizable and described as a "bad feeling" of indefinite discomfort.

4. There are therefore rudimentary attacks of anxiety and equivalents of the anxiety attack of which Freud has prepared the following list:

(*a*) Disturbances of the heart's action, palpitation with brief arrhythmia, with longer attacks of tachycardia up to severe conditions of cardiac weakness, the differentiation of which from organic affections of the heart is not always easy—pseudo-angina pectoris, a delicate diagnostic field.

(*b*) Disturbances of respiration: many forms of nervous dyspnea, asthmatic attacks, etc. These attacks, however, are not always accompanied by recognizable anxiety.

(*c*) Attacks of sweating, often nocturnal.

(*d*) Attacks of shaking and trembling, which may only too easily be taken for hysteria.

(*e*) Attacks of ravenous appetite often accompanied by vertigo.

(*f*) Diarrhea in the form of attacks.

(*g*) Attacks of locomotor vertigo.

(*h*) Attacks of so-called congestions about everything which has been called vasomotor neurasthenia. Here may be mentioned the vasomotor edemas, the sudden dying of a finger, an arm, or a foot (angina pectoris vasomotoria).

(*i*) Attacks of paresthesias (these, however, seldom without anxiety or a similar feeling of discomfort).

5. Nothing but a variety of anxiety attack are the frequent night terrors (favor nocturnus of adults) commonly accompanied by anxiety, dyspnea, sweating, etc. This disturbance occasions a second form of sleeplessness in the framework of the anxiety neurosis. In addition, the pavor nocturnus of children shows a form which undoubtedly belongs to anxiety neurosis. It frequently has an hysterical touch which makes it appear as something special and brings it into closer connection with the anxiety hysteria which will be discussed later.

6. A prominent place in the symptomatology of the anxiety neurosis is occupied by vertigo which, in its lightest forms, is better designated as giddiness, in its severer types as "attacks of vertigo" with or without anxiety, which belongs to the se-

verest symptoms of the neurosis. This vertigo never leads to complete loss of equilibrium. On the other hand, it seems possible for such an attack of vertigo to be replaced by an attack of profound weakness. Other fatigue conditions of the anxiety neurosis appear to depend on a heart collapse. Dizziness at high altitudes, on mountains and precipices, likewise frequently accompanies anxiety neurosis.

7. On a basis of a chronic anxiousness (anxious expectation) on the one hand, and a tendency to attacks of vertigo on the other, two groups of typical phobias develop, the first in regard to general physiological menaces, the other in regard to locomotion. To the first group belong the anxiety over snakes, thunder, darkness, vermin, and the like, as well as the typical moral overscrupulousness.

Forms of scepticism; here the unattacked anxiety is plainly applied to the strengthening of doubts which are instinctively implanted in every person.

The other group embraces agoraphobia with all its varieties collectviely characterized by its relation to locomotion. A preceding attack of anxiety is here frequently the foundation of the phobia.

8. The digestion in anxiety neurosis undergoes only a few, but characteristic, disturbances. Sensations like a tendency to nausea and vomiting are not rare and the symptom of ravenous appetite, either alone or with other congestions, can give something of a rudimentary attack of anxiety. A chronic change, analogous to the anxious expectation, is found a tendency to diarrhea which has given occasion for the strangest diagnostic errors. The diarrhea is the analogue of the frequent micturition of the anxiety neurosis.

9. The paresthesias which may accompany the vertigo or attack of anxiety are of interest because of the fact that they are associated in a regular sequence like the sensations of the hysterical aura. Nevertheless, these associated feelings, in contrast to the hysterical are atypical and changeable. A large number of so-called rheumatic patients really suffer from anxiety neurosis. In addition, many cases of anxiety neurosis show a tendency to hallucinations; these cannot be considered hysterical.

10. Many of the so-called symptoms which accompany or replace the anxiety neurosis appear in chronic form. This applies especially to the diarrhea vertigo and the paresthesias.

Occurrence and Etiology. — These symptoms which Freud describes indicate very clearly the presence of the endocrine factors and correlated disturbances of the sympathetic nervous system. The condition of general irritability is what we expect from an abnormal amount of thyroid secretion in the blood. It is altogether like that which occurs with Graves' disease, or can be produced by the administration of thyroid. The palpitation, diarrheal attacks, and other symptoms are apparently the same as those occurring with hyperthyroidism of other origin. The vasomotor symptoms and others referable to the sympathetic nervous system might indicate the presence of an excessive secretion of adrenalin or might be the effect of thyroid bodies themselves.

As already explained, the morphology of this malady is the corrollary of a typical etiology which makes it preferable to consider men and women separately. Anxiety neurosis occurs in females classified according to their age and positions in life in the following cases:

(*a*) Anxiety of virgins or adolescences. A number of indisputable observations have shown that a first experience with the sexual problem, a rather sudden revelation of what up to that time had been veiled, for example by the sight of the sexual act or by the male genitals, by a lecture, printed or pictorial representation, can cause an anxiety neurosis in a maturing girl which is combined with hysteria in an almost typical manner.

(*b*) Anxiety of the newly married, young women who have remained anesthetic during the first cohabitations often develop an anxiety neurosis which disappears again after the anesthesia has given way to a normal feeling. Total anesthesia is not meant here, but that of those women who are excitable up to a certain degree but are incompletely gratified.

(*c*) As anxiety of women whose husbands exhibit ejaculatio præcox or a very diminished potency.

(*d*) Anxiety of women whose husbands practise coitus interruptus or reservatus. These last two cases belong together, for it is easily proven from the analysis of a great number of cases that the occurrence depends on whether or not the woman is gratified during coitus. In the latter case the ground is prepared for the outbreak of an anxiety neurosis. On the other hand, if the husband can gratify the woman either through a better performance of the act or by preventing ejaculation at the beginning of the act, she remains free from anxiety neurosis. The congressus reservatus by means of a condom exposes the woman to no injury if she is very easily excited or the man very potent; in other cases this kind of conception-preventing intercourse is not less injurious than the other forms.

(*e*) As anxiety of widows and intentional abstainers, often in typical combination with obsessions.

(f) As anxiety in the climacteric, during the last great climax of the sexual appetite.

Classes *c*, *d*, and *e* embrace the conditions under which the anxiety neurosis begins most frequently in the female sex and earliest, independent of hereditary disposition.

For the conditions of the anxiety neurosis in men, Freud has formulated the following groups analogous to those found in women:

(*a*) Anxiety of intentional abstainers, frequently combined with symptoms of defense (obsessions, hysteria).

(*b*) Anxiety of men as a result of unsatisfied excitement (during the engagement period), further, of persons who through fear of the results of sexual intercourse content themselves with fondling and looking at the woman. This group of conditions (which is also transferable unchanged to the other sex), engagement, relations with sexual forbearance, afford the purest cases of the neurosis.

(*c*) Anxiety of men who practise coitus interruptus, therewith delaying the ejaculation until the woman is gratified. This form of anxiety neurosis in men is usually mixed with neurasthenia.

(*d*) Anxiety of men in the senium. There are men who have a climacteric like that of women.

and at the time of their diminishing potency and increasing libido, develop anxiety neurosis.

For both sexes, the two following classes apply:

(*e*) Neurasthenics as a result of masturbation fall into anxiety neurosis as soon as they forego their method of sexual gratification. These persons have rendered themselves especially unable to stand abstinence.

It is here important for the understanding of the anxiety neurosis to notice that a very serious case of this condition occurs only in men who remain potent and in women not entirely anesthetic.

(*f*) Anxiety neurosis arises in both sexes occasionally from overwork, exhausting exertion, for example, night watching, nursing the sick, and after a severe illness.

In addition to the results of his observations, Freud has sought to give a theoretical interpretation of the pathogenesis of anxiety neurosis in which he takes into account the observation that many cases of anxiety neurosis accompany an appreciable lessening of the libido or psychic pleasure.

In the points adduced thus far concerning the anxiety neurosis there are sufficient stopping points from which to gain a view of the mechanism of this neurosis. One gains the impression that it has to do with an accumulation of excitement; that the anxiety which corresponds to this accumulated excitement, as psychic anxiety which finds no outlet, is of somatic origin; and further that the accumulated excitement is of a sexual nature. These hints favor the expectation that the mechanism of the anxiety neurosis is to be sought in the diversion of the somatic sexual excitement from the psychic and in the abnormal application of this diverted excitement caused thereby. This idea of the mechanism of the anxiety neurosis can be made clearer by a consideration of the normal sexual process, at first only as it occurs in men. The normal sexual act may be sketched as follows: First there is an accumulation of somatic excitation; this increases to a point where it occasions a psychic irritation, creating the libido; finally this is discharged by a complicated spinal reflex act which must also carry off the psychic excitement simultaneously. Such a psychic discharge is only possible by the way which Freud has called adequate or specific action. The etiology of true neurasthenia and anxiety neurosis finds its place in the outline of this representation of the sexual process, which in essentials is also applicable to the woman. Neurasthenia ensues every time the adequate discharge is replaced by an inadequate one as when normal coitus under favorable conditions is replaced by masturbation or spontaneous pollution; all agencies, however, which hinder the psychic utilization of the somatic excitement conduce to anxiety neurosis.

The previously described etiological conditions of anxiety neurosis disclose the common characteristic of accumulation of excitement. Intentional abstinence constitutes the first etiological factor for the man in that it prevents the specific action which should follow the libido. The somatic excitement is thus accumulated and is discharged in other ways. In this way, abstinence leads to anxiety neurosis. Abstinence is also the real factor in the second etiological group, that of frustrated excitement. The third class, that of coitus with precautions (reservatus) acts injuriously by disturbing the psychic preparation for the sexual discharge since it interposes another diverting psychic task before allowing the completion of the sexual act. Anxiety in the senium (climacteric of men) demands another explanation. There is here, as in the climacteric of women, such an increase in the production of somatic excitement that the mind proves relatively inefficient to care for the same.

The etiological conditions in the woman may without difficulty be viewed from the same standpoints. In addition, the disagreement, between the somatic and the psychic in the course of the sexual excitement can occur earlier in the woman and is more difficult to remove than in the man.

Thus, the Freudian view considers the symptoms of the anxiety neurosis as substitutes in a way for the omitted specific action which should follow the sexual excitement.

As a further corroboration of this view, it should be remembered that also in normal coitus the excitement is accompanied by acceleration of the respiration, palpitation, sweating, congestion, etc. In the corresponding attack of anxiety of our neurosis, there are the ryspnea, palpitation, etc., of coitus isolated and exaggerated.

In those exceptional cases which do not arise from specific causes but from other banal injuries, such as nursing the sick, overwork, etc., the sexual etiology is indeed absent, but the illness is established on the foundation of a sexual mechanism, since general exhaustion renders the mind unable to care for the somatic excitement which continually makes demands on it.

This reference to the exceptional causes of the anxiety neurosis is always overlooked by the critics who, in opposition to Freud, think they have found anxiety neurosis without sexual injury. This explanation of a sexual mechanism replacing a sexual etiology is, however, a very important one, and it is easy to make the same one for those very similar cases of neurasthenia not of sexual etiology, for example, those occurring with arteriosclerosis. In these conditions the disease may also arise from indirect disturbances of the elaboration of sexual products, like the primary disturbances of other organic processes. By the substitution of a sexual mechanism for the sexual accidents, there may result a progress in the comprehension of the true neurosis similar to that which the theory of the psychoneuroses experienced when the importance of the sexual traumas was replaced by infantilism of sexuality.

Refutation of the objections brought against the sexual etiology of anxiety neuroses.—As already mentioned, the formerly much greater field of the neuroses has been lessened by the diseases of the blood-forming glands. Neurasthenia and anxiety neurosis constitute the transition from the sexual neuroses to such exquisite toxic diseases of the nervous system. They are caused by disturbances of sexual processes in the organism which we must call chemical. Further, they actually show a great similarity to the phenomena of intoxication and abstinence; the similarity to Basdow's and Addison's diseases is obvious.

Freud in his assertions regarding the etiology of the true neuroses knew that in bringing forward

the sexual etiology he adduced nothing completely new, for the undercurrents in medical literature which took this fact into account have never disappeared. Indeed, in many of these undercurrents, the cure of "sexual difficulties" and "nervous weakness" has been united in a common promise. Further, the official medicine of the schools has really noticed these relations, although it has acted as if it knew nothing of them. It may easily be perceived that a dim perception of the predominating importance of sexual agencies in the production of nervousness, such as Freud has recently sought to establish scientifically, has never been absent from the consciousness of the laity, as many of the native but fundamentally correct expressions of patients concerning the cause of their troubles indicate.

The chief objection to Freud's assertion of a sexual etiology of the anxiety neurosis concerns the fact that abnormal relations of the sexual life are so exceedingly frequent that they must always be at hand whenever sought. Thus, the existence of these in cases of anxiety neurosis cited does not prove that the etiology of the neurosis lies therein. Further, the number who practise coitus interruptus and the like must be incomparably greater than the number afflicted with anxiety neurosis. In reply to this, it may be asserted that in the recognized tremenddous frequency of the neuroses and of anxiety neurosis in particular, one ought not to expect to find a rare etiological agent; further, that a postulate of pathology is actually fulfilled in this case, namely, that in the investigation of etiology, the etiological agent must be proved more frequent than its result, since for the latter other conditions (as disposition, total of specific etiologies, other banal injuries) may be required; finally, that the detailed analysis of suitable cases of anxiety neurosis proves the significance of the sexual agency beyond dispute.

Perhaps many a one who is entirely ready to take into account the sexual etiology of the nervous malady will still repudiate it as one-sided because he is not requested to direct his attention also to the other agencies commonly mentioned by the authors. It is far from Freud's intention to substitute the sexual etiology of the neuroses for every other, hence he would explain that the efficiency of these remains. Freud means rather that in addition to all the known and probably rightly recognized etiological agencies of the authorities are added the sexual which have not been sufficiently appreciated. It should not be forgotten that the etiological problem of the neuroses is at least as complicated as that of other diseases. A single pathogenic influence is almost never sufficient; for most, a combination of etiological agencies is necessary, which aid one another and which cannot be brought into opposition to one another. The sexual agencies in the etiology of the neuroses deserve, however, according to Freud's estimate, to be assigned a prominent place in the etiological series. For only these will be found missing in no case, these alone are able to produce the neurosis without other assistance, so that the other agencies seem reduced to the role of predisposing or supplementary causes; these alone enable the physician to recognize certain relations between the variety and multitude of clinical pictures. Heredity, which is so strongly emphasized by most authors, is undoubtedly an important factor where it is found; it permits a severe case of illness to result where otherwise only a very mild one would have ensued. Heredity alone is inaccessible to the physician's efforts, while the sexual causes are just those which offer him a good opportunity for his therapeutic activity. The agency of overwork which physicians so gladly tell their patients is the cause of their neurosis, is subjected to excessive abuse. The physicians will have to accustom themselves to explaining to the official who has "overtaxed" himself in his office or the housewife whose household duties have been "too hard," that they are not sick because they have sought to perform duties really easy for a civilized brain, but because they have in the meantime grossly neglected and stifled their sexual life. Whoever approaches the cases from this side will find the proof of how valuable for the anamnesis are these points of view. Naturally, he who would convince himself from his patients whether or not their neuroses are really connected with their sexual life cannot avoid making express inquiries regarding their sexual life and giving a truthful explanation of the same without being diverted from this medical duty by ethically colored arguments. It would facilitate his task if the patients might know with what certainty the trained physician can now detect the meaning of their neurotic difficulties and the inference from these to the real sexual etiology. The semblance of negative cases without sexual etiology, which might be given by a negative result of the examination, is explained by the fact that behind such cases is an anxiety hysteria or obsessional neurosis which the actual neurosis merely imitates. Such hysterias in the form of neurasthenia are not at all rare; a more pentrating investigation by means of psychoanalysis invariably unmasks them. For the very frequent mixed forms of true and psychoneuroses, it is recommended in many cases to overlook at first the psychoneurotic component in the clinical picture and to combat therapeutically the true neurosis; in this way one can sometimes succeed in becoming master also of the separated psychoneurosis.

The anxiety neurosis is such a widespread malady that it is daily encountered in practice. Its prevention would be a weighty social task; still, the elimination of certain injuries is dependent on so many material and social factors that an ideal accomplishment of the task under present civilized conditions is not to be thought of. This much can be said, that only an individual who has no great sexual appetite can endure abstinence and that the entire abstinence before marriage is not to be generally recommended, let alone demanded, since it can lead in many cases to deficient capacity for work and indeed directly to a neurosis. Still, complete abstinence is repeatedly harmless just as frustrated excitement, or methods of imperfect gratification are. Finally, if its necessary for a married couple to go without children, harmless measures for the prevention of conception must be employed which are suited to the tolerance of the individuals participating. Thus, here again, just as in the prophylaxis of neurasthenia, it is shown that these neuroses are rooted in a true sense in our whole present-day sexual morality and that only a thorough change

of our entire social and economic organization can bring humanity the solution of the old inherited evil of nervousness.

511 East Eleventh Street.

A SURVEY OF GASTROINTESTINAL METHODS.*

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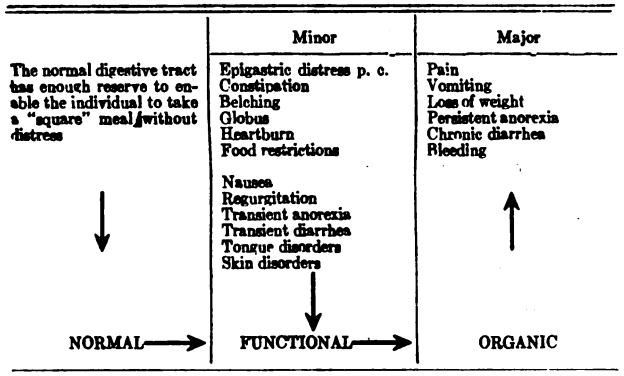
It is the object of this paper to present in a simple way a brief but reasonably comprehensive plan of examining the digestive tract, based on methods which have been shown to give the greatest return, for the time and effort expended, in useful, practical information.

Before taking up in detail some of the basic methods employed in the diagnosis of digestive diseases, let us consider two important characteristics of the gastrointestinal tract. In the first place, we know that it is a matter of some thirty feet from mouth to anus, and that it takes about thirty hours for a meal to travel that distance. In the second place, we know that the digestive tube is under the control of a special block system regulated by a series of mechanical, chemical and nervous factors so linked together as to make the tract responsive not only to its own intrinsic disorders but to those arising almost anywhere in the body. Hence, we must keep in mind from the start two points of practical importance. First, owing to the length of the tract and the length of the digestive cycle, the complete diagnosis of a given case of dyspepsia is more likely to require a long, rather than a short, study in symptoms; and, secondly, many a so-called dyspeptic may have an underlying phthisis, or nephritis, or hypertension, or some other systemic condition, which might just as well be recognized by the first doctor he sees as by some subsequent consultant.

A SCHEME OF DIGESTIVE SYMPTOMS.



The History.—Coming now more directly to our subject, we face the question: How shall we go about finding the cause of a patient's trouble? Undoubtedly the most obvious method is the anamnesis as elicited from the patient. The more one knows about the natural history of digestive disorders the more quickly can one begin the process of narrowing down the possibilities suggested by the patient's story. It is a good practice to begin a cross-examination by asking for the chief complaints and then to develop the history in strict chronological order from the very beginning of symptoms. Sometimes the patient loses sight of early significant details. In such a case it is particularly useful to keep in mind what might be called the minor symptoms of dyspepsia. These are commonly: epigastric distress after meals, constipation, belching, globus, heartburn, food restrictions. Perhaps less often we have nausea, regurgitation, transient anorexia, transient diarrhea, skin and mucous membrane disorders, including those of the tongue. It is obvious that any or all of these may be purely functional manifestations. (See diagram.)

As the history unfolds, a tentative opinion can be formed as to the organic or neurotic nature of the case in hand, with this practical proviso, that any patient showing one or more of the "major" symptoms of indigestion—pain, vomiting, loss of weight, bleeding, persistent anorexia, chronic diarrhea—should be regarded as suffering from organic disease until proven otherwise.

The Physical Examination.—A preliminary general physical survey should never be omitted because in every careful study of patients presenting gastrointestinal lesions a very considerable number of people are found to be suffering from lesions originating elsewhere than in the digestive tract.

A great deal of help can be obtained from sizing up patients in respect to their body habitus. By classing individuals as sthenic or asthenic, stocky or slim, erythic or ptotic, carnivorous or herbivorous, plethoric or lymphatic, depending on the nomenclature we choose to follow, we do something more than pay our respects to the external appearance of the body. It is in this way that we learn to utilize the important principle that body form determines visceral form, and that visceral form, in turn, determines visceral function. From this point of view, the finding of a low liver in a stocky person would generally speak for enlargement; in a slim person it would mean only ptosis. Similarly, in a stocky person a six hour barium residue in the stomach might mean pyloric obstruction, whereas in a slim person it would mean nothing more than a severe atony associated with the ptosis.

By physical examination we are enabled also to check up in a certain sense the amount of importance to be attached to the subjective complaints of the patient. Often, in palpating an abdomen, we elicit points of tenderness, most commonly in the epigastrium or in the right iliac fossa, quite unassociated with rigidity. Are we pressing near the hypersensitive plexuses of a neurotic, or do we have to deal with a local lesion? We owe to Dr. Libman, of New York City, a very simple test which can be applied to decide such questions. Firm pressure over the styloid process, just behind the angle of the jaw, is painful to most people. With a little experience it is easy to form an impression of the amount of complaint made by a "normal" person when this pressure is applied. If an individual winces inordinately he may safely be put down as hypersensitive; if he remains indifferent he may properly be classified as hypo-

*Read before the Lackawanna County Medical Society, Scranton, Pa., September 28, 1920.

sensitive. The more one uses this procedure, the more confidently will he avail himself of this method as a useful yardstick in differential abdominal diagnosis. In just the same way, the response of the knee-jerks may be utilized as a rough measure of general nervous irritability.

The Glenard belt test should be incorporated as a routine part of the examination. This test is performed by supporting the lower abdomen while the patient is standing and noting whether there is a welcome relief from some of the symptoms, such as a feeling of weight, drag, or dull pain in the abdomen or back. A positive response gives a useful therapeutic indication.

As an integral part of the physical examination the patient's weight should be noted. It is really surprising how often this is neglected and yet a continuous weight record is just as important in a "stomach" case as is a temperature chart in a fever case. The scales are practically indispensable in studying such conditions as pyloric obstruction, suspected malignancy, and chronic diarrhea, for example. Offtimes nothing is so effective in combatting the hypochondriasis of a neurasthenic as the objective demonstration of a half pound gain in weight since the last visit.

After the completion of the physical examination the physician is in a position to decide whether the case is of sufficient gravity to require the use of more special gastrointestinal methods. In addition to those very sick patients in whom complete studies are urgently needed there are two other groups which in practice often require thorough examination. I refer first to recent dyspeptics of cancer age, and secondly, to certain neurotics whose only hope of cure lies in a sympathetic and detailed analysis of their trouble.

Tube Findings.—The chief function of the stomach tube is the recovery of stomach contents. With a good apparatus, such as the Ewald evacuator, this end can be accomplished quickly, completely, and with a minimum of discomfort to the patient. The examination is best begun in the morning, aspiration of the fasting stomach being one of the most useful procedures in gastroenterology. This test alone enables us to diagnose three things: hypersecretion, gross retention, and gastric bleeding (the last is uncommon). After the fasting stomach is evacuated a test meal may be administered. It is important to bear in mind that a test meal is a definite amount of a definite kind of food administered to the stomach in a definite state (fasting) to be removed after a definite interval. Experience has shown the futility of expecting most patients to carry out these conditions precisely and it is far better to have the entire procedure supervised by the physician or his assistant. Handled in this way, the following information becomes available: The amount of contents recovered reveals the emptying time of the stomach. Simple chemical tests show the absence, or presence and amount, of acidity. Only the free hydrochloric acid and total acid figures are of clinical importance. Special tests for blood, bile, and lactic acid are generally unnecessary. The presence of the first two is sufficiently revealed by their color. Microscopic examination of anything but suspected tumor tissue is generally not helpful. On the other hand, the odor of the recovered material may be suggestive. Ordinarily, stomach contents are sweet, that is, they have the odor, if any, of the food as swallowed. Incidentally, it may be remarked that fetor *ex ore* is practically never fetor *e ventriculo*. Contents that smell sour, or as of stewed prunes, indicate retention. A foul or putrid smell speaks for malignancy, a fecal odor, for intestinal obstruction.

Special meals are used for estimating the emptying time of the stomach. The Leube meal consists of a small mixed dinner which should normally be evacuated at the end of seven hours. The difficulty with complicated meals is that they are hard to recover and that even a normal stomach requires a fairly long time for the evacuation of the most simple combinations. A much more practical procedure, on the other hand, is the employment of milk (say a pint of milk with or without two eggs beaten in it) as a motor meal. Such a meal is normally evacuated within about five hours and is easy to withdraw. These qualities make it available for a course of repeated observations—a method that is in every way to be preferred to a single test of this important function. In fact, employed in this manner, the procedure becomes of value not only for diagnosing the nature and prognosticating the course of a gastric retention, but, when combined with lavage, for the actual cure of the condition under observation.

Finally, a word as to the best time of day for gastric lavaging. When the stomach is washed at night, as is commonly done, the patient is robbed either of his food, if the procedure is done early, or of his sleep, if done late. By waiting until the morning, on the other hand, the residue of at least three meals is allowed to accumulate and a restless night is invited. It would follow therefore that the best time for the removal of residues and for lavages is just before dinner in the evening. In this way the stomach is not only put in the best condition for the reception and digestion of a heavy meal, but it is given the longest interval in which to do it.

Roentgen Study.—The Roentgen method offers perhaps more information than any other single *laboratory* measure. Both fluoroscopy and radiography should be used together and the patient should be examined in both the standing and reclining postures. It is of course impossible in a survey of this nature to do anything like justice to this aspect of our subject, but a few outstanding points ought not to be omitted. In the first place, the Roentgen method is the method par excellence for the establishment of the exact size, shape and position of the hollow viscera of the digestive tract. As a result, the clumsier methods heretofore in vogue, such as soundings, distention with gas, percussion, and palpation, have been largely supplanted. In the second place, by no other method can we learn so much concerning the exact tonic state of the hollow viscera. The peristolic function of the stomach is a term used by Stiller to denote the ability of the stomach to hold up its contents by the tonic action of its walls. This can be visualized only by the *x*-ray. The impairment of this function, the condition commonly called atony, is equally easy to recognize. Atony can also be suspected from the presence of gas ac-

cumulations, provided that obstructions can be ruled out.

As a means of examining motor functions, also, the Roentgen method gives accurate and comprehensive information. Very slight changes in the normal rate of food progress can be detected and gross obstructions are, as a rule, more easily studied by this than by any other method. Thus, in the case of the esophagus, the Roentgen method has practically superseded the use of bougies and the esophagoscope as a diagnostic agent. In general, it should be stated, however, that although the *fact* of disordered motility is very positively demonstrated by the *x*-ray, its *cause* may not be so clearly shown, and often requires further and independent study.

Occasionally, but rather less often, I believe, than is the general impression, direct evidence of actual lesions is available. Gallstones are about the only lesion that can be seen as such. The diagnosis of new growth, ulcers, and adhesions, is generally inferential. A few words as to cancer of the stomach. Undoubtedly the *x*-ray is the best modern means for diagnosing this condition, and it should never be neglected in cases of dyspepsia occurring past middle life. Cancers of the mid-region of the stomach can be diagnosed readily when filling defects are produced. Cancers at the pylorus cannot often be distinguished from other obstruction-producing causes. Cancer of the cardiac region, unfortunately, is very hard to visualize and is often overlooked. There is a type of cancer, infrequent to be sure, which can be diagnosed readily, and often only, by the *x*-ray, and that is the scirrhus cancer with the associated high, shrunken, clinically impalpable stomach.

Ulcers are not so readily diagnosed as the laity, at least, seems to think. It is the exception, rather than the rule, to find a niche on the lesser curvature or a persistent deformity of the duodenal cap. The syndrome of hypertonus, hyperperistalsis, and initial hypermotility with or without a six hour residue, spells duodenal or pyloric irritation which may originate from stomach, gall bladder, appendix, or bowel. The differentiation depends on other than Roentgen data.

As regards appendicitis, in the acute condition, *x*-ray is out of the question. In recurrent or chronic cases fluoroscopy may reveal localized tenderness and adhesions. If the appendix is filled, still more data are available, such as the position and shape of the organ and whether it is adherent or free.

In the large intestine, such conditions as constipation, adhesions, and obstructions are the chief subjects of study. No examination of the colon is really complete without studying the filling both by mouth and rectum. The barium enema should always be administered under fluoroscopic control, and in general, fluoroscopy of the bowel is even more important, if possible, than that of any other portion of the digestive tract.

In presenting the above sketchy outline, the writer has endeavored to offer a plan of procedure that has worked well in private, dispensary, and army hospital practice. A summary of this sort undoubtedly leaves much to be desired. Yet the progress of gastroenterology is nowadays so rapid that a survey from time to time of the whole field, clinical as well as laboratory, may find a place and perhaps be of value to all of us. It is in this spirit that these lines have been written.

44 WEST 96TH STREET.

MONAKOW'S VIEWS ON CEREBRAL LOCALIZATION.*

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THE problem of cerebral localization has occupied the attention of physiologists for more than half a century and the names of Hitzig, Goltz, Munk, Jackson, Broca, Wernicke, and Charcot are indissolubly connected with it. Experiments on lower animals and observation of diseased conditions in man have greatly enriched our knowledge concerning this subject. By these means physiologists have mapped out in the cortex a visual area, an auditory area, and areas for motor and sensory representation. When, however, we inquire what is actually localized in these areas we must admit that we know very little about it and we can form no adequate conception of what we mean by cerebral activity. The current conception of the visual area in the occipital lobe, that it represents optical ideas, or representations; of the auditory area, that it is the storage of auditory impressions; of Broca's convolution, that it is the center for speech; of the frontal lobes, that they represent intelligence, must, in the light of our present-day knowledge, be discarded. The fault with these conceptions lies in the confounding of two dissimilar viewpoints—namely, the anatomicophysiological and the psychological. When we speak of seeing, hearing, motion, etc., we use psychological terms which have a definite unified meaning, representing as they do simple and unified acts. Physiologically considered, however, they represent complicated processes made up of many components, differently organized in relation to time. In the current psychological conceptions of these terms we easily overlook that apparently the simplest sensory perceptions of the adult have an enormously complicated phylogenetic and ontogenetic developmental history and contain a number of functional elements which are not taken account of in the habitual psychological use of the terms. Clearly, our first aim should be to study our sensations and motions in their component parts before they are brought together into circumscribed cortical areas. And what is here said of sensation and motion should apply with even greater force to highly specialized functions, as when we speak of ideas and intellect.

The fully developed human brain is the end-product of a complicated phylogenetic and ontogenetic evolution extending over centuries and neither its structure nor its functions can be readily understood without reference to its various developmental phases. The most primitive nervous system (*Lumbricus*) is represented by a few sensory and

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ganglionic cells which are brought into relation with each other and with the muscular apparatus and other organs by means of nerve fibers.

The first differentiation of the central nervous system comes from the splitting off of certain ectodermic cells, and the further development consists in greater refinement of the sensory organs serving the better adaptation in the struggle for existence. The phylogenetically young cells develop out of the old and there results a constant shifting of positions of the newly acquired structures cephalad while at the same time they undergo typical changes in organization until they reach the stage of five subdivisions in the higher vertebrata. The earliest organization of the central nervous system consists of a pair of ganglionic masses which are connected with individual organs (molluscs, insects). In the vertebrates this ganglionic system has developed into the metameric system. Even here we find the rudiments of a brain-stem in the form of a thickened knoblike upper extremity of the spinal cord. In the fishes the differentiation is still higher—here we have 5 distinct parts of the brain—the forebrain consisting mainly of the organ of smell. At this stage of development, the roof of the midbrain exhibits an accumulation of cells. It contains the cells for the mechanism of sight, also for whatever psychic activity that being is capable of. In the next higher stage (amphibia, reptiles, etc.) we find definite purposeful combined movements while at the same time there is a further development of the sense organs, leading to perception of hearing, recognition of colors, etc. Alongside of this functional development there is not only a relative increase of the brain, but there is virtually a new central nervous system—to the metameric and midbrain systems are added the system of the cerebrum with its cortical evolution in the neighborhood of the cornu ammonis, also visual and motor areas. This cortical organization and the later developed projection system take over the somatic functions, leaving to the ganglionic, metameric, and midbrain systems the exercise of their former functions. In the highest developed mammalia the nervous functions are expressed more in the direction of individual experiences and of purposeful activity. Such functional increment is accompanied by the development of cortical association areas.

The phylogenetic wandering of a function cephalad can be best shown in the optic tracts and centers. Originally the sense of sight served principally the purpose of orientation in space and the protection of the body. The finer differentiation of the retinal images enabling the creature to distinguish qualities of light and forms was later added in the interests of food acquisition. Even at this low developmental stage the optic apparatus stands in close relationship not only to the mechanism for the eye movements, but to other parts of the body, which serve the animal to orient itself in space. And here we observe that the centers for eye movements which originally, together with the optic centers, were exclusively localized in the midbrain, in their wandering cephalad, were also drawn into the cerebral cortex when such change became necessary in the interest of space orientation. In the cortex they now occupy a position near the optic centers and are so arranged that the turning and fixation of the eyes are exactly and promptly carried out. These new cortical representations of the retina and their corresponding eye movements are closely bound up with local representations of other senses and their muscular mechanisms, which are nothing but reactions to light and skin irritation by appropriate muscular movements. All these centers form a diffusely spread but closed reflex arc, and the sum total of their activities forms the basis for spatial concepts. The migration of the primary optic centers to the occipital cortex and the transition of the midbrain sight to the occipital sight, takes place in the following manner: The cells of the outer geniculate body as well as those which later develop into the optic cortex become detached from the mother-center in the midbrain (fishes), the lateral geniculate body becomes organized into the midbrain and the optical cortex into the occipital lobe, without, however, their severing connections among themselves and with the old optic centers. The cortical optical centers and the cortical centers for eye movements develop together and form the basis for the future higher optical qualities.

Although the phylogenetic and ontogenetic investigations have brought us a better understanding of the gradual development of nervous functions, we are still far from knowing how the numerous connections which are necessary for nerve activity take place. Brain anatomy shows us the connections of the nervous system by means of afferent and efferent fibers, it touches the spatial relations only; but functions have their time as well as space relations, and the more highly organized a function is the greater the time relation becomes. The most important elementary properties of gray matter, Monakow summarizes as follows: (1) The instinct of self-preservation and preservation of the species. (2) The ability to react to external stimuli. (3) The ability to retain impressions—memory. (4) The property of passing into a state of exhaustion following severe exertion and to pass into a condition of shock as a result of severe injury. (5) The property to progressive development and attainment of perfection, by forming new points of contact and new centers of activity.

These properties of the gray matter are very important as they form the basis on which localization of functions may become possible. For the present, however, very little that is definite is known concerning localization. True, anatomical and physiological investigations have greatly enriched our knowledge of localization, but when attempt is made to use scientifically the accumulated knowledge, we at once get into difficulties. When the first experimental observations have shown that injury to definite cortical areas results in disturbances not only of sensation but of higher functions (gnostic, speech, writing, etc.), it appeared then to many as quite evident that in each so-called corticosomatic area not only common sensibility and kinetic impressions are present, but also ideas and representations (optical, acoustic, sensational, etc.), and that each cortical area contains specific sense representations. We began to speak of centers for optical ideas, ideas of movements, speech memories, etc., and the loss of such faculties was ascribed to focal lesions in definite convolutions, etc. Evidence, how-

ever, has gradually been accumulated, especially in recent years, both clinical and physiological, which did not agree with this center theory. It was observed that the symptoms resulting from a definite cortical lesion are more complicated in character than those adherents of the center-theory ever assumed, and in the evaluation of the symptoms not only the seat of the lesion but the time—moment, the duration of the lesion—plays a great rôle. Of course, all authors admitted a certain bodily and sensory representation in the cortex, but which special components of the sensory activity or which higher factors are represented in each cortical sensory area, about this no definite statement could be made. What, however, was especially damaging to the functional theory is the experience that the symptoms following destruction of definite motor or sensory areas frequently disappear rapidly. The loss of function resulting from experimental procedures on lower animals is quickly recovered from even when the extent of the lesion corresponds to the definite sense area mapped out by investigators. The symptoms that remain more or less permanent, especially in bilateral lesions of the cortex, are generally of rudimentary character. What really is lost are certain components of a function but not the function as a whole. Moreover, it was also demonstrated that destruction of definite deep-lying structures (for instance unilateral midbrain lesions or removal of one lobe of the cerebellum) is followed at first by a number of serious disturbances, the majority of which are recovered from, a few, however, remaining permanent. At any rate, the assumption that lesions of definite brain areas result in loss of "ideas" is a highly artificial conception. After destruction of definite areas in the brain, the symptoms may be either of a permanent character, directly resulting from the anatomical lesion, or they may be of a temporary character. The temporary symptoms as a rule accompany the permanent symptoms, they disappear after a variable length of time, depending upon the seat and extent of the lesion and whether the tissue affected was healthy or already the seat of disease. The permanent symptoms are as a rule relatively coarse—total or partial hemiplegia, loss or reflexes or of coordination, hemianopsia, etc., and the study of these permanent defects has been most helpful in giving us an insight into the structure of the nervous system and localization of functions.

How should we explain the temporary symptoms? Their origin is admittedly dependent upon the focal lesion or circulatory disturbances (for instance, aphasias.) Agnostic disturbances are due to lesions of branches of the anterior or middle cerebral arteries, but a definite and regular relationship between the seat of the injury and the symptom-complex, as where the symptoms are permanent, does not exist. Most authors make no distinction between temporary and permanent symptoms as far as localization is concerned, others assume that they are the result of inflammatory conditions. The current explanation of the gradual restoration of function notwithstanding the persistence of the lesion (recovery from aphasic disorders for example) is that the unaffected part in the neighborhood of the lesion or the corresponding area in the opposite hemisphere assumes a vicarious function. Monakow is strongly opposed to this substitution hypothesis. He argues that the building up of a new function in an area originally foreign to it is highly improbable. Many such functions are of high order requiring years of exercise for their full development (for instance, speech). Such functions of a highly specialized order may return in a very short time after the destruction of their hypothetical centers. Furthermore, the assumption of such functions as speech, sight or praxia has been relegated to convolutions which are not infrequently themselves the seat of disease or exhaustion. When, in addition, it is remembered that return of function is frequently complete, while it must be assumed that every newly acquired function must of necessity be at the expense of the centers which originally were endowed with this function, it will become apparent that the substitution or vicarious hypothesis has no basis for its support. Monakow here advances his own hypothesis—the restoration of function is due to gradual resumption of activity on the part of an area which was temporarily in a state of passive blocking, because of its connection with the seat of the lesion by means of nerve fibers. This conception leads us to his theory of shock. He classifies shock as follows:

1. *Psychic shock* brought about by powerful emotions, fear, etc. Here are included hysterical paralyses, hysterical blindness, etc. It is probable that the sympathetic system is here involved.

2. *Surgical shock,* or surgical stupor, brought about by severe injuries of bodily organs, skin, or nerves.

3. The shock-like state due to brain concussion or loss of continuity of brain tissue, hemorrhages, etc.

4. To these three forms of shock, Monakow adds a fourth which he names *diaschisis*—splitting of function through loss of one of its directing parts (local shock). Diaschisis also results from severe brain injuries, but the area affected is more nearly circumscribed; its spread is along definite channels. Clinically, the symptomatology varies, depending upon the fibers injured, whether these lead to the periphery or to the opposite hemisphere or serve purposes of association; so we have diaschisis, cerebro-spinalis, diaschisis commissuralis, associative diaschisis, etc. The diaschisis can be of brief duration, become permanent, or pass into the apoplectic shock and produce death. As an example of diaschisis without any anatomical change may be mentioned the loss of pupillary and patellar reflexes after an epileptic attack, or temporary loss of speech after head injuries. Where, therefore, we have before us temporary symptoms, not explainable on pathological grounds, but in close association with a definite lesion, and especially where there is a rapid restitution of function highly specialized, we must assume not a vicarious process or newly developed functions, but the setting free of nervous elements from a condition of diaschisis. That the problem of localization of functions becomes more involved as we proceed is now quite evident.

In the present stage of our knowledge, we can

speak of localization only in a general sense, keeping in mind possibilities rather than actualities. We must bear in mind that even the simplest nervous acts are complicated phenomena and that we cannot speak of localization *in toto*, but only of localization of the component parts. We should consider localization of sense impressions, of various forms of movements, of sense qualities, of time relations, synchronous or successive localization; there is the problem of the mneme—our memories. The principles of localization can be also applied to the consideration of various instincts. Experiment and clinical observation have shown that any cerebral convolution may be removed without affecting the feelings; pain, desire, fear, joy, anger, etc., even in the absence of the cerebrum, still remain, though in a much diminished quantity. We must assume that each cortical area is furnished with such feelings, so that after destruction of a large part of the visual cortex pleasurable and painful sensations from the retina, and after destruction of the temporal cortex in sensory aphasia, these same sensations are no longer appreciated. This occurs even then when the part of the cortex remaining sound is so large that its functioning is not interfered with and the corresponding sensory stimuli are still appreciated. Soul-blind people are notoriously indifferent to optical impressions, and word-deaf people to sound impressions.

The best known localized areas are those of the corticosomatic system. In complicated activity the whole nervous system is involved. In locomotion, for instance, the metameric system (spinal cord) furnishes the control of the successive steps; the cerebellar system, the factors for correct posture, equilibrium in station and motion and the unconscious finer movements; the midbrain holds the balance of the various metameric parts together, that is, it coordinates their activities; while the brain undertakes the regulation of impulses, the guidance of the whole, the orientation in space, furnishes the mental component of the locomotion, and finally determines the purpose of the whole complex activity. Of all cortical areas the best known is the visual area in the occipital lobe. Even here we cannot speak of centers for complete sight, or visual images in a psychologic sense. Such do not exist. What is localized there is the mechanism whereby the eyes turn in the direction of the source of light. On the other hand we know little about the order, organization, and extent of those paths in the cortex which lead directly to the macula lutea which is the place of conscious vision. We do know, however, that an individual may be deprived of both his visual cortical areas, may go about like a blind man, unable to orient himself in space, in whom light from any part of the retina no longer produce movements of the eyes in the direction of the source of light, and yet may not only have sensations of light (from some unknown cortical area) but can even read print. In short, according to our present knowledge we must sharply differentiate vision serving orientation from mental grasp of the seen—cognitive seeing. The same may be said of cortical area for hearing; the loss of both temporal lobes by softening does not preclude understanding of spoken language.

What should we say about the localization of higher functions, of conscious orientation in the gnostic sense, of symbols and language signs, praxia and apperception? To answer these questions, we must again return to the origin of nervous functions in their earliest stages of development. Here we find that higher functions develop out of lower and the lowest are reducible in the last analysis to the elementary sensations and reflexes and these are depended on the neurons in the various systems. The actions and interactions of these systems and the conversion of potential into actual stimuli and vice versa furnish the basis for the future development of the higher functions, engram-complexes, as Semon termed them, by which we understand ideas, perception, memories, etc. These spread out beyond the confines of the cortical somatic areas and become so to say the property of the whole brain. And a differentiation of these engram-complexes is possible only in the sense of chronological cortical strata—in other words, along the lines of the development of these functions, some of which become apparent only through diaschisis, after focal lesions, as fragments of remaining functions.

Viewed at from this angle, localization is seen as subject to constant change and embraces all the numerous developmental phases which we can only roughly and schematically reconstruct on the basis of our phylogenetic and ontogenetic studies. We are not justified to confine within strict limits, to bound by geometrical lines nervous activity, even of the simplest kind. Each cortical area or stratum will have a fairly definite physiological role assigned to it, but in each there will also be unknown components of other functions—we can speak here of a multiplicity of centers. There are undoubtedly performances with an anatomical localization which is relatively circumscribed; these are in the first instance the reflexes and reflex actions. Even here we must note that for the organization and realization of even the simplest reflexes, several systems of neurons are invoked, namely ganglionic, metameric, midbrain, and cortical systems and that they all combine to produce the reflex, so that we have here a *polymorphous representation*. What is especially interesting is that the cortex plays a definite rôle in the reflexes (and contributes a very important component of it, for instance in the plantar reflex, so that in certain localized destructions of the cortex the reflexes become split) due to loss of the cortical component. Such splitting is at times permanent; no substitution is possible. The reflexes form the basis for the other nervous functions since the more complicated nervous activities differ from the reflexes mainly through the increasing complexity of their chronological structure. The more complicated a nervous activity is, the more complicated the coordination of its parts are, the greater the number of polymorphous components that take part in the realization of an act, the greater is the extent of the brain surface over which the "function" spreads out. Yet, in lesions, it is possible here to isolate artificially certain somatic and sensory components. In the highest functions, which differ from lower functions more in their relations of time than locality and which have developed gradually, where memory plays a prominent rôle we can speak only of localization in the sense of development or de-

generation, that is a constantly changing localization. Monakow concludes that his theory of diaschisis, in conjunction with other forms of shock, forms the connecting link uniting the nervous functions capable of localization with those incapable of it. The diaschisis is nothing else but a temporary break in the activity of the highest functions. It engenders a struggle for the maintenance of the life of the function. This struggle has its counterpart in the constant conflict of the normal nervous impulses of our daily life. And, fundamentally considered, every nervous function is the result of a struggle which the various central systems, since the beginning of their phylogenetic development, have carried on and are still carrying on among themselves and with the outer world.

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STAMMERING, AS IT IS.

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Four years ago Fletcher wrote in regard to stammering, "The sufferers from this affliction have looked to the medical profession for relief since the existence of that profession and have looked in vain. While medicine has made almost unexampled progress in the understanding and treatment of known diseases, and has added to the list of those that were formerly unknown, regarding this old, old malady, whose record dates back at least to the Egyptian hieroglyphics, there is in the medical world of to-day little more than a confusion of personal opinions and theories. . . . This subject is of sufficient importance to deserve better treatment."[1] This arraignment of Fletcher's, although it fails to give the profession credit for Dr. Liebmann's work, is not overdrawn in respect to the confusion; and it is as true to-day as it was four years ago. Those who have real regard for humanity and science and the medical profession will endeavor to reduce that confusion.

Before we can reduce the confusion we must realize the causes of it, and a little reading of the subject will show one cause to be mixed truth and error. Take a current example. Not long ago Dr. Kenyon made two contributions to the subject, a rather elaborate thesis[2] and a short article.[3] These are valuable in that they show the habit nature of the disorder, even in its details; but their value is largely nullified in that they pronounce the disorder to be developmental. Rectification was of course necessary. Dr. Swift attempted it.[4] He properly shows the invalidity of the developmental allegation, but he denies the emotion of stammering. In short, he corrects one error but sets up a more serious error. Now what chance is there of getting the truth when every move in that direction is saturated with error?

In Dr. Martin's article entitled "Stammering," published in the Medical Record of May 29, 1920, although the proportion of truth is large, still there is a modicum of error. Let us endeavor to make it all truth. And let us further endeavor to make the truth convincing. If that article can be revised from what it contains and can be made thoroughly consistent, then the reader ought to be convinced that the revision is reliable and instead of accepting it on the authority basis with necessary reservations, he can accept it on the reason basis with dependability.

Dr. Martin tells us the nature of the disorder, and with slight interpretation of his account we may obtain a clear conception of it. He says: "A patient may, for instance, try to say 'mother' with his mouth wide open—an impossible position for the letter 'm,' which requires the lips pressed together. The indellible impression made upon the mind of the stammerer by his effort to speak, increases the physiological cause of his suffering. When laboring under the compulsive idea that he is unable to articulate normally there is an undue amount of nerve energy released by his brain in the attempt to control the organs of speech. The muscles laboring under this excessive innervation become rigid, jammed together, and a general juxtaposition results."

Now in the interpretation of Dr. Martin's descriptions, in order to be backed by high medical authority and to avoid suspicion of bias, I will, for the general interpretation, quote Dr. Liebmann's words regarding the stammerer: "If he has to speak, he becomes excited and makes voluntary efforts intended to bring out the 'difficult' sound, but which really obstruct it."[5]

Before we take up the special interpretation it is advisable to bear in mind that normal speech is automatic and that the stammerer's efforts are voluntary. Credit for this distinction is also largely due to Dr. Liebmann.

When the stammering child wants to say "mother" it remembers the humiliation of past failures in uttering that sound. It has been laughed at or reproved. In order to avoid further humiliation it makes a conscious effort to say the word, but no one knows how he talks, so the effort is misdirected. In this case the child probably reasons, "I must open my mouth in order to say the word," and it opens its mouth too soon, thereby obstructing its normal speech. For this failure it is further humiliated, and this humiliation goes to increase its dread of speech difficulty and its determination to make more effort to talk. The habit is self-intensifying to an appalling degree. One point more is necessary. How does it begin? It begins by a temporary interruption to normal speech. There is no question about this in the cases acquired by imitation. The imitator consciously impedes his normal speech and no serious consequences follow until the fear arises. Some one tells him he is likely to catch it or he remembers an imitator who has caught it or in some other way he is induced to make a voluntary effort to avoid catching it. That fright-impelled effort is misdirected and obstructs normal speech. Somebody laughs or mocks and the chain of misery is begun, probably to end only in the grave, not infrequently self-sought; and in spite of anywhere from half-a-million to a million such cases in the country, the score or more of writers on the subject please themselves by juggling personal opinions that keep up the confusion and its consequent appalling misery. Accidents and incidents also cause the temporary interruption which induces the disorder. A fall, a sickness, a fright will temporarily incapacitate normal speech and then the conscious effort is begun.

If the above conception of stammering is valid it will harmonize all features of Dr. Martin's discussion, sustaining the truths and amending the errors, and the discussion itself will justify the conception, warranting its acceptance by the reader. One thing should be kept in mind, namely, that although the origin of stammering is largely an unavoidable consequence of the peculiarities of the speech faculty, the continuance of stammering is an avoidable consequence of the cruelty of the human race. The stammerer would recover if society did not drive him deeper and deeper into his misery. Society humiliates him if he does not do as normal talkers do: if he does not answer questions, telephone, dictate, introduce friends, exchange greetings—in short, if he does not conform with speech conventions which are made for normal talkers but are inimical to him. He is discharged from work or given inferior work, he is considered queer, he is ridiculed or scorned. In order to avoid this injustice he continues his efforts to talk, not realizing that they constitute the actual trouble; and so he is forced into his impediment, for every convulsive effort induces more and worse efforts.

Possibly one more point will help to a clearer understanding of the disorder, and consequently of Dr. Martin's discussion, and that is the recovery. Notice the word "recovery"—not cure. As we have shown, the stammerer interrupts his normal speech; so necessarily he has normal speech, else he could not interrupt it. Moreover, he uses his normal speech when he is not embarrassed. Most stammerers do far more normal talking than they do stammering. The stammerers who approach muteness are almost invariably those unfortunates whose impediment has been intensified by the prevailing treatments. But every stammerer does some normal talking; and this is the means of recovery, for it instills confidence of speech ability just as the stammering instills doubt of speech ability. The recovery of the girls, a fact as obtrusive as it is avoided, is an illustration of this recovery. Their environment facilitates normal speech and discourages indulgence in stammering; so the fear of speech difficulty wanes to disappearance and normal speech then prevails. A considerable proportion of male stammerers recover by the same means. Roughly, the time necessary for recovery is proportional to the extent of indulgence in the stammering. A child who has stammered for only a few days will recover quickly if it is not allowed to stammer, but a man who has stammered for most of his life will not entirely recover for several years. He may, of course, be brought to fluency by an artificial environment in which he is relieved of speech responsibility, but years of that fluency are necessary to dissipate totally the memories of past failures.

Now let us take up the statements of Dr. Martin which agree with this conception of stammering taken from his own description.

"Ignorance of this subject is appalling among those who have the care of children." This is perfectly true, and it is also true of most of those who attempt to instruct those who have the care of children. A medical friend whom I interested in the subject set himself to learn about it by reading the medical literature on the subject, and he wrote me that he was perfectly confused by it. That result was practically inevitable, as may be realized from the fact that the three popular theories of the subject, namely, "transient auditory amnesia," "visual asthenia," and Freudianism are each and all fallacions, yet a considerable proportion of the current contributions to the subject are expositions or variations of these theories. The public is not to blame for its ignorance of the subject. The blame rests with those who disseminate the misinformation.

"Physical obstructions of the air passages seldom bear a direct relation to stammering. They may, perhaps, be causal agents through interference with clear enunciation or perfect articulation, but cannot be considered a cause *per se*." This is a clear view in face of the fact that a great proportion of the discussions are to the contrary. Dr. Makuen was a firm believer that nose and throat affections had an etiological relation to stammering, and it was only shortly before his death that he came to the conclusion that "stammering is a psychical rather than a physical disorder." We can readily see that Dr. Martin might have gone further and said that physical obstruction of the air passages has no relation to the disorder. Since the continuing cause is the fear of speech difficulty, the obstruction could not be, or contribute to, the continuing cause; so, if it had any causal relation, it could only be as an inducing cause. But there is no apparent way in which obstructed—partially obstructed—air passages could induce the conscious, misdirected effort at speech. A stammerer may have catarrh. Many stammerers do. But no relation between the two affections has ever been shown, and the nature of the disorder indicates that there is no relation; so it is wrong to allege one.

"Nor does nervousness cause stammering, as commonly supposed." Here, again, Dr. Martin is right, and the subject is important. Although the popular theories hold the field by reason of their novelty, the great resort as a cause of stammering is nervousness. For lack of a known cause it holds the place in stammering that "heart failure" does in mortality; and it is pleasing to hear an authority speak against it. Most stammerers are nervous. They are pestered beyond the comprehension of a normal speaking person. They are almost never free from planning and scheming to express themselves without stammering. They arrange and rearrange their comings and goings to that end. They construct and reconstruct their conversation, keeping in mind sets of remarks for each expected contingency. But every contingency cannot be foreseen, and, in spite of the prodigious mental effort, stammering is unavoidable. The wretched victim of misapplied convention blushes, sweats, writhes, and inwardly curses the fate that blights almost every feature of his life. Nervous? Yes. Who would not be nervous under the circumstances? But the nervousness is resultant, not causal.

"A common fallacy in attempting to correct a case is to ask the stammerer to take a breath before speaking each word or group of words. The

fact that he is made to realize that he must take a breath recalls to his mind his inability to speak as others do. He even recalls the mental pictures of his past suffering and fear predominates to such a degree that all the coordination of nerves controlling speech is temporarily destroyed." This is such a good account of the effect of breathing exercises, namely to intensify the stammering, that one hesitates to correct any portion of it. However, the nerve coordination is not destroyed any more than the coordination of one's optical nerves is destroyed if the sight is obstructed by holding the hand over the eyes. The sight is blocked, but there is no upset in the visual mechanism. And that is true of stammering. The speech mechanism is in perfect order, ready to run, but the voluntary effort blocks the running. Anyone can prove that for himself. Let him hold his mouth open or shut and try to talk at the same time. He will to all appearances be stammering, but his nerves and his cerebrum are in perfect order, as he will find if he desists from the obstructive effort and allows his speech to operate. The grand mistake that practically all the investigators make is to translate the struggle from the peripheral organs to the central organs. Why not see things as they are? Indeed, any but a blind man can see the peripheral struggle, and many investigators—Denhardt among them—show photographs of the contorted muscles. Now be content with that, for a scientific deduction is merely a comprehensible description. But to change the facts and allege an internal struggle is the reverse of science—it is superstition. No valid evidence of an internal struggle has ever been presented, and the disorder is fully accounted for by the external struggle, of course taken in connection with the impelling fright.

Let us return to the breathing exercises. In pre-war days when every German practice was considered worthy of emulation merely from the fact that it was German, the breathing exercises were considered to be the most important feature of practically every treatment. Specialists and would-be specialists were determined to force the German system of treating stammering into our schools, and in some cases they succeeded. However, Dr. Martin tells us, and tells us truly, that the breathing exercises inculcate stammering. Consider, then, that stammering children in the public schools are being forced deeper into their affliction by treatments advertised to be beneficial but really intensifiers of the disorder. Read the reports of these treatments forced on the stammerers and you will find the breathing exercises still extensively used. But how can they be reported beneficial? For the simple reason that any distraction is a temporary reliever of stammering, and the exercises when new, and especially when practised in a non-embarrassing environment, afford a distraction which brings about temporary fluency, generally advertised as cure. In reality, in the child's natural environment, its efforts to breathe as it is taught, keep its difficulty in mind and thereby increase it. Credit to Dr. Martin for showing the mistake of this treatment and credit to Dr. Liebmann, who since twenty years ago has been a voice crying in the wilderness against it.

Now let us take up the features in which Dr. Martin's article fails to agree with his description of stammering. He says, "It is difficult to discover any cogent reason for stammering, for the original causes may be remote, having left only the effect." That seems to indicate failure to grasp his own description completely. What is difficult about it? A boy cultivates the habit of interfering with his normal speech, and fearing to contract the disorder, persists in interfering, not realizing that he is blocking his speech with every voluntary effort. Each effort increases his impression of speech disability, so the disorder grows on him. The course of events is perfectly logical and perfectly in accord with the observed and frequently recorded facts. Stammering is no longer a mystery.

"In the correction of speech defects it must always be remembered that each case must be solved as a personal equation." This belief was formerly fairly extensive from the fact that no two stammerers feared the same group of sounds, but since the appearance of Freudianism we hear it proclaimed by nearly every authority. In fact, there is no real basis for it. The stammerer fears the sounds with which he has had trouble, and these have some tendency to become stereotyped, for he will make further effort to avoid difficulty with them and thereby will continue the difficulty. But the course of recovery is identical with every stammerer, namely to "cut out" the stammering and to cultivate the fluent talking.

"The teacher is kindest who makes him prove that he can speak—when she forces him to overcome the handicaps of the class room." This is refuted by almost universal testimony and by the nature of the disorder. Rudolf Denhardt's testimony is convincing. He says, "For many stammering children the entrance in school inaugurates a significant period in the development of their impediment in which spring up new and grave dangers. The increased demands which the lessons place on their speech, the apprehension of making an exposure of their impediment before their comrades and becoming a welcome prey to ridicule; the anxiety regarding the opinion of the teacher; the not always appropriate treatment of the stammerers by the teacher; the realization coming first on the school bench with full force, of reduction in grade through no fault of their own, below others of no more ability—all this combines to engender in the soul of the stammerer every feeling which contributes to the increase of his impediment."[10] Evidently Denhardt does not find the conventional school treatment the kindest thing to the stammerer, and Denhardt gives his reasons instead of making a dogmatic statement. Albert Gutzmann says, "The school conditions—or similar ones elsewhere—call out the feelings of anxiety and shame and the impediment wins the mastery over the individual."[11] H. Gutzmann says, "Anxiety in the presence of the teacher, shame in the presence of the school children increase the trouble extraordinarily, and that in a very short time."[11] Dr. Wile says "Under ordinary circumstances the very act of recitation increases and tends to protract the disability."[12] I could fill a page of the MEDICAL RECORD with such testimony

from records at hand, and am confident that I could fill a whole number with a little research. But what is the use of multiplying evidence of what is evident? We have already shown that the custom of forcing the stammerer to talk is responsible for the continuance of the disorder. If he was allowed to take his time or not to talk at all when tired, ill, or discouraged, the fluent periods would remove the fear of disability and he would recover. He is constantly scheming to avoid stammering, but society as constantly forces him into it. Here in our supposed-to-be enlightened and Christian land we are forcing three hundred thousand stammerers into lives of misery in our public schools, and although the Commissioner of Education has repeatedly had the fact brought to his attention, he declines to use his influence to stop it."

"In my treatments I use a series of vocal gymnastics which I have carefully developed. The faithful practice of these exercises will not only intensify the auditory images of the stammerer. . . ." In "auditory images" we find the "auditory amnesia theory" cropping up again. It is hydra-headed. Whether or not these exercises intensify the auditory image is immaterial. Stammering is independent of the auditory image. The big question is, "Are the vocal gymnastics beneficial?" Dr. Liebmann says they are injurious, and he eschewed them along with the breathing exercises years ago. What is the effect of the exercises? Dr. Martin tells us that they have the effect of "focusing the attention upon direct control of the muscles employed." But that is the stammerer's trouble—conscious effort at speech; and just what it is necessary to avoid. Dr. Martin recognizes such necessity for avoiding the breathing exercises, but he fails to see that it is equally true of the vocal exercises. Let us pause a minute and take a broad view of the situation.

Why were breathing exercises and vocal exercises ever used? For the simple reason that it was thought the stammerer needed to be taught how to breathe and how to talk; our predecessors thought that the stammerer was deficient in these two functions. What was the result? It was temporary improvement and generally ultimate intensification of the disorder. Oh, I know, for I went through it—many times. A few, whose environment is favorable, may progress to recovery, *in spite* of the treatments. The proportion of recoveries, and after years of time, is variously put at from 1 per cent. to 10 per cent. Of the many cures which I attended I do not know of one recovery at the cure, and I do know that most of the attendants continued to stammer worse than when they originally took the cure, and after repeated treatments. What is the situation now? It is that we are very slowly coming to realize—what was always evident—that the stammerer's breathing and speaking are all right when he ceases to interfere with them. Leave him alone and he talks to himself fluently, hypnotize him and tell him that he is an orator and he orates, elate him and he is fluent, enrage him to the extent that he forgets his idea of speech disability and he will express his feelings without a hitch. He knows how to breathe and to talk, and, what is more, he knows these things better than anyone can teach him. His trouble is that he interferes with his speech by conscious speech efforts, and the exercises encourage him to do it more so. It is much to Dr. Martin's credit that he has spoken up regarding the intensifying effect of the breathing exercises; but he has still another step to take, which is to put the vocal exercises in the same class.

In closing it might be well to outline what should be done with stammering. Certainly we should cease from intensifying it. The public schools are the big factor in the continuation of the disorder, not only by making the stammerer worse but by favoring the contagion. The stammering child should be allowed to write his recitations and should be forbidden to stammer on school property. This one reform would within a few decades extirpate the disorder, for even severe stammerers would recover during the ten years of schooling. However, a five-year intensive campaign for the extirpation of stammering shows such a reform to be unpopular. The cure is wanted. "Give us the cure." Let me outline that again." To begin with, except at the very inception of the disorder there is no recovery sufficiently quick to warrant the name cure. Tell me how to destroy memory of speech difficulty without deleterious results and I will tell you a quick cure for stammering—otherwise not. One who long walks the path of the stammerer has a long walk back—not necessarily as long as the walk in, for a favorable environment may produce fairly rapid results. The means of recovery is the reverse of the means of cultivation of the disorder. The fear of speech difficulty was built up of repeated speech failures, and that fear can be removed only by repeated speech successes, and, of course, by desistence from further failures. First, the environment which conduces to fluency must be provided. such as freedom from speech responsibility, from embarrassment, weariness, and anything of a depressing nature. Hygiene is beneficial in that it contributes to buoyancy, and that contributes to fluency. Every stammerer should always carry a pad and pencil and the determination to use them rather than stammer, for without the latter they are useless. He should have congenial company, preferably one companion at a time, and should be kept talking, fluently. At first his remarks will be short, for he can not say many words without remembering trouble with a coming one and making trouble when it arrives. Thereupon he should check himself, or be checked, and should do anything but stammer. He may "let it go," he may write it, he may use a synonym; but in any case he should avoid stammering. There is no valid reason why the institutions now treating stammering by methods which intensify the disorder should not treat it by this rational and beneficial method. The environment is there, and the associates are there, for two stammerers will often converse with comparative fluency on account of the bond of sympathy between them. Recovery will not ensue at the treatment unless the stammerer makes a long residence there. Apparent recovery, that is, complete fluency, may occur, just as it does with the present treatments; but the

underlying fear will still be there, just as it is with the present treatments, ready to spring into full strength with a few speech failures. Complete subjugation of it is possible only by consistent maintenance of the regimen. Dr. Kenyon is right in saying that real recovery must occur in the stammerer's natural environment.[15] He must learn to keep the fear in subjugation there before he is master of his speech. The temporary uplift and the proper course of procedure may be obtained at the treatment, but the ultimate recovery must be patiently worked out under the circumstances in which the stammerer lives.

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THE TREATMENT OF GASTRIC ACHYLIA.

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WHEN achylia gastrica is due to malignant disease of the stomach or elsewhere, the treatment is, of course, surgical. When achylia is due to gall-bladder disease, again the cause is treated. Of Lockwood's (1) 153 cases of achylia only four were malignant. Of the remaining 149, 33 were associated with gall-bladder disease. This leaves 116, over 75 per cent. to be accounted for by other means. In these remaining cases the causes are not clear-cut and definite. Suggestions that there is a local catarrh affecting the stomach glands, that there is a primary atrophy of the tubules, or that irritative or infective foci outside the stomach cause the condition, are attractive and plausible. They do not, however, indicate successful treatment aimed at the cause.

A number, possibly large, of individuals with gastric achylia present no symptoms and receive no treatment. It seems reasonable to think that in such people the pancreatic digestion compensates for the loss of gastric digestion. The treatment of patients with symptoms consists in making use of the pancreatic digestion, in restoring the reservoir action of the stomach with slow transference of small amounts of chyme to the duodenum and in taking such steps as are possible to restore to the stomach its normal secretion.

Diet.—The food prescribed must be bland so as not to aggravate or induce catarrh of the stomach. It must be selected of foods suitable for pancreatic digestion. It must be cooked properly and served in a finely divided condition. Meats must be so cooked that the connective tissue framework is softened and the sections of meat separate readily. Boiling and stewing are satisfactory methods of preparation. Roast lamb is physically better adapted for digestion than roast beef. Fried and broiled meats should not be allowed. Fish is suitable for the achylic dietary and is usually well borne. The vegetables allowed should be tender ones, such as can be passed through a purée sieve. Just how much of the subdivision of these foods can be done by the patient and how much should be done for him will vary in different cases. If the patient is able to chew his food well and will do so, he may be allowed to have his vegetables served whole and his meat without mincing. If however he has not sufficient teeth or his teeth cannot be put in proper condition, or he will not take the time and pains to masticate well, his vegetables should be puréed and his meat minced. It is often worth while to ask the patient if he is chewing his food thirty-two times to each mouthful and to explain again and again the advantages of so doing. Once established such a habit is of great value and not likely to be given up. Cereals should be well cooked. Salad and raw fruit should not be taken.

The following is the diet list used by the author. Directions may be added to the margins, and changes to suit the individual case are easily made.

(A) Diet.

Breakfast:

Orange juice, grapefruit juice or pineapple juice.
Oatmeal which has been cooked three hours or more, cream of wheat or hominy with salt or sugar, and cream.
One slice of lean bacon or one soft boiled or poached egg. Toast or rolls with butter.
Marmalade or strained jelly or honey.
Tea, coffee or cocoa.

Midmorning:

A glass of milk or buttermilk with three or four saltines or a glass of malted milk.

Luncheon:

Clear broth or cream soup.
Any fresh fish, boiled or baked.
Roast chicken, turkey or lamb, stewed beef or lamb. The meat should be very well cooked.
Potatoes in any form except fried. Any vegetable which can be put through a purée sieve.
Macaroni or spaghetti.
Any simple dessert as ice cream, custard, farina, blanc mange, corn starch pudding, tapioca pudding, baked apple with cream, prune soufflé, simple cake or pastry.

Midafternoon:

Anything on the midmorning list. Cream cheese sandwich, simple cake or toasted muffins with tea or milk.

Dinner:

Anything on the luncheon list.
Olives, caviar, anchovy or sardines.
Bread and butter. Any cheese.

General Medical Treatment.—The amount of gastric juice secreted in twenty-four hours has been estimated at three pints (2). Carlson (3)

found 700 mils: secreted in four hours after a meal of meat, bread, vegetables, coffee and dessert. It is difficult to understand how twenty drops of a 10 per cent. solution of hydrochloric acid three times a day can have much effect on the digestion of an individual's food when his own hydrochloric acid is absent. However, many cases are relieved at once by such a dose, remain so relieved as long as it is taken, and soon have their symptoms again when the acid is stopped. On the other hand, hydrochloric acid sometimes gives no relief whatever. It seems probable that where symptoms are helped or stopped altogether, the hydrochloric acid acts by one or both of two means: It may stimulate or help to stimulate the pancreatic secretion; it may restore the reservoir action of the stomach. For when acid chyme is passed into the duodenum, the pylorus closes reflexly and remains so closed until that acid is neutralized by the pancreatic secretion. So that the chyme in the stomach passes little by little into the duodenum rather than overwhelming it with large units which cannot be properly acted on in the duodenum by the pancreatic juice. The hydrochloric acid may be given, twenty minims of the dilute in a glass of water to be drunk during the meal, or it may be flavored with syrup or tincture of lemon and sweetened with sugar.

That gastric secretion may be re-established should never be lost sight of. Meat extracts, of which there are several advertised and popular brands, are sometimes useful. A meat powder may be prepared by drying finely chopped lean beef over a water bath, scraping the residue into a mortar with a spatula and powdering. The powder is mixed, a teaspoonful or two to the cup of hot water. This is taken well seasoned with salt and pepper twice a day before meals. Meat, its extractives and powders, will increase acidity where the stomach is already manufacturing some acid. It will probably assist in re-establishing the acid of stomach juice where that acid is absent due to a suspension of the acid forming property of the gastric glands. Clear broth taken before luncheon and dinner serves the purpose nearly as well.

Drugs which directly stimulate the production of gastric juice are pilocarpine, choline and morphine. These are obviously unfitted for clinical use as Meyer and Gottlieb (4) have pointed out. Calcium salts and parathyroid gland are of no benefit.

Eyes.—Disease of the eye may cause functional stomach disorder. In 1894 Stockton (5) suggested that eye trouble, particularly astigmatism, might cause gastric achylia. It is well to have the eyes of the patient examined, and if astigmatic, corrected. Little can be promised from this procedure alone, however.

Mouth.—It is most important that the patient's mouth be put in as good condition as possible. The teeth should be examined by X-ray and a competent dentist should treat as indicated. Once in order, the teeth should not be neglected but should be examined at regular intervals. One part of the digestive sequence having been removed, the remaining parts must do extra work. An effective routine consists in brushing the teeth and washing the mouth the first thing in the morning with a solution of one-half vinegar and one-half water. After this the teeth should again be brushed and the mouth rinsed with a solution of a teaspoonful of bicarbonate of soda to the glass of water. At night a good dentifrice may be used. This procedure will usually relieve the bad taste in the mouth from which so many achylic patients complain.

Any focus of infection may contribute to the production of gastric achylia. The tonsils should be examined and if diseased should be treated or removed. Examination should be made of the antra and sinuses and inquiry made as to middle ear disease. The indicated treatment should, of course, be carried out.

Lungs.—Achylia is met with following acute infections. Recovery is usually spontaneous and rapid. It often accompanies chronic infections particularly tuberculosis and syphilis. It is well to carefully examine the patient for evidences of either of these diseases. If tuberculosis is present the achylia must be taken into consideration, and the institution of proper diet and other measures will often be of the greatest help in promoting nutrition and helping the tuberculosis.

Stomach.—The occasional patient will complain of an indefinite distress after eating. Sometimes it is described as "acidity" or "heartburn." Rarely there are "acid" eructations. It is sometimes difficult to convince patients that they have no acid in their gastric juice, so strong is their belief that they taste acid chyme. In these cases the small meals in midmorning and midafternoon are of great benefit, and should be prescribed as a routine, as they have the further virtue of reducing the bulk of the other three meals, which is an advantage where the reservoir function of the stomach is disturbed. Where it is impossible for the patient to arrange these small meals a glass of water will usually relieve the distress.

Intestines.—Diarrhea may be of two forms, that coming in the morning, leaving the patient free for the rest of the day, and another form coming in attacks without morning incidence, responding to treatment but recurring after a longer or shorter interval. With the morning diarrhea, the patient has ordinarily from one to four or more loose movements, coming before or after breakfast or both. This may occasion the patient no discomfort or may be accompanied by the rumbling of gas, a sense of distension in the abdomen, or even cramp-like pains. When coming in attacks it may be all grades from a few mild loose movements to severe seizures. In the former variety no special treatment directed to the intestines is necessary. It will be enough to prescribe diet, to give the hydrochloric acid, and to meet any other indications. In the latter if an attack of any severity has manifested itself, the patient should be put to bed. Over the whole abdomen a flannel wrung out in very hot water is placed and over this a layer of oiled silk. On the oiled silk should be placed a hot water bag lightly filled with very hot water or an electric heating pad. A high colon irrigation of normal saline, at 115° F. in the bag, should be given as soon as possible. The diet in severe cases should be limited to six ounces of peptonized milk every two hours. While in less severe or improving cases two hourly feedings of well cooked oatmeal or fine cereal, with milk or salt. Other foods which may be given are malted milk, dry milk, arrowroot gruel, milk toast or clear meat broth. As further improvement takes

place the various foods on the achylia diet may be given, first potatoes, then the desserts, then minced meats and last of all vegetables. For medication in severe cases it is well to start with a brisk purge. After this has acted ten minims of deodorized tincture of opium should be given and repeated every hour until there has been no movement of the bowels within the hour. Then it may be given after every movement though not oftener than once an hour. In the less severe cases or in severe cases as improvement begins, salol grains ten with castor oil minims ten in capsule may be given every two hours. The interval should be gradually lengthened as the patient improves.

Achylia may occur in the enteroptotic individual. In advanced cases splendid results are obtained by treating for three to six weeks in bed with achylia diet, hydrochloric acid and proper treatment for the ptosis.

Headache.—The treatment of this symptom is the treatment of the whole condition. Migraine which is due to achylia will usually be relieved by an achylia régime. If relief is not obtained by this means, causes of headache, other than achylia, should be suspected and investigated.

Blood.—Austin Flint (6) in 1860 pointed out the relations between profound anemia and atrophy of the gastric tubules. Primary idiopathic anemia is always accompanied by diminution or absence of hydrochloric acid in the stomach juice. In many cases of achylia there is a simple anemia of varying intensity. An examination of the patient's blood, including count of the red cells, estimation of the hemoglobin and examination of the stained smear, should be made in all cases of achylia, at least once a year. If anemia be present the patient should be given iron or iron and arsenic by mouth or by hypodermic injection.

Nervous System.—Achylia gastrica is sometimes spoken of as a neurosis and *achylia gastrica nervosa* has been used as a name for the condition. Any such conception of the disease is at best hazy and indefinite. Nor does the theory become more clear-cut by naming it sympatheticotonia or mixed vagotonia and sympatheticotonia. If it occurs as a result of nerve influence it seems likely that it is reflex from some trouble elsewhere in the abdomen, as gall-bladder disease or appendicitis, as Lockwood (7) has pointed out. On the other hand, some of these patients are neurotic. Such are benefited by three quarters of a grain of luminal three times a day after meals.

The occasional association of tabes dorsalis and achylia has been noted and a casual relationship suggested. Syphilis in any of its manifestations may be accompanied by achylia. Whether this is due to the disease itself or to the anemia which often accompanies this disease, treatment should be directed toward both.

Finally, estimation of the acidity should be attempted every six months for some years. The juice should be taken at short intervals over an hour and a half after an Ewald meal. A case has been reported where the acidity was reestablished after five years.

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955 PARK AVENUE.

FIGHTING FIRE WITH FIRE.

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EVERY now and then, and sometimes in the pages of the various medical journals, we read how the various cults, pathies, and so forth are making inroads into the practice of medicine and robbing the legitimate practitioners of their rights as physicians. We are also told that the quacks are successful, to some extent, in their work. We are also offered various sorts of remedies, but never are we told to fight fire with fire, for that would be unethical, you know.

The legitimate physician is *supposed* to sit in his office, very quietly, and wait for patients to come his way. He must not, by any manner of means, do any advertising. He must gain publicity only through his deeds, providing, of course, he has opportunity for any such things. That is, all this must occur, if the doctor be ethical.

On the other hand the cultist, pathist, or whatnot, advertises himself in one way or another and gains publicity at every turn, no matter what the means. A church may be the means in one instance, street corner talks in another, or printers' ink may be called upon. Without advertising or publicity, of one sort or another, the charlatan in medicine cannot live.

It is said that the quack usually "does something." On the other hand, it is said of the legitimate physician that he is not a man of action. He pays too much attention to the discovery of an ailment and insufficient to the bringing of his patient back to the normal. And there is some truth in that statement, for in this day of the laboratory we do become too greatly interested in diagnosis and very probably not sufficiently so in the matter of disease treatment. Therapeutics have gone too much out of style.

The charlatans claim many cures, but do not give credit to coincidence, for it is a known fact that many abnormalities will adjust themselves, even without a hand being taken by a cultist, pathist, or whatnot. Whenever a patient of theirs does recover his good health, Nature is rarely given much if any credit and we find the cultist or pathist or practor crying from the housetops, that all may hear, and that he may gain much publicity thereby, "I cured him!"

The legitimate physicians do not give themselves sufficient publicity. They do not fight fire with fire. The charlatans use the pages of their local papers, that their names may become household words. The legitimate profession may have signs

on their doors and windows, but to use printers' ink —that is a something not to be considered—not for an instant. For it is unethical, you know. Nor must the legitimate practitioner claim that he has cured a single patient, for he has never done anything of the sort. He has, perhaps, acquainted the patient with the name of his ailment, but further than doing that he must say nothing.

It has always seemed to us that every local paper should have printed therein a list of reputable physicians. We have much to say about medical practice acts as a protection to the public, but we do not advise that same public regarding who may be practising under the auspices of those acts. Supposing we offset the advertisements of the quacks with a list of the reputable physicians of a community, published without comment. That would be fighting fire with fire and would, without a doubt, attract many people from the doors of the charlatans. Supposing we went a step farther and, during an epidemic for instance, we gave publication to the public, through the medium of the secular press, those things which might act to make the cases of the disease fewer, then it might be that the public would think more of us, for we would be "doing something."

We are too prone to sit back and curse the illegal practitioners, but further than that we are inactive. We, in our endeavor to be scientific, become narrow minded and top heavy and finally we lose our balance and tip over backward. We lose sight of the patient and think only of his serum, of some one of his particular organs, and ignore him as a whole. We become so interested in the "scientific" end of things as to cease being doctors and become laboratory workers. We are so interested in knowing what ails a patient that we completely overlook the fact that he employed us to bring about a correction of his condition, be that "cure" or whatever name you may please to call it.

To fight fire with fire we should be just as active in our methods of treatment as are the cultists, pathists, practors, or whatever they may happen to be called. We must "do something" when a patient calls us in, other than perfect a diagnosis. We must take greater heed of the curative side of the question and we can, if we so desire, effect just as many cures as do the charlatans.

We have, at least some of us, ceased being doctors, in the true sense of the word, for we have ceased endeavoring to cure disease, or to make much of any effort in that direction. The average patient does not care a continental about some fancy name for his condition. What he is looking for is relief from that condition, and if he cannot get that relief through the ministrations of legitimate, educated, scientific physicians, then he is going to the quack, where, at the very least, something of a tangible nature will be done. The average layman does not care to what particular school a doctor belongs, just so long as that doctor obtains satisfactory results. You will find that irregulars, Christian scientists, and others of like sort all have their friends, and no matter how illiterate, in so far as medicine may be, those practitioners are.

First, in fighting fire with fire, let the doctors of community come from beneath the bushel and let the public be acquainted with their names, as legitimate practitioners of medicine. Second, let them "do something," other than make diagnoses, when called upon to give their services. Let them *really* give service to the extent of bringing about a resumption of the normal within the bodies of their patients, and that in the quickest possible time. Third, let the legitimate profession educate the public to the same extent as do the quacks. Finally, let the various medical practice acts be so rewritten as to close those loopholes which exist in every one now in force and which allow cultists, pathists, practors, and whatnot to carry on practice.

We realize that this is all very unethical, but it seems to use that we have been *too* ethical in times past. We have forever hidden our light under the bushel and have not claimed credit where credit was our due, excepting possibly in some medical journal, published far from our field of action, and never to be seen by our patients, the ones who should, very naturally, be interested in our activities and possibilities.

We may make vast claims as scientists, but we must be actors as well, for those who compete with us are actors, if nothing else. And it is because they are such that they wax strong and grow rich while many of we decent physicians become weaker and weaker and finally go to the pauper's grave, no matter what our attainments.

A little publicity, coupled with some ability, should be a good thing for the medical profession, as is publicity, associated with little or no ability, for the quacks. And the public would be better off because of the first mentioned sort, for they would have the assurance of the attention of educated men and women.

AN UNUSUAL CASE OF LATERAL SINUS THROMBOSIS.*

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LATERAL sinus thrombosis in most cases is a postoperative complication. Only rarely is the condition diagnosed or even suspected when the mastoid has not yet been opened. In the latter case it is most often apt to be associated with very virulent infections and in patients with greatly lowered resistance, or in those mastoids that have received improper care and attention and have been permitted to go on unoperated. The typical case of lateral sinus thrombosis presents a fairly distinct picture occasioning little difficulty in diagnosis. The patient who has been operated upon for an acute mastoiditis and who, several days later, has a chill followed by a sudden rise in temperature which then assumes a septic character, with remissions below normal, with a blood count of from 15,000 to 20,000 white blood cells and a differential count of from 70 per cent. to 85 per cent. polys, supplemented by a positive blood culture, offers no place for doubt in the surgeon's mind as to what he is dealing with.

*Read before a meeting of the Williamsburgh Medical Society, May, 1919.

Even in the absence of a positive blood culture, if pneumonia and erysipelas can positively be excluded, with a negative urine (especially in a child) he still has a fairly clear picture. This is particularly true if the operating surgeon recalls that at the time of operation the sinus plate was eroded and extensively diseased, or if upon exposure of the sinus granulations were visible over the sinus wall. The edema and swelling located over the so-called emissary region, the cord-like tender jugular in the neck with enlargement of the deep cervical glands, in a patient with pronounced euphoria, all aid materially in arriving at a definite conclusion. But it is an entirely different matter in the patient without these typical findings, especially those cases that occur in the course of an acute otitis, in which instance the symptoms, which are often severe during pus retention—fever, feeling of cold, pain and edema over the mastoid—may easily mask the symptoms of sinus thrombosis. Furthermore, there are cases of sinus thrombosis which run an irregular course with an irregular temperature, without chills and with only mild mastoid symptoms. The literature abounds with atypical cases of sinus thrombosis discovered at postmortem examinations, many of which have succumbed to the more serious complications following upon the unrecognized thromboses. There is no question that any otologist operating upon what he terms the "typical mastoid" would elicit surprise should he most unsuspectingly encounter a sinus thrombosis. Even greater would be his surprise if a patient had walked into his office on the same day, who, according to the mother, felt that he was not very ill, with a history that his present illness dated back only ten days.

The case we are recording is one in which we must confess that no diagnosis of sinus thrombosis was made, nor even suspected before operation. There were no symptoms nor signs at the time that led us to believe we were dealing with anything more than the usual "typical mastoid." The operation disclosed an infected thrombosis completely occluding the vessel lumen with a collection of pus in the sinus. The internal jugular was ligated but not resected. The patient made an uneventful recovery.

Report of Case.—Jacob T., aged twelve, came to our office on February 16, complaining of pain in the left ear. He had had more or less pain for the past ten days, but for the previous three nights it had been of sufficient severity to prevent sleep. He gave no history of an aural discharge at any time. Previous to the onset of this pain the patient never complained of trouble referable to his ears, but the mother stated that when a child, he had had a running ear during an attack of measles. Examination at this time disclosed a tender mastoid, more so at the tip with a moderate amount of edema typically located. The canal was dry; the drum bulged moderately at the poster-inferior quadrant; there was absence of a perforation, but there was quite marked sagging of the posterior-superior canal wall. The only notable feature that was not in harmony with the existing condition was the youngster's physical appearance. He apparently showed evidences of suffering from some sort of severe septic infection. He was pale and anemic, haggard looking, with an expression that was drawn and sickly. The rectal temperature was 103° F., pulse 104, respiration 26. His tongue was heavily coated; breath extremely foul. Immediate operation was advised, the child was admitted to the Bikur Cholim Hospital, and operated on the same day.

The interesting features of the operation are given as follows: The mastoid was completely uncovered and the cortex removed. The bone was unusually hard and sclerotic, the cells few and containing very little pus. The bony covering of the sinus was distinctly diseased, discolored, softened and necrotic and after being removed we found the sinus wall greenish in color, ulcerated and more or less collapsed. From the evidence at hand we decided that the sinus would require opening and probing and consequently we thought the safest and most rational procedure would be to limit dissemination of our infectious material and to accomplish this end we proceeded to the ligation of the internal jugular. The usual incision was made extending from the tip of the mastoid to the clavicle below. The vein was exposed but found to be normal throughout its whole extent and therefore was ligated but not excised. The incision was closed and a small drain inserted. We now again directed our attention to the sinus. The sinus wall was incised and about one drachm of pus evacuated. There was absolutely no bleeding from the sinus and we introduced a ring curette into the jugular end, and removed a number of large well organized clots as far down as and including the jugular bulb, but no free bleeding could be obtained. We then removed a number of blood clots along with pieces of thrombus from the torcular end, and here free bleeding soon occurred. A large portion of the diseased sinus wall was excised and the wound packed with iodoform gauze and covered with an outer dressing of saline.

The boy began to improve immediately after the operation. The temperature slowly dropped and in two weeks reached normal and remained so thereafter. The patient left the hospital three weeks after the operation well on the way to recovery.

This case presents four special features to which we wish to call particudar attention:

1. The infection through the sclerotic mastoid to the sinus took place with unusually great rapidity. The ear symptoms from the date of onset to the operation were only of ten days' duration.
2. The more pronounced symptoms indicating such a severe involvement were entirely lacking. Nothing that could be detected at the time of examination pointed to the possibility of such a serious complication. It should be remembered that this was an ambulatory case of sinus thrombosis.
3. The actual demonstration of pus in the sinus.
4. The absence of bleeding from the jugular bulb after removing all clots from the sigmoid below the knee to the bulb, showed conclusively that our thrombosis must also have extended at least into the inferior petrosal sinus. Nevertheless, nothing developed as a consequence.

691 Lafayette Avenue.

IS TUBERCULOSIS CONTAGIOUS?

By G. K. DICKINSON, M.D., F.A.C.S.,

Jersey City, N. J.

THIS is an old question. Going back in our journals where we read of scrofula and phthisis we find it being asked and answered. Ignorance in pathogeny made it all excusable, but in these days with the increase in knowledge acquired there is little excuse. We are reminded of a sermon by Rev. Mr. Kelman, heard at St. George's in Edinburgh, in which he spoke of words being the clothing of thought, and that where we had accuracy in language we inevitably found accuracy of thought, and where we had lax thought there would always be laxity in language. It is inaccuracy in words, it is our careless way of expressing ourselves, which have led to inaccurate thinking, and we are getting

nowhere because we do not express ourselves in precise language.

Ghon, as well as Hamburger, have shown in numerous autopsies carefully made that the human tuberculosis germ enters the system through the lung. They both claim to have discovered the points of entry, from which the germs pass into the mediastinal glands. As the spirochete will make a little sore and pass into the system to hide, and, in many instances, not to demonstrate itself until late in life, so the tuberculosis germ leaves its litttle scar and passes to the glands at the hilum. These people are infected.

In the larger cities careful tests, von Pirquet, x-ray and physical examinations, show that 90 per cent of children under fourteen years of age are infected. In the rural communities it may be as low as 25 per cent. It is believed, and perhaps the belief is warranted, that these infected people cannot receive a secondary infection. The logical conclusion must be that tuberculosis is primarily a disease of the lymphatic glands, that it is a disease of childhood, that once a person becomes infected he will remain so as long as he lives, to give tangible expression of such infection by the invasion of the lung if conditions occur which will bring the bacilli out of the lymphatics into the blood stream.

Laennec was one of the first to announce that he had come to the conclusion that consumption, that is, tuberculosis of the lung, is not a contagious disease from man to man, that the danger of contagion is largely with children. Wilson Fox's experience of over twenty-seven years found but two instances of married couples infecting each other. Weber, in a much longer and larger experience, saw but nine cases, while West, who was on the lookout for such cases, found but one in the course of 25 years, and that could hardly bear investigation.

More recently Osler and others speak of the rare instances of apparent contagion between man and wife and between the invalid and the attending nurse. So rare is it, and so common is the disease in the system as acquired in childhood, that even these cases are probably open to suspicion.

In the late war numerous troops were sent to the front from the Far West in America, who had never been exposed, who were von Pirquet negative, and who on physical examination gave no evidence of invasion or infection. On reaching France they were quartered with other troops who became active in the lung—bacillary cases. There being an interval between the time they demonstrated symptoms and their segregation, these Western troops were exposed. It is an interesting conjecture whether they will become infected and demonstrate it later in life. To date there has been no such evidence.

Now the answer to the question: "Is consumption or tuberculosis contagious?" will depend upon the accurate understanding of the question and its meaning. It is positively contagious to each and every child, as subtle as measles, but generally producing an infection. The patient with tuberculosis of the lung, spitting active bacilli, has not as yet been demonstrated a danger to the adult by any clinician who thinks logically and expresses himself accurately.

In our experience in the Tuberculosis Clinics of Jersey City no von Pirquet negative or *x*-ray negative case in the adult, whether nurse, attendant, or physician working in our tuberculosis institutions, has ever come down with an active process in the lung. All of our attendants are given careful examinations before employment. A number of them show infection; many of them show healed lesions; a large percentage are in a position to explode on provocation. These are the ones which the general profession say "caught it."

280 MONTGOMERY STREET.

Medicolegal Notes.

Suit for Penalty for Practising Without License Is Civil in New Jersey.—A suit by the New Jersey State Board of Medical Examiners for a penalty for the practise of medicine without a license in violation of the New Jersey Medical Examiners Act, 3 Comp. St. 1910, p. 3329, as amended in 1915, is held to be a civil suit and it is proper to award venire and to try the case before a jury. The language of different sections of the act is incongruous, and provisions may be cited which afford an argument for either side. Upon the whole the trend of the prior decisions has been to hold that the proceedings are a civil suit. It was urged that the trial judge should have directed a verdict for the board. The evidence was suggestive that the defendant in one case at least undertook to diagnose and prescribe, but his testimony was that he merely sold medicine and avoided any attempt to make a diagnosis or prescribe. He came very close to admitting facts sufficient to sustain the charge, but whether he did admit it was held to depend on what he in fact said and what he in fact did. In view of the somewhat different versions it was held a jury question was presented. Judgment for the defendant was affirmed.—State Board of Medical Examiners v. Curtis, New Jersey Supreme Court, 110 Atl. 816.

Hospital Treatment Under Statute Provisions.—Missouri Rev. St. 1909, § 1465, as amended by Laws 1919, p. 200, provides that patients having no ability to pay shall be received for treatment in the Mt. Vernon Sanatorium, and that if a person desiring free treatment shall apply under oath to the county court, or if a resident of the city of St. Louis to the comptroller, the latter shall at once certify the name. A writ of mandamus was sought to compel the comptroller of the city to certify the name of a resident to the superintendent of the Sanatorium for the treatment of incipient tuberculosis.

It was held that the comptroller, on proper application being filed, is bound to certify the name of the applicant without investigating the applicant's ability, notwithstanding that the comptroller is charged with the responsibility of conserving the financial interests of the city, which in the end must pay for the treatment; the words "at once" meaning with reasonable haste in the circumstances, and not entitling the comptroller to a reasonable time to investigate the truth of the affidavit. The policy or impolicy of the statute in including the city was held to be a matter for the legislature and not for the courts, the statute being valid and unambiguous.—State v. Nolte, Missouri Supreme Court, 218 S. W. 862.

Different Theories of Injury Due to Trauma Not Inconsistent.—In an action for personal injuries, in which one of the plaintiff's expert witnesses diagnosed her trouble as "traumatic neuritis," and another, who examined her some two years later, found her suffering from "traumatic neurasthenia," both nervous troubles originating from external violence, attributed by each to the shock, blow, or fall she received at the time of the accident, and each in effect expressed the opinion that she might also be suffering to a degree from the related nerve disease or disorder which the other expert designated, it was held that if the jury believed the plaintiff's testimony and that of her witnesses, the difference in the testimony did not render the damages awarded double or excessive.—Oliver v. Detroit Taxicab Co., Michigan Supreme Court, 177 N. W. 235.

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THE DIAGNOSIS OF HEPATIC INSUFFICIENCY BY MEANS OF ALIMENTARY GLYCOSURIA.

IT IS unquestionable that alimentary glycosuria is an important semiological element for the appreciation of the functions of the hepatic cell, although there are lesions of the liver which will not give rise to the glycosuria in spite of a morbid change in the hepatic cell. The individual resistance is an extremely important factor which depreciates the value of every clinical symptom. On the other hand, in certain cirrhoses where the portal circulation is greatly obstructed it may be supposed that the hepatic cell is still sufficient to carry on its glycogenic function and it is also a fact that an alimentary glycosuria sometimes occurs in apparently perfectly healthy subjects, but nothing proves that in them the hepatic cell is not to some extent pathologically involved.

Now, "arthritism" is a frequent cause of morbid changes in the hepatic cell because, consequent upon a general state of debility of the metabolism, the body manufactures a larger number of toxins, so that from birth the work imposed upon the liver will be more considerable. Therefore, at a given time the liver will become insufficient when called upon to deal with a very considerable amount of carbohydrates or toxic matter. This insufficiency is but temporary, but if the cause be durable it will in turn become permanent and the disease constituted. Hepatic diabetes is an example and is largely met with among gouty subjects. At the onset it is intermittent and inconstant, the glycosuria appearing only after meals; but if the subject is not quickly put upon a proper diet it will become permanent. All this applies to patients with gout, obesity, and gastric dilatation, who present an alimentary glycosuria when the test is made. Strictly speaking, these people are not ill; their liver functions are normal and sufficient, but may be compared with congenitally small arteries. Quite capable of transforming a certain amount of sugar into glycogen, the organ becomes insufficient for this transformation when larger quantities are brought to it; it is suddenly overwhelmed with work, becomes insufficient, and allows the sugar to pass into the urine.

Alimentary glycosuria is the index of this latent intermittent "hepatic claudication" as it has been aptly called by French writers, or a visceral meiopragia, as Petain was wont to say. On the other hand, hepatic insufficiency can be produced by infections or intoxications which suddenly or progressively change the hepatic cell or diminish its resistance. Therefore, it can be understood why alimentary glycosuria is met with in catarrhal icterus. The latter process is not due, as was formerly thought, exclusively to occlusion of the excretory bile ducts; it is almost always the outcome of a true hepatitis, a morbid change in the liver cells due to infectious or toxic products derived from the intestine and carried to the liver by the portal vein or bile duct. Whenever the hepatic cell is pathologically changed, its glycogenetic function will be disturbed so that the absorption of a certain amount of sugar will result in glycosuria. But several factors may give a positive result of the test; and first of all the condition of the nervous system, which possesses such great influence over the liver, must be considered. Medullary lesions, diffuse cerebral processes, and the neuroses sometimes give rise to alimentary glycosuria. Gastric lesions, dilatation or various types of gastritis, and intestinal affections almost invariably give rise to disturbances of gastrointestinal absorption. By causing a prolonged sojourn of sugar in the digestive tract, they favor its destruction by fermentation, while disturbances of renal elimination, by prolonging the sojourn of sugar in the blood, also favor its destruction by the tissues of the organism.

Now, it is easy clinically to place these two causes of error in evidence. A subcutaneous injection of methylene blue will reveal the disturbance of the renal permeability, while the state of absorption of the gastric mucosa can be estimated by the ingestion of five centigrams of the same hydrocarbon. These disturbances of absorption and elimination greatly influence the production of alimentary glycosuria. When absorption is defective the minimum of ingestion increases it if the liver is intact, but decreases when the liver is diseased. The same results are observed when renal permeability is diminished. Finally, if the disturbances of absorption are combined larger doses of sugar are required to produce glycosuria.

The coexistence of alimentary glycosuria with urobilinuria and hypoazoturia is one of the best evidences we have of hepatic insufficiency. Alimentary glycosuria should always be sought for in every case where this syndrome is suspected, but if sugar does not appear in the urine the renal permeability and the state of the gastrointestinal functions should be tested by the usual clinical procedures before integrity of the liver is admitted.

THE DIETETIC TREATMENT OF DIABETES.

WHEN one speaks of the treatment of diabetes one means, as a matter of fact, dietetic treatment. The treatment of the disease is essentially dietetic; as a rule, if the diet be arranged in accordance with the particular type of the disease from which the

patient is suffering, no other form of treatment is necessary. According to Dr. P. J. Cammidge, who writes on the subject in the *Prescriber* for October, 1920, the first step to take is to discover the type of case. He provisionally classifies diabetics into three main groups: 1. The purely pancreatic; 2, The purely hepatic; 3, A residuum many of which are probably nervous in origin. The differential diagnosis of these types depends partly upon the results of exhaustive analyses of the urine, feces and blood, partly upon the chemical data, and partly upon the effects of treatment. As a rule the hepatic form occurs in elderly people, although it is seen in children. The pancreatic patient is generally young, between 15 and 40; is usually under weight, and is losing flesh rapidly; a history of gastrointestinal catarrh or some infection, such as influenza, preceding the onset of glycosuria is not uncommon. The nervous type of diabetes may occur at any age, but is most common between twenty and thirty; the patient is generally high strung and neurotic, and often gives the history of some mental shock or business worry.

Cammidge insists that whatever the type of case, and no matter what treatment has been found most suitable in the first instance, the after treatment must be arranged with three objects in view: first, the provision of, at least, a maintenance diet; second, the prevention of the further progress of the disease; and, third, such an arrangement of the diet as will ensure variety and a physiological balance of its constituents. It is pointed out that, although loss of weight is generally regarded as a very serious symptom in diabetes which must be prevented at any cost, it is really an attempt on the part of Nature to cure the disease, and within reasonable limits should be encouraged. If he is over the weight which his defective powers of metabolism can maintain without strain, these powers are likely to diminish through overwork, but when the work is well within their capacity, sufficient physiological rest can be obtained to allow of recuperation and a consequent improvement in function. In most instances, where the liver is the organ chiefly at fault, a moderate loss of weight is sufficient to balance the functional capacity of the organ and the mass of the tissues, so that a maintenance diet is secured without difficulty. With mild pancreatic cases the same holds good, but where there is advanced pancreatic insufficiency it is often difficult, and even impossible, to arrange a diet which will secure adequate nutrition and yet prevent further progress of the disease. The first two conditions are fulfilled by discovering for each patient his total dietary tolerance, and at the same time so reducing his weight that the work his defective organs are called upon to perform will be well within their limits. The third condition is the most commonly neglected and is the most fruitful source of relapse and complications. Cammidge explains how a diet can be arranged which will ensure variety and a physiological balance of its constituents, but the explanation is too long to deal with in the way its importance deserves. The salient points of this most excellent article are that treatment of diabetes is essentially dietetic, but that such treatment is of little avail unless the types of diabetes are correctly differentiated and each type treated in accordance with its particular characteristics. It is here that the ordinary practitioner so often fails in his treatment of diabetes. He does not differentiate between the different types frequently, because for various obviously valid reasons he is unable to do so, and treats the disease accordingly. He may follow closely the dietetic principles of treating the malady, but if he does not diagnose quite accurately his treatment will be a failure or will not be so successful as it should be. Special scientific dietetic treatment is indicated for diabetes. This treatment, however, cannot be given properly unless one knows exactly when it should be given; it is advisable, therefore, that in cases of diabetes a specialist be consulted. It is one of the diseases in which special knowledge is required in order to deal with it with any great hope of success.

IS LUDWIG'S ANGINA A GAS PHLEGMON?

Is the malady known as Ludwig's angina an ordinary phlegmon in the affected area, or a disease *sui generis?* If the latter, is it essentially a form of gangrene? Peyre, a practitioner of Algiers, attempts to answer this question in *La Presse Médicale* for November 3, 1920, xxviii, 80. A case is described which followed extraction of a tooth. The diagnosis was made on sight, although the affection was in its inception. The floor of the mouth was swollen and the patient complained of malaise and chills. Trismus made examination very difficult. The suprahyoid region was the seat of a hard edema —a so-called woody phlegmon. Having the experience of two previous cases in his mind, the author at once made a mentohyoid incision without waiting for an anesthetic. From this wound escaped a fetid brownish liquid and some gas. Counter openings were also made and the finger was used to evacuate the sphacelated connective tissues. Dakin's fluid was used to irrigate, and the patient seemed to be doing well when chills reappeared. The original wound was in good shape but the left cheek was swelling, the edema involving the orbit and eyelids. The ophthalmic veins and cavernous sinus were menaced. The cheek was incised from the commissure to the ascending ramus and the process repeated. The state of the patient continued to give alarm for ten days when a third focus appeared over the temporal bone to the left and was treated in the same manner, this time without further developments.

This case of gas gangrene is called by the author a typical one of angina Ludovici. Most textbooks state that the disease may end in resolution, abscess, or gangrene, the latter being clearly regarded as an occasional sequel and not the essence of the disease. While the disease was once regarded as streptococcus infection, of late various anaerobes have been accused, including the perfringens. The gangrenous

theory is not new and long ago Ludwig's angina was held by some to be an example of primitive gangrene and not of phlegmon.

According to Peyre much the same question was debated in 1892. So far as the gangrenous process was concerned it was an especially deadly disease, the mortality alone serving to distinguish it from other suppurations in the cervical region which usually originated in the lymphnodes. The lethal factor was a "sepsis" save where the process caused suffocation. Demoulin, who once reported eight cases, states that in seven there were marked gas symptoms. If a phlegmonous process ends in gangrene we may of course speak of a gas phlegmon and it was shown during the war that gas gangrene and gas phlegmon are indistinguishable from each other. Although his views are not endorsed by all surgeons, the author believes we are safe in regarding Ludwig's angina as an example of gas gangrene or gas phlegmon.

INFANTILE SPASTIC HEMIPLEGIA OF HEREDOSYPHILITIC ORIGIN.

INFANTILE spastic hemiplegia and hereditary syphilis upon more than one occasion have been found to exist simultaneously in the same subject. This coincidence is uncommon, but nevertheless it is more than probable that it is not one of chance and that there exists a relationship of cause and effect between the two processes. The reasons for this conclusion are, firstly, that at present it is an unquestioned fact that infectious processes are very often the cause of infantile spastic hemiplegia and there is no valid reason why syphilis—a preeminently infectious disease—should not produce this nervous affection; secondly, syphilis is capable of creating cerebral lesions similar to those produced in infantile spastic hemiplegia. Besides the gumma and sclerosis, syphilis engenders vascular changes susceptible of ending—under certain influences—in cerebral hemorrhage or softening. The lesions of infantile spastic hemiplegia are for the most part of vascular origin and are often the sequelæ of old hemorrhagic foci or softening.

It is as yet impossible to determine under what conditions or influences a child with hereditary syphilis will develop the syndrome of infantile hemiplegia. However, traumatism on the head, nervous heredity, febrile diseases, and still other factors may favor the localization of the spirochete in the brain. The lesions created by syphilis and capable of giving rise to infantile spastic hemiplegia are of three orders, namely, (1) lesions of luetic nature, that is to say, specifically syphilitic; (2) lesions in themselves nonspecific but secondary to syphilis, and (3) parasyphilitic lesions.

The diagnosis of this affection is easy, but the syphilitic basis is sometimes difficult to recognize. In all the cases the stigmata of hereditary syphilis must be carefully looked for on the child himself, as well as his brothers and sisters. The Wassermann reaction is not to be relied on in these hereditary cases. If this search is always made thoroughly, hereditary syphilis will more often be accused as the factor of spastic hemiplegia. The differential diagnosis must be made from syphilitic pseudoparalysis and all those morbid processes which may accompany hemiplegia — tuberculous meningitis, cerebral tumors, choreic and hysterical hemiplegia, and with those affections which may simulate the spastic type—infantile spinal paralysis, spastic tabes dorsalis, obstetrical paralyses, and sclerosis *en plaques*. The diagnosis of the primary lesion which has given rise to the spastic paralysis will be found practically impossible in all cases.

The prognosis as to life is serious only during the first phase of the process. The gravity of the affection depends upon the infirmities which ensue and the developmental arrests, both intellectual and physical, which are its ordinary consequences. Occasionally other visceral complications of syphilis are to be feared. The newer specific treatment is to be essayed in all cases, and should be energetically employed from the start, but when the affection is of some standing it will remain without effect.

THE CHRONIC FORMS OF PUERPERAL METRITIS.

THE chronic forms of puerperal metritis are more common than the acute types, whether they directly follow the latter or appear at a later date at a time when the uterus offers more resistance. The chief characters of the chronic forms are a dextroversion of the uterus, the organ presenting a very peculiar cylindroid shape with intense sensitiveness to pressure. The cervix is gaping and its walls are thickened. There is a tendency to a lowering of the vagina and uterus, while the leucorrhea is less intense than in gonorrheal metritis and the large mucous plug characteristic of the latter process is wanting in the puerperal form. A relatively common variety of puerperal metritis, especially following miscarriage, is due to retention of a bit of placenta, and has been improperly called hemorrhagic metritis, because it may be aseptic, at least at its onset. The expulsion of clots, an increase in the size of the uterus, and a gaping cervix are the ordinary symptoms. Of no lesser interest are the parenchymatous forms of metritis which result from a leucocytic infiltration which in turn sets up a process of diffuse sclerosis with a tendency to involve the entire uterine body, hence a considerable increase in the size of the organ and an excessive vascularization. This type of chronic metritis almost invariably causes a sharp reaction in the bladder and rectum and gives rise to other troubles such as dyspepsia, palpitations, and nervous disturbances. Severe abdominal pain, increasing at the time of the menses, is prone to occur, and if the patient is examined at this time a kind of edematous infiltration around the uterus will be detected. The enlarged uteri, with gaping cervices, become infected upon the slightest occasion, hence the frequency of relapses of the process. Finally, the ovaries may undergo pathological changes, sclerous or sclerocystic degeneration being probably the most common. The development of a metritis in a recently delivered female may be due to gonorrhea. This is a mixed metritis in which the infec-

tion results from a preexisting gonorrhea that has remained localized in the cervix up to the time of labor and then rapidly invades the uterine cavity during the puerperium. It naturally gives rise to a discharge whose peculiar character resides in the causation of considerable irritation of the labia majora and especially the internal aspect of the thighs resulting in eczematous dermatitis with lichenoid formations. The treatment of the hemorrhagic types of puerperal metritis is by curettage, but in the late and mildly virulent forms of the process swabbing the uterine cavity with tincture of iodine and formol will be found satisfactory. Finally, parenchymatous metritis with delayed involution should be dealt with by rest in bed, kinesitherapy, and balneotherapy.

Side Lights on the Marquis of Sade.

Under the title "The Admirable Marquis of Charenton," a writer in *Le Progrès Médical* for August 21, 1920, xlviii, 34, gives an account of some little-heard-of experiences of a character known almost solely for a vice to which his name has been applied and with which we are not here concerned. At Charenton was a famous lunatic asylum in which the marquis was interned in 1803 for the second time at the request of his family and the police. It was an asylum *de luxe* for the wealthy and in charge of the clergy, who sought to divert their charges with theatrical displays and which contained a theater. On his admission, Sade was placed in charge of the theatrical activities. He selected the plays and made up the casts as far as possible from the inmates, with professionals and others to eke out. Some well-known women assisted, and the hospital surgeon was conscripted, but the physician in chief, Royer-Collard, who was for some reason *persona non grata*, was not allowed to take part. The actual head of the hospital and religious activities was the Abbé Coulmier, and when Cardinal Maury, Archbishop of Paris, visited Charenton, the choir sang a cantata *"Des mon enfance"* of which the author was Sade. After some time the latter wished for his freedom, but this was not granted, and subsequent efforts also met with failure. Royer-Collard now petitioned to have the theater discontinued and the prisoner deprived of his excessive liberty; for the Marquis had changed his demeanor when his plea was denied and became a good deal of a nuisance. There were two parties, one of which wished to be rid of him while the other upheld him. It was finally decided to hold him at Charenton and he became a model inmate once more, dying in 1814. He was interred there and eventually the madhouse was changed to a maternity hospital.

Serum Treatment of Epidemic Poliomyelitis.

The great hope of remedial and curative treatment in certain forms of disease hinges to some extent on the success of vaccine and serum therapy. It is difficult to say with any degree of exactitude whether modern vaccine or serum therapy has achieved great results. Opinions are divided on the subject. With regard to the serum treatment of epidemic poliomyelitis, Dr. Hugh Thursfield, reviewing recent work on children's diseases (*Practitioner*, October 1920) quotes from an article by Dr. Rowan which appeared in the Medical Record, December 13, 1919. He points out that the infective agent of poliomyelitis is generally believed to be a filtrable virus, and that the efforts of Flexner and his associates to produce an efficient serum have not, on the whole, been successful, though a certain degree of success has been attained. He then refers to the isolation by Dr. Rosenow of the Mayo Foundation of a streptococcus, which he believes to be intimately connected with the causation of the disease, and who has produced a serum with which it is claimed that remarkable results have been secured. Among those who have recorded great success with this serum was Dr. Rowan of Dubuque, Iowa, who gave an account of the results in an epidemic of poliomyelitis which occurred in that town in the Summer of 1918. Thursfield states that the article in question afforded very little information concerning the serum, and therefore judgment must be delayed on the point. It would be instructive and extremely valuable information if Rosenow would give further details of the serum and an account of the results generally brought about by its use.

News of the Week.

Increase in Child Labor.—The National Child Labor Committee, in announcing Child Labor Day, to be observed in churches, synagogues, schools, colleges, and clubs throughout the country in January, 1921, gives out some interesting figures showing an increase in child labor. Fourteen States, it is announced, show an increase in child labor during the first six or eight months of 1920. In New York City 5,283 more children applied for work permits during the first half of the year than in the corresponding period last year. The last three months, however, show a decrease in applications, bringing the total increase to date down to 2,353. Baltimore county, Maryland, shows an increase of 4,064 in application for work permits up to October 31, 1920, than in the corresponding months of 1919. Chicago authorities report an increase, during the summer, of 13,000 in that city. In Minnesota there has been an increase of 193 per cent since 1915.

New Surgeon-General of the Navy.—President Wilson approved the application for the retirement, effective November 26, of Admiral W. C. Braisted as Surgeon General of the United States Navy, and appointed to the position Admiral Edward Rhodes Stitt, of the Naval Medical School, a distinguished authority on tropical diseases. Admiral Stitt was graduated from the Medical Department of the University of Pennsylvania in 1889, and entered the Naval Medical Service the same year as Assistant Surgeon. He was made Rear Admiral in 1917. During the World War, he performed valuable service in connection with the preparation at the Naval Medical School of the medical officers newly inducted into service with the Navy.

Smallpox in Haiti.—According to cable advices from Rear Admiral Knapp to Secretary Daniels, more than three hundred cases of smallpox had developed in Haiti up to November 22. Smallpox serum from the naval hospital at Washington was immediately rushed to Haiti. The disease is of a

mild type, it was reported, only one death having occurred.

"Seal Your Mail With the Stamp of Health."—This is the slogan of the Christmas Seal Campaign of the Committee on Tuberculosis and Public Health of the State Charities Aid Association. Doubtless the 700,000 homes in the State, to which letters have been sent, as well as many thousands not so approached, will respond to this worthy appeal.

Drive for Mental Convalescents.—With the objective of $50,000, a two weeks' campaign has been undertaken to augment the building fund of the Home and Farm Institution for Mental Convalescents. It is proposed to erect an institution on Long Island, where the mentally afflicted may be restored to health and vigor through proper environment and treatment. Dr. Menas S. Gregory, of the Psychopathic Department of Bellevue Hospital, is medical advisory chairman of the organization.

Malnutrition in New York City Schools.—The annual report of the Children's Aid Society, recently issued, gives interesting figures concerning the prevalence of malnutrition among school children. Investigation by the Society in ten schools revealed that from 20 to 67 per cent. of the children were suffering from malnutrition, while from 12 to 35 per cent. were classified as needing immediate medical attention for ailments that prevented proper physical and mental development. The general average of malnutrition among public school children of the city is given as 20 per cent., and that of children needing medical attention as 4 per cent.

Automobile Fatality Rates.—Frederick S. Crum, in the *Spectator*, gives a table of comparative automobile fatality rates in thirty-eight American cities. The thirty-eight cities combined showed rates of automobile fatalities, per 1,000,000 population, of 77.9 in 1915, and 142.3 in 1919, an increase of 82.7 per cent. New York City occupies the seventeenth place in the list, with a rate of 66.1 in 1915 and 137.5 in 1919, a percentage of increase of 108.0. Basing his figures on the registration area covered by the Census Office, Mr. Crum states that nearly 10,000 persons were killed by automobiles in the United States, exclusive of Alaska, during the year 1918.

Positions for the Blind in Boston Stores.—The Massachusetts State Commission for the Blind has under consideration a plan whereby, if it materializes, certain stores in Boston will give positions to blind men and women. Some of the merchants are said to have offered to furnish departments in their stores to be conducted entirely by those who, as the result of war injuries or other causes, have lost their sight.

Asthma and Hay Fever Clinic.—The first public clinic in New York City for the serum treatment of asthma and hay fever has been established at the New York hospital. The clinic is in charge of Dr. Robert A. Cooke.

Associate in Clinical Psychiatry and Psychotherapy Wanted.—The United States Civil Service Commission announces an open competitive examination for associate in clinical psychiatry and psychotherapy. A vacancy at St. Elizabeth's Hospital, Washington, D. C., at a salary of $2,500 a year and maintenance, and vacancies in positions requiring similar qualifications, or this or higher or lower salaries, will be filled from this examination. Applicants should apply at once for Form 2118, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C., or to the Secretary of a local Civil Service Board. Applications close December 28.

Medical Interne Wanted.—The New York State Civil Service Commission announces an open competitive examination for medical interne for St. Elizabeth's Hospital, Washington, D. C., at a salary of $1,200 a year and maintenance. Other vacancies at this or higher or lower salaries may be filled from this examination. Applicants will be rated as received until March 1, 1921. Applicants should apply for Form 1312, stating title of examination desired, to the Civil Service Commission, Washington, D. C., or to the Secretary of a local Civil Service Board.

Harvey Society Lecture.—Dr. Carl J. Wiggers of the Western Reserve University, will deliver the fourth Harvey Society Lecture at the New York Academy of Medicine Saturday evening, December 11. His subject will be "The Present Status of Cardiodynamic Studies on Normal and Pathological Hearts."

Charitable Bequests and Gifts.—By the will of Jacob Wertheim, of New York City, who died November 14, the sum of $100,000 is left to the Federation for the Support of Jewish Philanthropic Societies. Announcement was made November 24 of a gift by John D. Rockefeller, in memory of his late wife, of $63,763,357.37, for the benefit of public institutions and charities, of which women and children are the chief beneficiaries. This brings the total sum of Rockefeller donations up to $475,000,000.

Sir Berkeley Moynihan of Leeds, England, was elected to Honorary Fellowship in the New York Academy of Medicine, at the stated meeting of that body on November 18.

Dinner to Dr. E. L'H. McGinnis.—The Womans' Hospital Society gave a dinner to Dr. E. L'H. McGinnis on November 16 at the University Club. There were some forty members and guests present. The dinner was given in recognition of the work done by Dr. McGinnis during his many years of service at the Woman's Hospital.

Dr. Sarah J. McNutt has removed her office from 265 Lexington Avenue to the Park Avenue Hotel, between 32d and 33d Streets.

Dr. Otto V. Huffman has removed his office to 25 East Sixty-fourth Street, New York City.

Research Information Bureau.—The National Research Council has established a Research Information Service as a general clearing-house and informational bureau for scientific and industrial research. This "Service" on request supplies information concerning research problems, progress, laboratories, equipment, methods, publications, personnel, funds, etc. Requests for information should be addressed, Research Information Service, National Research Council, 1701 Massachusetts Avenue, Washington, D. C.

Neuropsychiatric Patients in Marine Hospital.—The United States Public Health Service will soon convene in Pittsburgh a board consisting of Dr. A. J. Ostenheimer, of Philadelphia, Dr. T. Diller, of Pittsburgh, and the officer in charge of the Marine Hospital to arrange for the setting aside in the

hospital of a section for the diagnosis of neuropsychiatric patients from the third district of the Service, comprising the States of Pennsylvania and Delaware.

Segregation Urged in Drug Habit Cure.—John S. Kennedy, President of the New York State Commission of Prisons, in a recent report on the municipal farm for drug addicts on Ricker's Island, urged the segregation of criminal from non-criminal addicts. When Commissioner Kennedy visited the farm recently it had 275 inmates, 65 of whom were self-committed and 49 of this number had never been in an institution before. One man told the Commissioner that he had come to New York from Tennessee for treatment. Although he was well supplied with money to pay for his care he was sent to the municipal farm to be treated at city expense. It was found, according to the report, that while the self-committed addicts had a separate dormitory and separate tables at mess, they are in almost all respects on the same basis as those convicted of crimes and serving sentences. They wear the departmental criminal uniform, work the same and are under the same discipline and subject to punishments as the delinquent inmates.

Doctor Again Seeks Whiskey Blanks.—Dr. Melville A. Hays of New York City states that when a book containing one hundred blanks to prescribe whiskey to patients for medicinal purposes had been used he was refused a new one. Through his attorney he asked the Federal Court for a mandatory injunction requiring the Prohibition Director to furnish him with a book of blanks.

Medical Society Elections.—THE NEW YORK ACADEMY OF MEDICINE, at its stated meeting November 18, 1920, elected the following officers: *President*, two years, Dr. George David Stewart (re-elected); *Vice-President*, for three years, Dr. E. L. Keyes, Jr.; *Corresponding Secretary*, three years, Dr. D. Bryson Delavan; *Treasurer*, three years, Dr. Seth M. Milliken; *Trustee*, five years, Dr. Nathan E. Brill; *Member of Library Committee*, five years, Dr. J. J. Walsh; *Member of Committee on Admission*, five years, Dr. Nellis B. Foster.

THE MEDICAL SOCIETY OF VIRGINIA, at its fifty-first annual meeting, held at Petersburg, October 27 and 28, elected the following officers for the ensuing year: *President*, Dr. A. L. Gray of Richmond; *First Vice-President*, Dr. E. C. S. Taliaferro of Norfolk; *Second Vice-President*, Dr. F. J. Wright of Petersburg; *Third Vice-President*, Dr. Hunter H. McGuire of Winchester.

"Police Day" for Police Hospital.—A day is to be set aside by theaters as "Police Day," part of the proceeds to be contributed to the Police Hospital. At a luncheon recently given by Commissioner of Police Enright to theatrical and motion picture men was marked by the contribution of $75,000 for the hospital, which is to be erected near the entrance to Prospect Park, Brooklyn.

Obituary Notes.—DR. WILLIAM ADAMS DAYTON of New York City died November 19, at the age of sixty-two. He was graduated from the College of Physicians and Surgeons in 1880.

DR. JAMES B. GERE died suddenly at his home in New York City November 18, at the age of forty-eight. He was graduated from Bellevue Hospital Medical College in 1896. Dr. Gere served as major in the Medical Corps with the Seventh Regiment during the World War. He was a member of various state and local medical societies.

DR. MARK I. KNAPP of New York City died November 26, at the age of fifty-two. He was graduated from New York University Medical College in 1894, specializing in gastroenterology. He was a member of the American Medical Association.

DR. F. E. W. HOPKE of Brooklyn, N. Y., died November 23 from injuries received when he was run down by a motor. He was graduated from New York Homeopathic Medical College and Flower Hospital in 1899, specializing in pediatrics.

Correspondence.

VACCINES FOR WHOOPING COUGH.

TO THE EDITOR OF MEDICAL RECORD:

SIR:—Having just read the article by Dr. Freeman in your issue of Nov. 6, 1920, I wish to contribute my mite to the subject as a general practitioner in a country town. During the past summer and fall I have used pertussis combined vaccine in eighty-two cases for the prevention and treatment of whooping cough. The vaccine was obtained in Columbus in 5 c.c. vials and was said to be "fresh." Just what this word meant as to time I do not know.

The epidemic was very severe and there were numerous deaths from pneumonia and malnutrition combined with pertussis. All my cases were treated alike as to dosage and no other treatment was given. Two minims was the first dose, four the second, and eight the third. Additional doses were of ten minims. Three doses were the minimum number and six the maximum. Babies three days of age were given the same size dose as the older children.

The cases came voluntarily and no promises of prevention or cure were held out to the parents. Some of the patients had not been exposed; some had been exposed but had not yet shown symptoms of the disease; some were in the beginning and some well advanced in the malady. A few were very ill. Two had catarrhal pneumonia when the first dose was given. Many had vomiting of meals and greatly disturbed nights. Several had lost appetite and were losing weight rapidly. In fact the epidemic was severe and parents with babies were much concerned for their safety.

In order that this letter may not be too long I shall condense the data as much as possible. Four babies under one week of age were vaccinated because some member of the family had pertussis at the time of their birth. One of these contracted the disease after three injections and three more of maximum size were given at two-day intervals. A good and prompt recovery followed, although the baby gained nothing in weight for several weeks. The others did not contract the disease. One baby three months old with marasmus and enterocolitis, artificially fed, was vaccinated in the third week of the disease and died before the second dose was given. The babies with pneumonia and bronchitis made good and rather rapid recoveries. Of the whole number the majority were so far along in the disease when the first dose was given that the parents were certain of the diagnosis. In several families of four to six children there would be one

or more not apparently benefited to the extent of the others. About eighty-five per centum of the whole number of eighty-two were benefited so apparently and promptly that the result was surprising alike to the parents and myself.

In five families where the older children contracted the disease first and the younger ones were just taking it when the disease was at its height in the older ones, I vaccinated only the younger ones, and the difference in the severity and length of the disease was very apparent.

Upon the whole I am enthusiastic about the results, as all except the ones noted made rapid and good recoveries without complications other than those existing at the time of the first dose. As a preventive the result was equally gratifying. Parents were even more sanguine than myself in their belief in the curative power of the vaccine.

I know full well that one swallow does not make a summer, and I appreciate at its full value the danger of drawing conclusions from so few cases and these in a general practice. I began the vaccines a doubter in their efficiency. I kept a record of the age of each patient, the stage of the disease, the severity of symptoms and the complications if any, and I had the parents report after the treatment was over when they considered the patients well. Also parents were asked to give me their opinion of the results obtained. From these data, I must say the treatment was successful far beyond my expectations in about eighty-five per cent. of the cases. There were no unpleasant symptoms from more than two hundred and seventy-five injections, all in the arms. There were no sores beyond the local redness, which was the greatest after the largest doses. There was no fever which the parents observed and nothing but good could be attributed to any of the vaccinations. Babies often slept through the process of vaccination. Older children seldom cried, only the very sensitive and nervous made objections and in these cases the few tears were soon dried.

HOWARD JONES, M.D.
CIRCLEVILLE, OHIO.

THE ELIMINATION OF FEAR.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—As a fellow practitioner studying American ideals and seeking progressive innovations, may I, in the spirit of helpful criticism, offer our coworkers a few suggestions which may aid in eliminating fear in surgery and medicine.

Though we appreciate the advantages accrued to both patient and doctor in securing the faith and tranquillity of mind of the patient, do we seriously endeavor to eliminate his fear and study the real causes and remedial methods for overcoming the faint-heartedness we wrongfully attribute to one seeking medical aid? How often do we regard augmented pulsation, tremor, sudden pallor, and other visible indications of distress on the part of the patient presenting himself for examination, consultation or operation, as due to nervousness, suppressed excitement, adrenal flow and natural fright?

I find that equanimity can be maintained and restored by a soothing objectivity, *id est*, those things and influences outside the person which, through an appeal to the senses, are comforting, health-bringing, and hope-restoring. Make the environment overcome the patient's misgivings and inculcate complete confidence. Consider the soothing effects of a small, well-furnished room, with shaded lights, harmonious color combinations, and with instruments, bottles, and apparati carefully concealed. Consider the perturbing influences of glary lights. Consider the glare produced by white through its reflection of all the colors of the spectrum and its resulting startling effect. Make the surroundings cheery and homelike, and all which the patient is accustomed to in an atmosphere of refinement, rather than label the place "physician's office," "dentist's office," etc. Make your patient comfortable. Eliminate the "doctory" aspect. Make it homey. I believe that is half the secret of eliminating fear in surgery and medicine.

F. F. VAN COURT, M.D.
RITZ-CARLTON HOTEL,
NEW YORK.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, Nov. 5, 1920.

International Health.—Professor F. F. Roget in his second Chadwick lecture—reference was made to the former lecture in a previous letter—dealt with tuberculosis. He pointed out that the preventive mode of giving to human beings an environment and a nutrition as free from germs as possible, should not be applied irrespectively of the segregation of tuberculous persons and keeping them apart from the healthy for any necessary length of time. In the third lecture, given on Oct. 29, Professor Roget discussed the work mapped out for the Public Health Department of the League of Red Cross Societies. The work is divided into seven sections dealing respectively with social diseases, venereal diseases more especially, the prevention of malaria, tuberculosis, preventive medicine, child welfare, nursing, and education. He drew attention to the fact that serious difficulties attended this inclusion of venereal diseases in Red Cross work, such diseases being more suitable for the ministrations of the medical officer and the private physician. As for the resolutions of the Medical Advisory Board of the League as affecting child welfare and nursing, the speaker said that the General Council of the League of Red Cross Societies met in Geneva, March, 1920, for a week, 27 societies being represented. The medical resolutions passed by this Council came before the Medical Advisory Board, which met for the first time in July of this year. Child welfare as defined by this board, included all measures to be adopted for children before and after birth, the hygiene of the mother and child, the supervision of growth, and protection from communicable diseases, especially tuberculosis. Analogous to the cry "Back to the land," the cry "Back to the child," implied the scattering far and wide of the child welfare scheme, which must be based on the sympathetic support of doctors and on the education of the public. It lay with the Red Cross societies to provide doctors to produce the largest possible number of modern nurses duly trained, and to create schools or centers for instruction. All this should tend to one end. The education of the public of great importance was the formation of

a child welfare unit, consisting of an instructed group of workers with proper equipment, which would be sent to places where child welfare work was most difficult. It was hoped that such a unit would form a nucleus from which a knowledge of the science of child welfare would spread in every country throughout the world. Professor Roget insisted that there was no way in which a woman could better serve the community than by nursing.

The work of the Red Cross in civil communities involved the utilization of women health workers in the organization of society. No work of social relief could be better suited for Red Cross organization in time of peace than child welfare work. The entire trend of the address was to impress upon his hearers that the welfare of children was almost wholly the concern of women, and he contended that each socially unemployed woman of any country should take upon herself the care of a child or children. He pointed out that the work was not charitable but humanitarian.

Maternity and Child Welfare.—As Professor Roget made the subject of child welfare the most outstanding part of his eloquent addresses on international health, it will be interesting to note what the recently issued report of the chief medical adviser to the British Ministry of Health has to say on the matter. I mentioned in a former letter that I should take several occasions to refer to this extremely valuable document which is distinguished by the solid facts it contains expressed in lucid and logical language. It is stated in the first instance that the health of the mother and child is obviously the primary step in the health of a community. For here is the source of a nation. It is almost true to say that, from a health point of view, what the mothers and children are the nation is and will be. It is then pointed out that immense progress has been made in this subject in recent years. The results of the various acts passed since 1907 have been very remarkable. The decline in the death rate of infants from 150 per 1,000 born in 1900 to 59 at the present time must be attributed in large measure to the action taken. It is one of the two or three most significant triumphs of preventive medicine in the present century.

The report then goes on to recount the steps which have been and are being taken to preserve the lives in good health of the women and children of this country. Among other measures, a scheme of maternity and child welfare has now been inaugurated in every county and county borough of England and Wales and in many of the larger urban districts. There are now (the report was written at the end of March of this year) in existence 1,754 maternity and infant welfare centers, 221 day nurseries or crêches, and 89 maternity homes with 1,360 beds. In many areas also the midwifery service is being reorganized and brought into closer association with other forms of maternity and infant health service. However, these services are, of course, not yet adequate or complete in the sense of solving the problem. The death-rate of women in childbirth remains approximately what it was 25 years ago, and there is lost by death every year upwards of 3,000 mothers in the fulfilment of one of their principal and most vital duties to the State, a mortality almost entirely preventable. Then in the next place there is a large volume of abortion, miscarriage, still-birth, and ophthalmia neonatorum, a very large part of which is directly avoidable.

Again, a substantial number of the 700,000 mothers who gave birth to children in 1919 were so injured or disabled in pregnancy or childbirth as to make them chronic invalids and bring them in very large numbers to the gynecological clinic or the hospital ward, an excessive burden of preventable invalidity, incapacitating in its immediate and deterrent in its remote effects. This is an issue which profoundly affects the woman as industrial worker, as home-maker and as mother. Lastly, there is still lost by death not less than 60,000 infants in the year, excluding 19,000 still-births. The four-fold problem, it is pointed out, can only be met by a wide, continuous and persistent effort in every district of the land, an effort which must be comprehensive and not confined to one or two methods. It must be concerned with the efficiency and adequacy (1) of methods for the supervision of pregnancy; (2) of midwifery; (3) of maternity homes and hospitals; (4) of home nursing and health visitation; (5) of infant welfare centers and institutions, and (6) of the sound administration and wise use of maternity benefit. No panacea will meet the situation; it can only be met by a comprehensive movement, universally accepted and steadily pursued. Then the final issue cannot be doubted. The State cannot afford to be careless or negligent of motherhood; it cannot afford to leave its infant life to chance or the misfortune of circumstance. There must come a time when civilization means that no child-bearing woman is without adequate and skilled assistance, and no infant without a birthright of health. In the opinion of the writer of the report that time should come in England first among all nations.

It may be said that concerted efforts are afoot to improve the conditions under which the great majority of women bear children in this country. Obstetrical work is performed mainly in the houses of the patient and amid surroundings not adapted in any respect as a lying-in room for a parturient woman, and still less for the performance of what would be probably a surgical operation. In fact, childbirth in itself is a surgical operation, while for abnormal pregnancy mechanical removal is the only specific treatment. Consequently, midwifery should be done under the best possible aseptic conditions and with highly efficient skilled aid. As is pointed out in the report there is a great dearth of maternity institutions in this country and until this deficiency is remedied lying-in mothers will die in unduly large numbers, be functionally and physically incapacitated and children will not be born in the healthy manner they should be.

Clinics for Mental Diseases.—The Lady Chichester Hospital for Women and Children at Hove, Sussex, the only hospital in Great Britain which specializes in all forms of nervous and mental

breakdown in their early stages, has published recently a short survey of its work during the past fifteen years. This publication points out that experience gained in the hospital strikingly confirms the arguments which the leading mental specialists are now urging in favor of establishing clinics for the treatment of such diseases in connection with the general hospitals. Under the present system no hospital treatment is provided for nervous and mental paients until they have reached the certifiable, and, therefore, in the majority of cases, the incurable stage. What is urgently called for is that sufferers from these diseases should have exactly the same prompt and easy access to treatment as those afflicted with any physical disease.

The survey analyzes a hundred consecutive cases which were treated at the hospital. They were of all ages, ranging from six to eighty-three, and came from all parts of the country and from many different occupations. Of the hundred no fewer than fifty-four were completely cured. While only twenty-two left the hospital without showing any improvement, and not one of the twenty-two was a genuine early case. Some of them had been suffering for years, and it is thought might have been cured if they could have been treated in time.

The war has given an impetus to the intelligent treatment of mental disorders of a certain class. As a matter of fact it is really rather preventive than curative treatment and follows on the lines laid down by Sir James Mackenzie's early diagnosis and treatment to prevent the malady from proceeding further. But in the case of mental disorders, it is especially essential to make a prompt and correct diagnosis and therefore the establishment of psychopathic wards in general hospitals, a plan, I believe, which is pursued in several large American general hospitals, is almost a sine qua non of successful treatment. It seems likely that when the great desirability of this plan is fully appreciated it will be widely adopted in this country.

A Radium Hospital in Manchester.—Sir Edward and Lady Holt have presented Nelson House Nursing Home, almost adjoining the Royal Infirmary and Eye Hospital, to the Manchester Radium Institute, as a hospital in which patients can be treated by radium and housed. The hospital will be handed over absolutely free from encumbrances and completely furnished and equipped. All the hospitals of Manchester together with Bury Infirmary, will participate in the use of the Radium Institute. The hospital just given will be the first in Great Britain to be used exclusively for treatment by radium. Also as there are thirty beds in the new hospital, patients will not be distributed among eight institutions as at present, although radium treatment, if necessary, will be carried on in these hospitals. Manchester has spent already nearly £30,000 for its stock of radium. Up to the present the institute has been self-supporting by means of fees paid by private patients. However, the upkeep of the hospital will necessitate the aid of the public if the fullest benefit is to be reaped from this gift.

Progress of Medical Science.

Boston Medical and Surgical Journal.

November 18, 1920, clxxxiii, 21.

1. Lessons from the Selective Military Draft. Oliver H. Howe.
2. Tuberculosis and Influenza. John B. Hawes, 2nd.
3. Traumatic Spleens. Francis Freeman Henderson.
4. Ruptured Uterus in Previously Caesareanized Patient. Charles J. Kickham.

1. Lessons from the Selective Military Draft.—Oliver H. Howe, from a review of this subject, points to certain physical advantages that would accrue should universal military training be adopted. The benefit of examinations like those of the draft would be further extended. In fact, he holds, a physical survey of the youth of the land would be made every year. This would undoubtedly stimulate the race to greater physical stability. The military training would eliminate the last tendency to round shoulders and would improve the physique as it uniformly did during the late war. Should certain measures which the writer suggests (medical inspection in schools, provision of hygienic conditions in schools, annual physical examinations of pupils, etc.), be carried out in the schools and in the homes. Following the general acceptance of the means of preventive medicine, the author expresses his belief that another generation will show a man-power that may be regarded without reproach—a physical perfection of which one may be proud.

New York Medical Journal.

November 20, 1920, cxii, 21.

1. The Unconscious. W. H. R. Rivers.
2. A New Psychoanalytical Theory. André Tridon.
3. Tricuspid Stenosis and Tricuspid Insufficiency. John J. Young and Lawrence H. Cotter.
4. Clinical Notes from the First Surgical Division of Fordham Hospital. Alexander Nicoll and Harry M. Rammol.
5. Cellular Therapeutics—Its Practical Application. Frank Thomas Woodbury.
6. Cholesterol Thorax. Joseph H. Barach.
7. The Cause of Astigmatism. George Edward Barnes.
8. A Case of Erysipelas with Complete Loss of Vision. Navroji A. Cooper.
9. Underlying Factors in Good Posture. C. Ward Crampton.

3. Tricuspid Stenosis and Tricuspid Insufficiency.—Young and Cotter were prompted by the lack of specificity in the symptomatology of tricuspid disease, as usually described, to record the anatomical and clinical findings in a series of four cases of tricuspid disease, and to call attention to certain pulsatory phenomena in the liver, which they consider characteristic of certain lesions of the right side of the heart. From this study they are led to express the view that the most valuable clinical sign of organic tricuspid disease is the presence of a pulsating liver which continues to pulsate or even pulsates more markedly under influences calculated to effect disappearance of this phenomenon.

6. Cholesterol Thorax.—Joseph H. Barach discusses briefly the occurrence of cholesterin in the body and of cholesterinemia following obstruction to the free flow of bile into the intestines. In certain locations following the accumulation of fluid, if that fluid remains stagnant for a sufficient length of time, a deposit, or a crystallization of cholesterin, may occur. The fluid of cholesterol thorax may be mistaken for chylous or pseudochylous fluid if one were to rely upon the macroscopic appearance of the fluid. True chyle will show a fat content of about 10 per cent. and small fat globules, while pseudochylous fluid will have a fat content of about one-half of one per cent., and its fat globules are much larger. Whereas the chylous fluids are milky in appearance, the cholesterol fluids are more of the color of butter. In not one of the cases cited did the cholesterol deposit occur at the time of the primary attack upon the diseased part. The deposit or precipitation of cholesterin crystals occurred in inflammatory exudates within serous sacs, following the subsidence of acute inflammatory processes. The author notes that the cases cited show that the antecedent history of a deposit of cholesterol may vary from five years to as long as thirty years.

Journal of the American Medical Association.

November 20, 1920, lxxv, 21.

1. A Method of Treating Congenital Syphilis. John A. Fordyce and Isadore Rosen.
2. Dislocation of the Carpal Semilunar Bone. Walter G. Stern.
3. Surgical Treatment of Chronic Maxillary Sinusitis of Oral Origin. Henry S. Dunning.
4. The Treatment of Bladder Tumors, with Analysis of Sixty-two Cases. B. A. Thomas.
5. The Surgical Treatment of Malignant Tumors of the Bladder: Results of Operations. E. S. Judd and W. E. Sistrunk.
6. Reclamation of the Physically Handicapped. Harry E. Mock.
7. The Causes and Occurrence of Functional Scoliosis in College Men. William Lawrence Estes, Jr.
8. The Meltzer-Lyon Method in the Diagnosis of Infections of the Biliary Tract. George E. Brown.
9. An Edema Disease in Haiti: A Preliminary Report. W. L. Mann, J. B. Helm, and C. J. Brown.
10. Arthritic Changes in the Spine: Their Relation to the Roentgenologic Study of the Gastro-Intestinal Tract. William S. Newcomet.
11. The Preferred Base for Zinc Oxid Ointment. Torald Sollmann.
12. Action of Mercurochrome—220 and of Mercurophen: A Preliminary Report of Effects on the Human Tubercle Bacillus and on Experimental Tuberculosis in Guinea-Pigs. Lydia M. DeWitt.

1. A Method of Treating Congenital Syphilis.—Fordyce and Rosen, in their work at the Vanderbilt Clinic, undertook to formulate, first, a method analogous to that employed in adults, i. e., to treat these patients intensively in the secondary stage, endeavoring to obtain a cure as quickly as possible, and, secondly, to make the plan workable and easy of application. In the method described, neoarsphenamine and mercury are used intramuscularly with a special needle to insure the proper location of the drugs in the gluteal muscles. If the infant is very much underweight, with a poor musculature, mercury alone is given at weekly or biweekly intervals until there is an improvement in the general condition, after which the injections of neo-arsphenamine are begun. The mercurial employed is the mercuric chlorid put up in palmatin in individual collapsible ampules in doses of from 1/10 to ⅛ grain or larger for older children. An ordinary mercury needle of from 19 to 20 gage, cut down to from one-half to one inch in length, is used. After the buttock has been sterilized with iodine, the injection is given into the muscle about one inch from the intergluteal fold near its upper angle. The neo-arsphenamine is put up in individual glass ampules containing from 0.1 to 0.2 gm., and large enough to hold 5 c.c. of solution, the object being to dissolve the drug in the original container. After the ampule has been immersed in alcohol to insure its proper sealing and sterilization it is dried with sterile gauze, the end broken off, and from 2.5 to 3 c.c. of cool sterile, freshly distilled water injected into it by means of a syringe. There is then attached to the syringe a Luer mercury needle long enough to reach the bottom of the ampule, and the fluid is drawn into the barrel, the solution being alternately expelled and drawn up to hasten complete solution. Infants, on the whole, tolerate drugs well; it is surprising what large doses can be administered with safety. The amounts given by the writers are large when computed according to the weight ratio, but so far no untoward results have arisen, and it may be possible to employ even larger doses. They are now giving neo-arsphenamine in the following doses at weekly intervals: 0.075 gm. for infants from 3 weeks to 8 weeks; 0.1 gm. from 2 to 6 months; 0.15 gm. from 6 months to 1 year; 0.15 to 0.2 gm. from 1 to 2 years. These doses are employed in courses of from six to eight, followed by rest periods of from four to six weeks. The histories of nine infants treated by this method are detailed.

7. The Causes and Occurrence of Functional Scoliosis in College Men.—William Lawrence Estes, Jr., in his capacity of consulting physician to Lehigh University, has had the opportunity to take part in the physical examination of the entering freshman class each fall from 1912 to 1919, with the exception of 1918. Early in the routine procedure he was struck by the surprising frequency with which a mild type of functional scoliosis was found. The men exhibiting scoliosis were consequently subjected to a more detailed examination with a view to determine the underlying causes. During the seven years 1856 men have been observed. Functional scoliosis was found in from 10 to 20 per cent. of the men of college age, the left-sided curve predominating (70 per cent.). This scoliosis results chiefly from flatfoot, occupational or developmental peculiarities, and from shortening in one lower extremity. This shortening may exist in Bryant's line, or in a trochanter to external malleolus measurement. A mild coxa vara, and variation in length of the femoral, and sometimes the tibial shaft, have been suggested as the most likely explanation of this shortening.

The Lancet.

October 30, 1920, cxcix, 18.

1. An Address on the Nature of the Ovarian Function and the Medical and Surgical Methods Adopted to Secure the Benefits of the Ovarian Secretions. W. Blair Bell.
2. An Address on Parliament and Public Health. Lieut.-Col. F. E. Freemantle.
3. The Myth of "Atypical" Enteric Fever. R. P. Garrow.
4. The Hereditary Factor in Tuberculosis. Karl Pearson.
5. On the Treatment of Oriental Sore by *X*-Rays. F. C. Ormerod.
6. Cœliac Infantilism: Its Fat-Digestion and Treatment by Bile-salts. Reginald Miller, Associated with John Webster and Herbert Perkins.

1. An Address on the Nature of the Ovarian Function and the Medical and Surgical Methods Adopted to Secure the Benefits of the Ovarian Secretions.—W. Blair Bell discusses the relation of the ovary to sex-characterization, the genital functions of the ovary, substitution and supplementary therapy, and ovarion grafting. Based on a fair experience, he advocates very strongly the practice of ovarian grafting in suitable cases. Nevertheless, he insists that this procedure be looked upon as a measure of necessity, which can never be weighed in the balance against the preservation of the natural connections of the normal ovary. While endeavoring, from an examination of the information at his disposal, to assign to the ovary its place in the economy of woman, he tries to make clear his belief in the sanctity of the task entrusted to those who deal with important living structures, knife in hand. The search after surgical knowledge is the search after better ways of assisting Nature to fulfil her purpose amid the manifold disharmonies of incomplete evolution. One has no right, therefore, wantonly to destroy. Rather must one strive to preserve intact and, if this be impossible, to foster or to substitute to the best of one's ability in imitation of the original design.

3. The Myth of "Atypical" Enteric Fever.—R. P. Garrow gives the personal experience on which he bases his "unorthodox" views. From July, 1915, to June, 1916, at the Military Infectious Hospital, Imtarfa, Malta, he observed upwards of 2000 cases of enteric or suspected enteric fever. As acting medical officer in charge of wards he had ample opportunities of studying the clinical, bacteriological and serological aspects of the enteric problem. This was followed by a similar experience of one year at the Military Infectious Hospital, Choubra, Cairo. He summarizes these observations as follows: 1. Enteric fever (typhoid and paratyphoid), far from being the "protean disease" it is usually represented to be, is remarkably constant in its clinical manifestations and true to type. This applies to the inoculated and uninoculated. 2. Enteric fever, whether in the inoculated or uninoculated, may appear clinically in every degree of intensity from extreme mildness to overwhelming severity. 3. "Atypical" enteric fever is a myth, in the creation of which two chief factors have operated, viz., (*a*) smallpox occurring in the vaccinated is so modified as to be frequently diagnosed as the milder disease, chickenpox. While that may be good reason for expecting that enteric fever in the inoculated should be similarly modified in *severity*, it does not support a belief that it is so modified in *character* as to resemble such divers diseases as malaria, trench fever and dysentery in their classical forms. (*b*) A far more important factor has been a lack of co-operation between workers in the wards and in the laboratory, and failure to co-ordinate their findings. When clinical and laboratory findings have conflicted the latter have prevailed, because laboratory investigation of disease has been generally regarded for

some reason to be more "scientific" than bedside observation. The truth, however, is gaining ground that science in medicine is not confined to the laboratory. The bedside has its victories no less than the bench. The flimsiest piece of evidence from the laboratory has often been accepted as proof of enteric infection in the face of bedside evidence which renders such a diagnosis untenable. The physician has thus allowed himself to be completely dominated in the matter of diagnosis by the pathologist. Diagnosis is the function of the physician; the pathologist's duty is to supply certain of the data for diagnosis. 4. Anti-enteric inoculation is the gift of practical bacteriology to preventive medicine, and is probably the greatest victory known to preventive medicine since Jenner's discovery of vaccination against smallpox. It would be a strange irony if the full fruits of this victory were lost amidst the clinical chaos resulting from the undue domination of bacteriology (and especially academic bacteriology) over clinical medicine.

British Medical Journal.

October 30, 1920, ii, 3122.

1. An Address on Surgery—Good and Bad. Charles F. M. Saint.
2. The Secondary Forms of Polycythæmia Rubra—Ayerza's Disease, etc. F. Parker Weber.
3. The Action of Chemotherapy. J. E. R. McDonagh.
4. The Effects of the Emotions on Gastric Secretion and Motility in the Human Being. T. Izzod Bennett and J. F. Venables.
5. General Results of Experimental Cancer Research. J. A. Murray.
6. Reversion of Cells to the Ancestral Type. H. J. Campbell.
7. Resistance of Immunity to Cancer. J. C. Mottram.
8. The *X*-Rays and Immunization. Prof. Sidney Russ.
9. Criteria of Malignancy of Tumors. Archibald Leitch.
10. Murphy's Work at the Rockefeller Institute. Prof. Simon Flexner.

1. An Address on Surgery—Good and Bad.—Charles F. M. Saint holds that in an ideal scheme for the treatment of disease, operative measures have no place, and the best surgery is that which approaches most closely to the ideal. Unfortunately, the present imperfect state of knowledge of disease, and consequent limitations so far as ideal treatment is concerned, leave open a wide field in which operative interference offers the best hope of cure to the patient. However, this interference is minimized by the surgeon of good judgment as unnecessary, and futile operations will be avoided. The failure of the natural and medical means of treatment has been postulated as the judication for operative interference, and it is just here where good judgment appears at its best. For whether or not operative measures will be necessary, what they shall be if they should be called for, and when the most opportune time will be for utilizing them, are questions which depend entirely on the adjudged efficiency or futility of the non-operative treatment. Pending the realization of this visionary ideal, however, the burden of present imperfection has to be borne, and a very prominent part in the treatment of disease must continue to be played by surgery, the basis of which consists of: 1. Good judgment, with all it involves—of paramount importance; and, depending on this—2. Rational treatment, non-operative or operative. When operative measures are indicated, then the outstanding features of good work are: (*a*) Conservatism consistent with efficiency; (*b*) simplicity of technique; and (*c*) operative skill, which includes gentleness, manipulative dexterity and careful speed.

American Journal of the Medical Sciences.

November, 1920, clx, 5.

1. Some Newer Concepts in Digitalis Therapy. Cary Eggleston.
2. Roentgenological Aspects of Lower Right Quadrant Lesions. F. H. Baetjer and Julius Friedenwald.
3. Errors in the Diagnosis and Treatment of Duodenal Ulcer. John Dudley Dunham.
4. Corrections versus Compensation of Physical Defects. Roger I. Lee and Lloyd T. Brown.
5. A Clinical Study of Wassermann-Fast Syphilis, with Special Reference to Prognosis and Treatment. John H. Stokes and George J. Busman.
6. Influenza Pneumonia: Certain Radiological Features of the Disease in the Epidemic of 1920. James A. Honeij and C. R. Scott.
7. Observations on the Latest (1920) Recrudescence of Influenza: A Detailed Clinical Study of 100 Consecutive Cases. M. E. Alexander and E. L. MacDonald.
8. Report of a case of Extradural and Subdural Abscess Following Suppurating Frontal Sinusitis and Osteomyelitis of the Frontal Bone. Joseph H. Bryan.
9. Benign Decidual Tumors of the Uterus. John Benjamin Nichols.
10. The Human Pre-Hallux. J. J. Monahan.
11. The Gravity Resisting Ability of the Circulation: Its Measurement and Significance (Blood Ptosis). C. Ward Crampton.
12. Pernicious Anemia: A Study of One Hundred and Forty-Eight Cases. James G. Carr.

1. Some Newer Concepts in Digitalis Therapy.—Cary Eggleston reviews the newer conceptions concerning digitalis in the treatment of cardiac disease, and sets forth the following plans of dosage by oral administration: *Small Dose Method.* From four to six days are generally required for digitalization by this method; ⅛ to ¼ gram (gr. ij to gr. iv) of the powdered leaf or 1¼ to 2½ c.s. (♏ xx to ♏ xl) of the tincture should be administered every four hours—four doses daily—and continued until digitalization is induced. With weak or poorly absorbed specimens of digitalis full digitalization may not be secured at all by this method or it may require ten days or more to secure it. *Large Dose Method.* From one to two days are required for digitalization. During the first twenty-four hours a dose of 4/10 gram (gr. vj to gr. vij) of the powdered leaf or 4 c.c. (dram j) of the tincture should be administered every six hours, day and night for four doses. On the second day the dose should be reduced one-half and the interval may be shortened to four hours, giving four doses per day and none at night. This latter dose and interval should be continued until full digitalization is secured. *The Body Weight Method.* This method permits full digitalization within ten to twenty hours from the beginning of administration and is specially serviceable in cases manifesting urgent symptoms. Its use has proved so satisfactory during the five years that have elapsed since its introduction that it has been possible very largely to do away with the necessity for the intravenous or intramuscular administration of ouabain, strophanthin or other digitalis preparation.

5. A Clinical Study of Wassermann-Fast Syphilis, with Special Reference to Prognosis and Treatment.—Stokes and Busman summarize their findings in this study as follows: 1. Of 458 syphilitic patients who had received from twelve to twenty-nine arsphenamine injections combined with mercurial inunctions, the average being fourteen injections and ninety inunctions in eleven months, 6.6 per cent. of primary and secondary cases and 101, 22 per cent., of latent, late and hereditary cases (average duration thirteen years) remained persistently Wassermann positive. 2. Cardiovascular changes are apparently those most likely to underlie a resistant positive Wassermann test in late syphilis (44 per cent.), with neurosyphilis 30 per cent., osseous lesions 30 per cent., hepatic, splenic, and gastric syphilis 21 per cent., and other types from 10 to 17 per cent. 3. More than one type of involvement was the rule in the individual cases of this group. There were only 10 patients presenting no other evidence of syphilis than their positive Wassermanns. 4. Patients with syphilis should therefore be studied from other angles than that of the presenting type of involvement, in the effort properly to appraise their condition and susceptibility to treatment. 5. Sixty-five per cent. of the patients with cardiovascular syphilis had aortitis and 60 per cent. myocardial changes. 6. Of the neuro-syphilitics, 40 per cent. had paresis and 50 per cent. clinical tabes dorsalis. 7. Fifty per cent. of patients with neurosyphilis had cardiovascular syphilis also. 8. Gastric and hepatic syphilis were recognized in 52 and 47 per cent. of the visceral cases as against only 14 per cent. presenting recognizable splenic involvement. Patients with cutaneous syphilis showed the familiar immunity from neurosyphilis and the reverse. 9. While pyogenic foci were present in 74 per cent. of the patients with resistant-Wassermann reactions no frank etiologic connection was apparent. The same was true of alcohol, which was used by only 12 per cent. of these patients. 10. There was no evidence that Wassermann-fastness is the result of infection with any special strain of organism. In fact, the "polystructural" involvement in such cases suggests the contrary. 11. Eighty-four per cent. of the patients in the Wassermann-resistant group

have undergone symptomatic arrest to-day under the treatment received. Paresis and tabes dorsalis with gastric crises formed more than half the failures. 12. The amount of treatment to which a Wassermann-resistant patient should be subjected cannot be exactly defined. The principles employed in making a decision, which are in effect the principles underlying the therapy of all late syphilis, are outlined. In particular, reversal of the Wassermann, while desirable, should not be the primary aim of the therapy. Symptomatic response, with arrest of the process, and the giving of as much treatment as to an early case, provided tolerance permits, are the important considerations. 13. A persistently positive serum Wassermann reaction seems to be an accompaniment of grave rather than of trivial syphilis. At least such is the case in enough instances to suggest the need for the most painstaking and repeated investigation of the clinical aspects of the Wassermann-fast case. Premature statements based on insufficient evidence as to the insignificance of a fixed positive Wassermann reaction are, they believe, to be deprecated. 14. Wassermann-fast patients should not, in their opinion, be discharged from periodic careful re-examination, with special reference to the cardiovascular and nervous systems throughout life. The frequency of such examinations should be dictated by the gravity and extent of the original process and the degree of apparent resistance to treatment.

11. The Gravity Resisting Ability of the Circulation; Its Measurement and Significance (Blood Ptosis).—C. Ward Crampton holds that the estimation of the ability of the circulatory apparatus is of considerable importance, both to the physiologist and to the clinician, and that the simplest way to test the circulation is to give it a standardized amount of work to do and to note its reaction to this work, estimating what is normal and what is abnormal by the character or extent of the reaction. The writer has suggested the use of a standardized load which may be imposed upon the circulation simply and easily and in an entirely natural manner. This consists in observing the reaction of the circulation to the hydrostatic load placed upon it when the subject rises from the horizontal to the vertical position. He discusses the rationale of the test; the conduct of the test, with examples; the gravity resistance in various diseased conditions, and physiological and other clinical variations of gravity resistance ability. The study is summarized as follows: 1. The horizontal and vertical blood-pressures may differ greatly in the same individual. 2. A rise in systolic pressure on standing indicates efficiency in the gravity resisting ability of the circulation; a fall, the reverse. 3. The increase in heart-rate on standing indicates inefficiency in the gravity resisting ability of the circulation in proporton to the increase. 4. Taking both influences into consideration, an index may be determined for convenient use. 5. This index is lowered by various influences among which are fatigue, toxins, the approach of disease and disease itself. 6. This index may be high in good health and also in some disease conditions. 7. The index may prove helpful in estimating the extent illness is damaging the circulation in the course of disease and in estimating the progress of recovery. 8. This index may indicate the fatigue and the variations of condition in an athlete. 9. The normal range of this value is approximately from 50 to 100, although records in this range may be given by sick persons, but high records in sick persons are probably evidences of pathological overtone. 10. Records below zero are evidences of great lack of circulatory power. 11. Comparison of records of two individuals may or may not give much information. Successive records on the same case may give more. 12. The customary single recording of the blood-pressure in one position gives no information as to the gravity resisting function of the circulation.

Wiener klinische Wochenschrift.

October 14, 1920, xxxiii, 42.

Prearteriosclerotic Emaciation.—Kiralyfi of Professor Koranyi's Budapest Clinic discusses this phenomenon at some length. Emaciation commonly results from insufficient aliment and poor utilization, both factors being often conjoined in the same subject. The sudden and extreme loss of weight which sometimes supervenes before the development of arteriosclerosis may reach 60 pounds. Examination for a cause is attended with practically negative results and the only factor in evidence in some cases was defective calories from war privations. There could be no mere coincidence between presclerosis and emaciation. The age period was 45-55, when arteriosclerosis commonly begins. During the process of emaciation the subject may appear to be in the best of health. Ordinarily, when losing weight, the individual complains of a train of symptoms which comprises malaise, dizziness, depression, and fatigue which supervenes rapidly on exertion. The condition cannot be due to war factors, or at least the author was familiar with it before the outbreak of hostilities. It appears to be readily controlled by supernutrition. The diet should be rich in calories and be well balanced. The only drug recommended is iodine, the too protracted use of which may, itself, lead to loss of weight. The author is not clear as to the diet of these subjects when the loss of weight begins, but inferentially the appetite was normal and in some cases at least the food intake as well.

Western Medical Times.

November, 1920, xl, 5.

1. The Unconscious. H. Laveson.
2. The Value of the "No Good"—Alcohol versus Phenol Douglas H. Stewart.
3. Pyosalpinx. Robert T. Morris.
4. The Phenomenon of Immunization. G. H. Sherman.

2. The Value of the "No Good"—Alcohol versus Phenol.—Douglas H. Stewart emphasizes the point that "solvent" and "antidote" are not synonymous terms, and that a fatal issue to some patient may be forefended, at times, if the difference between the two terms is very clearly understood.

La Médecine.

September, 1920, i, 12.

The Biological Movement During the War.—Gautrelet, who edits the biological number of this new journal enumerates the following activities: use of vaccines to combat epidemics, sterilization of water, grafts to replace lost tissues, blood studies, a great variety of studies of the nervous system and cerebrospinal fluid, cardiac studies with special reference to oscillometry, parasitology, radiations, etc., etc. To take up a special subject, that of wound healing, the author first seeks to know how wounds become infected in wartime? The elements he considers in succession are traumatic shock, and incidentally its prevention and treatment, the presence of germ carriers, the role of stinging insects and that of sensible parasites, the part played by special bacteria, including anaerobes, and the use of antiseptics. He then passes to the subject of alimentation of soldiers. In summing up he states that for the first time the different types of biologists have cooperated. The author uses the term in the widest sense of a savant who works with living organisms as distinct from those whose efforts are directed only to the inanimate world. These divisions of biology have a practical side also and should all possess their own special laboratories. But there is a great dearth of the latter as shown by the military needs. From another angle biologists assist the physician and surgeon; the latter of course may be themselves deserving of the term but in all practical activities such as prosthesis of limbs, aviation, gasing, etc., laboratory men and experiment were required and it is men of this type who supplement the practitioner that the author would designate as biologists, no other term being available.

Suprarenal Virilism.—Thirty cases of this affection have now been reported. One of the latest is by Mauclaire. A woman of thirty-eight developed an abdominal tumor a little to the right of the median line, and at the same time the menses ceased. The facies then changed and hairs appeared on the face, neck, and thorax. The subject increased in stature, the breasts atrophied, the muscles developed, and the panniculus receded. The diagnosis was at first ovarian cyst, and only during the operation was the correct diagnosis made. After removal of the tumor, ovarian extract was given and the menses returned.—*La Tribune Médicale.*

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, Held October 26, 1920.

DR. HAROLD BAILEY IN THE CHAIR.

Pudendal Hernia, Operated by the Abdominal Route.—Dr. JAMES F. GRATTAN reported this case, which occurred in a woman 53 years of age, who complained of irritation in the rectum with difficulty in moving the bowels and a bearing down sensation in the vagina, ascribed by two physicians who had examined her to "falling of the womb." With the examining finger in the vagina, the patient was told to hold her breath and strain downward. She was then told to cough. As she repeated the cough the speaker thought he felt an impulse against the back of his examining hand. A repetition of the cough revealed a definite impulse in the adductor reigion of the left thigh. A mass the size of a hen's egg developed at the site of the impulse. The mass was soft, reducible, and gurgling occurred on manipulation. The location was a crescentic area external to the left labium majus, but not involving that part. It was evident that the patient had a hernia. At operation an incision extending from the symphysis to the umbilicus was necessary on account of the extremely fat abdominal wall. Exposure of the pelvic organs, though difficult, was finally accomplished and revealed descent of the sigmoid loop through a triangular opening in the floor of the pelvis. This opening was bounded anteriorly by the posterior reflexion of the broad ligament, mesially by the lower segment of the uterus and the left uterosacral ligament, literally and posteriorly by the rectum. The sigmoid being fixed at its point of continuation into the rectum appeared to slide down along the posterior surface of the broad ligament and disappeared into the hernial opening. There were no surface adhesions and no evidence of constriction of any point. Gentle traction brought the sigmoid loop out of the sac. There was no process of the sac descending into the left labium, as in the cases of "pudendal" hernia reviewed by Moschcowitz. However, the exit and course of descent in this case was undoubtedly the same, the final destination being the subcutaneous tissue of the upper adductor region of the thigh rather than the labium. The protrusion undoubtedly occurred through the levator muscle and passed through the triangle bounded externally by the ischiocavernosus, internally by the constrictor cunei and posteriorly by the transversus perinei, then along the left lateral wall of the vagina, emerging in the thigh. The split in the levator was probably the result of a difficult twin labor mentioned in the history. No attempt was made at extirpation of the sac, since its depth, the adipose status of the patient and her age precluded the needless prolongation of the anesthesia. Five or six stitches of double pagenstecher linen were placed across the long arm of the triangle, thus closing it tightly and completely. A continuous suture was then whipped over the line of mattress suture, taking another reef in the broad ligament. This last step caused a version of the uterus backward and to the left, superimposing the fundus over the site of the hernia opening. The sigmoid was anchored to the left psoas muscle at the brim of the pelvis and about two inches above that point, the idea being to prevent its descending to its habitual location in the neighborhood of the hernial opening. The abdomen was closed in the usual way. The patient made an uneventful recovery and remained free from recurrence during the two years that she was under observation. Dr. Grattan said he reported this as a case of pudendal hernia because he felt sure that it corresponded to the cases of pudendal hernia described by Cooper in his volume on hernia published in 1807, and to the cases collected, under the heading of pudendal hernia, by von Winckel, in 1881, and reviewed by Moschcowitz. Moschcowitz called attention to the question whether it was a fallacy to name this hernia for its destination (the vulva) rather than for its point of exit in the pelvic floor. The present case demonstrated this fallacy because the destination of the sac happened to be the adductor region of the thigh rather than the pudendum. Dr. J. A. Blake suggested the term "levator hernia," but the speaker said he felt that he was not justified in making a new classification for a hernia the course and surgical anatomy of which was essentially the same as in the cases described under the term "pudendal" hernia. According to Moschowitz no case of "cure" of this type of hernia was recorded. This patient had been two years without recurrence, during which time she had been performing the heavy work of her household.

Dr. WILLIAM P. HEALY congratulated Dr. Grattan upon his careful examination of the case, for the condition was such that it could easily have led one into error, and upon the correctness of his diagnosis depended the cure. He was also to be congratulated on his excellent surgical result. The condition was so rare that few had seen a hernia at the vagino-labial base. Such a hernia might come out anteriorly or posteriorly, appearing in the labial crease. When this occurred the hernia was likely to be looked upon as a rectocele instead of a true vagino-labial hernia. One occasionally met such a case in which a colporrhaphy and plastic operation was done, but not being a true rectocele the hernia was not reduced and went through the cul-de-sac of Douglas and out over the required pelvic floor. The best way to deal with these cases was as Dr. Grattan had done. If possible reduce the sac. Having turned the sac inside out into the peritoneal cavity excise it. The hole could then be obliterated and the neck of the sac reinforced with such structures as were nearby. There need be no fear of these hernias undergoing obstruction or strangulation for most of them had very free access into and out of the hernial canal.

Dr. HAROLD BAILEY thought the point Dr. Grattan made about the name was very important. If the cases of true pudendal hernia were those that ruptured into the vagino-labial fold, he thought it would be well to differentiate between this type of hernia and one such as Dr. Grattan had described, which gradually came down into the adductor region of the thigh.

Right Tubal Pregnancy—Fourth Month with Rupture Into the Cecum.—Dr. HERBERT C. CHASE reported this case by invitation. He said his reasons for reporting the case were the clear sequence of events which led to a fairly easy diagnosis, and his belief was that the condition is exceedingly rare, as he could find nowhere in the literature its exact duplicate. The patient, 25 years of age, began bleeding on May 4, after having missed February, March, and April. The flow was scant, accompanied by no pain or clots. On June 20 she began vomiting and experienced knife-like pains in the lower left quadrant of the abdomen. The pain continued until August 7, when she felt a strong desire to evacuate the bowels. Several efforts were made but with no result until midnight of the same day, when she passed by rectum a large amount of dark clotted and bright red blood. From this time until her admission to the hospital on August 14 she had no pain but was very weak and much of the time did not know what was going on about her. When first seen she was pallid, emaciated, colorless; her pulse was thready, heart sounds weak with a soft systolic murmur at the apex. The abdomen was flat and soft. A mass the size of a fist and easily palpable was felt in the right side of the pelvis. Vaginal examination negative; the uterus was normal in size and position; the left adnexa were negative. She was at once given an infusion of 500 c.c. and brought by ambulance to the Woman's Hospital, arriving at 1 A. M. Here she was given a direct blood transfusion, which was followed by a marked improvement in the blood count. She lost no more blood, and at 8.30 A. M. seemed better. It was then decided to open the abdomen. A median, vertical, suprapubic incision was made. There was no bleeding or fecal matter, or any soiling of the peritoneal cavity. The omentum and several loops of the intestines were adherent to the posterior surface of the right tubal mass. The cecum was adherent to the posterior surface of the ruptured ectopic, and when it was separated a hole in the gut wall the size of a silver dollar was seen. The lumen

of the gut was filled with a large round clot the size of an English walnut, which filled the annular opening and was adherent to the posterior surface of the ectopic mass. When this clot was lifted the fetus lay in the cecum. There was no other rupture and no blood in the cul-de-sac or pelvis. The remainder of the large intestine from the secum to the sigmoid was filled with blood clots. The rent in the cecum was repaired with a continuous suture of zero chromic catgut for the mucosa and a continuous Lemoert suture of fine pagenstecher for the serosa. The ectopic mass was then quickly removed after ligation of the blood vessels, and a posterior vaginal drain of one inch iodoform gauze was introduced through the vagina from above down. During the operation, which required forty minutes, the patient was given 500 c.c. glucose into the vein. She reacted well after the operation, but on the fourth day it was deemed advisable to give her a transfusion. Following this she gained rapidly, was out of bed on the fourteenth day, walked on the seventeenth day, and went home on the twenty-first day. On October 17, her blood pressure was 112, hemoglobin 58 per cent., and her general condition had improved so that she was able to do her own housework. The pelvic examination was negative. The pathologist's report describing the specimen was presented.

An Analysis of Fifty Cases of Ectopic Gestation.—Dr. HERMANN GRAD made this contribution, in which he divided ectopic gestations into four groups: 1. Ectopic gestation with negligible hemorrhage. 2. Ectopic hemorrhage with moderate hemorrhage. 3. Ectopic gestation with severe hemorrhage. 4. Ectopic gestation with fatal hemorrhage. Of the 50 cases reported, 37 were of the first group; 4 of the second; 7 of the third, and 2 were of the fourth group. Charts were presented showing that in the first group only 25 per cent. of the cases were diagnosed, while in the second group 50 per cent. were diagnosed. In the first group pain was the most common symptom in three cases and bleeding in one. In the third group collapse was the prominent symptom. It would seem that there was little difference between a case with collapse and one with syncope, but actually there was a great difference. In collapse the patient had a thready pulse but her mind was clear; she was alert and conscious of everything. It was different in a case of syncope; here the patient's mind was dull and she was not conscious of what was going on about her. Her pulse was lost. He felt that he could hold out hope for ruptured ectopic cases in collapse, but there was little hope for one in collapse with syncope. A chart showed the various operations performed on the 48 cases operated upon, and also that gestation occurred with the same frequency in both tubes. Patients belonging to the first group frequently recovered spontaneously. If the hemorrhage was discovered operation should be performed because there was danger of repeated hemorrhage. Operation could be deferred until the peritoneal irritation subsided. The problem was different in the third group of cases. In these shock was very great and collapse imminent. These cases required immediate treatment even before they were transported to the hospital. Local manipulations of every kind should be avoided. All efforts should be directed toward supporting the vital functions of the patient until the hemorrhage could be controlled by operative measures. The pain should be relieved by morphine, the head lowered, the extremities bandaged. A donor should be procured for a blood transfusion, which was started before the incision was made in the abdomen, continued during the operation, and ended when the abdomen was closed. Could anything be done for the fourth group of cases? These fatal cases of hemorrhage bore transportation poorly; therefore something must be done for them when they were first seen. The first aim in these cases was to restore the circulation to a degree compatible with life. Infusing these patients with saline to which 6 per cent. gum acacia had been added would restore the circulation for a short time until the patient could be transported to a hospital where the bleeding could be stopped and a transfusion given from a proper donor. A physiological salt solution did not remain in the circulation long enough to do any good, but by adding gum acacia the fluid remained in the circulation for a longer time.

Dr. FRANK R. OASTLER said he had had the privilege of seeing 150 cases of ectopic gestation, the last that afternoon. In looking over Dr. Grad's paper, the first thing that was noticeable to him was that Dr. Grad called attention to the fact that ectopic gestation was really a subacute disease. Out of 109 cases which he had reported in 1917, in *Surgery, Gynecology and Obstrics*, only 15 cases were of the pyrotechnic or explosive variety. The disease was for the most part subacute and not acute. It was the exception and not the rule to find the patient in a faint, collapsed, exsanguinated, and with a thready pulse. Another point upon which Dr. Grad's experience coincided with his was that ectopic gestation occurred the same number of times on the right as on the left side. When one considered the etiology of ectopic gestation a common cause given was inflammatory disease. Inflammatory disease occurred oftener on the left side than on the right side. If it was true that ectopic gestation occurred equally as often on one side as on the other, inflammatory disease might be a cause of ectopic gestation but it could not be the only cause. Dr. Grad divided his cases into four groups, the mild, the severe, those with collapse, and those with syncope. He had not been able to divide his cases so finely, but divided them into two groups, the fulminating and the subacute. If one made such a fine distinction the patient might leave us while we were making the differentiation. Dividing ectopic gestations into two groups made differentiation much simpler. Dr. Grad had attributed fatalities to hemorrhage. Dr. Oastler said he thought they might be attributed to shock as well as to hemorrhage. Dr. Grad said there was a lack of necessity of removing blood clots from the abdominal cavity. He would remove the blood clots from the abdominal cavity as thoroughly as possible because he believed they created shock in ectopic gestation. They made convalescence much harder and recovery much slower. He thought nearly all fatal cases were due to both hemorrhage and shock, but there was one class of ectopic gestations that was nearly always fatal, that was the interstitial variety. When one met with the fulminating cases that died before they reached the operating table it would be found that they were nearly all of the interstitial variety. Another question was the advisability of operating upon every case immediately. If one felt that he had made a diagnosis of ectopic pregnancy he should at least open the cul-de-sac and if he found blood the operation should be completed above or below as the case might be. As to the question of salt solution with glucose gum, he had had experience with salt solution but not with glucose gum, and was not yet converted to the idea that salt solution was useless. He considered it a procedure of value, for it must be remembered that one could not always obtain blood for transfusion. Furthermore a reaction might follow blood transfusion which might be sufficient to topple over a patient who was on the verge between life and death.

Dr. LOUIS J. LADIN stated that he was absolutely in accord with Dr. Oastler on every point upon which he took issue with the reader of the paper. He had repeatedly laid stress on what Dr. Oastler had said in papers he had published and in discussions on this subject; and was glad of the opportunity to emphasize these facts again. Dr. Grad's grouping was original and interesting, but he believed the only safe classification of tubal pregnancy was the division into two groups—ruptured and unruptured. He could not understand why a correct diagnosis was made in only 25 per cent. of the series. This was certainly much too low a percentage. A positive sign of intrauterine pregnancy was the elastic area in the median line of the anterior wall of the uterus, to which he had called attention in a paper read before this Section in February, 1907. In uterine pregnancy the elastic area was always present. As regarded treatment, after all that had been said and written on the subject it was indeed surprising to find an advocate of delayed operation, especially in this city, where transportation and access to a hospital could be obtained at a minimum loss of time. His experience consisted of a series of over three hundred operations for extrauterine pregnancy, a large number of them being of the tragic type where

immediate operation was the invariable rule. No case was refused operation so long as there was a cardiac beat. There were four deaths in this series due to complications and not to shock and hemorrhage. In view of these experiences he had no hesitancy in saying that if the fatal cases reported by Dr. Grad had been operated on immediately upon arrival at the hospital, and infused or transfused afterward, instead of being infused or transfused while delaying the operation, the results would have been different. It could not be emphasized too strongly that shock, no matter how severe it might be, was no contraindication to immediate operation. Saline infusion should be employed either at the time or after the abdomen was open to check the bleeding. He had never had occasion to give a transfusion for hemorrhage from ruptured tubal pregnancy. It was generally admitted now that patients did die of hemorrhage due to ruptured tubal pregnancy, and he had seen one death caused by delayed operation. This patient collapsed in his office after examination, and instead of sending for an ambulance at once he waited for an hour or more before doing so. This was at a time some years ago when the doctrine of deferred operation was making its strongest impression. Prompted by that impression and actuated by a desire to avoid a scene in his office, he momentarily departed from his rule of immediate operation. When he did summon an ambulance there was some delay. He had the patient transferred to the nearest hospital, where she died on the operating table. This patient's life would have been saved if she had been transferred to the hospital at the time she collapsed in his office. Subsequent to that experience he had had four other patients collapse in his office with internal hemorrhage due to ruptured tubal pregnancy, and having learned his lesson, they were all immediately transferred to a hospital for immediate operation, and they all recovered. It was his practice to remove all blood clots from the abdomen, and as much as possible of the fluid blood. Clots might become infected and give rise to intestinal adhesions and interfere with the smoothness of convalescence. Shock and the rapidity of the recovery after operation depended not so much on the amount of blood as upon the time the hemorrhage was allowed to continue. The earlier the operation after rupture, the more rapid the recovery regardless of the severity of the hemorrhage.

Dr. BAILEY said he hoped the question of the advisability of immediate operation when the patient was in shock would be discussed. Under the conditions met in the war zone, as he understood, in the cases injured at the front it was found that the mortality was much lessened if measures were instituted to combat shock before an operation was entered into.

Dr. EDWARD WALLACE LEE said that several years ago he was called to see a patient in a hospital on account of a fibroid tumor which was growing rapidly. One of the features of this case was that the woman was having bloody discharges from the bowels, the blood being in clots that looked like old clots. The patient was 45 years of age and the tumor about the size of a six months pregnancy. On external palpation it did not give the feeling of a fibroid; it was somewhat nodular but not like a multiple fibroid. Vaginal examination showed fulness in the cul-de-sac. A sound passed into the uterus showed the uterus of normal depth. Without deciding upon the diagnosis he proceeded to open the abdomen. He found an immense organized clot of blood but no membranes. He broke off the clot piece by piece until he came down upon the Fallopian tube, near the ovary, and found where the clot came from. A portion of this clot seemed to run into the intestinal canal. It had evidently ulcerated through into the bowel. Further proof of this seemed to be offered by the fact that when the clot was cleansed away from the intestine the smell of gas from the bowels was very perceptible. He could not find the opening into the intestinal tract and did not look long for it, but drained and packed the wound and sewed up the abdomen. A fecal fistula resulted, which persisted for about six weeks and then closed. The patient's recovery was otherwise uncomplicated. This was evidently a tubal pregnancy. Dr. Grad's classification and treatment required a great deal of thought before one could coincide with all the views he expressed. First, he would speak of the cases of tubal pregnancy that were recognized when they came to the office, and in which an examination was made in order to differentiate them from pyosalpinx or salpingitis. These cases required operation but perhaps not immediately. Dr. Grad's so-called fatal cases demanded immediate operation before anything else was done; one should not even wait for a general anesthesia; local anesthesia could be used and no stimulation until hemorrhage was controlled.

Dr. HIRAM N. VINEBERG said that in reference to Dr. Chase's case, he recalled a case of ectopic pregnancy with hemorrhage from the bowel. In this instance the pregnancy had formed in the small stump of the tube following a salpingectomy for pyosalpinx some time before. The ovular sac was bounded in part by a portion of the sigmoid. At the operation he could not find any opening in the bowel. Evidently the villi had eroded the wall of the intestine sufficient to produce bleeding, but not enough to cause a defect perceptible to the naked eye. Regarding Dr. Grad's clinical classification of ectopic pregnancies, it might work satisfactorily in many cases, but a case with negligible intraperitoneal hemorrhage to-day might have a fresh infusion of blood into the peritoneal cavity during the night and to-morrow belong to one of the other groups. It was sometimes difficult to differentiate between the syncope due to shock, caused by the impact upon the peritoneum of a moderate amount of blood and that due to a very copious effusion of blood such as occurred in the class of cases grouped by the reader of the paper as *fatal*, and designated by the speaker as cataclysmic and by others as tragic. Dr. Vineberg said he found the following good working rule. In the moderate effusions an intravenous saline injection would bring about a prompt improvement which would be maintained; in the other group, there might be a slight improvement in the pulse at first, but it soon disappeared. The latter group (cataclysmic) were exceedingly treacherous. In one instance in which he was curetting a woman in her home and was not provided with instruments for an extensive operation, he opened the abdomen with scissors, stopped the hemorrhage and the patient recovered. When patients were in a desperate condition, he would not transport them but would operate at once even with the patient in bed. If a person cut the femoral artery he did not think of giving him saline and gum solution; if one was going to save the patient he could not wait for transportation or blood transfusion. Dr. Vineberg also corroborated the statement of Dr. Oastler and Dr. Ladin in reference to salt solution; it had helped him out in these very desperate cases. When the bleeding had stopped salt solution was a great help. If possible blood clots should be removed; it was not a good thing to leave them.

Dr. MEYER R. ROBINSON, after complimenting Dr. Grad on his paper and expressing admiration for his frankness in stating that in 25 per cent. of these cases he had failed to make a diagnosis, said the experienced clinician would readily understand this apparently large percentage of mistaken diagnoses. While the acute, fulminating and tragic cases of ruptured tubal pregnancy presented but slight diagnostic difficulties, the chronic cases would frequently task the diagnostic acumen of the most astute gynecologist. He was sure most of the diagnostic errors in Dr. Grad's series occurred in the latter group. At the Beth Israel Hospital where the number of ectopic gestations operated upon exceeded that of any other hospital in the city, they recognized only one contraindication to operative procedure in a case of ruptured tubal pregnancy and that was a dead patient. As long as the precordial heart sounds were audible and respiration was still present they operated, and not until sounder facts and better operative results were offered by those who waited for the symptoms of shock to subside before they resorted to operative treatment would they deviate from their rule of immediate operation. Why should intraabdominal hemorrhage due to ruptured tubal pregnancy be treated differently from intraabdominal hemorrhage due to other pathological causes? No other surgeon hesitated to stop hemorrhage as soon as it was diagnosed, why should the gynecologist hesitate? If shock was the deterrent

factor which stayed the hand of some gynecologists from carrying out their life-saving operation, then why resort to other means first instead of at once removing the cause of the shock, which in this instance were the hemorrhage and the peritoneal irritation by the foreign body, the free and clotted blood? As to the time of the transfusion he also took a very decided exception to the views of the reader. No intravenous infusion, no matter what it was, should be given before the bleeding point was secured. Nature in her effort to save the bleeding patient from exsanguination slowed the heart action, diminished the rate of the blood flow, and with the fibrin ferment formed as soon as blood was spilled produced clotting. The introduction of fluids into the veins stimulated the heart, increased the rapidity of the blood current, retarded clotting and thus thwarted nature's effort to keep the bleeding point plugged. Intravenous infusions in these cases was life giving and life saving if done after the bleeding had been stopped.

Dr. MAURICE OLIVER MAGID said most of the speakers had spoken only of the pathology and treatment of ectopic gestation. Dr. Grad maintained that ectopic gestation was a subacute condition and his view was confirmed by Dr. Oastler. As long as this state of the disease existed there must be some etiological features that could be controlled. He would like to hear what the gentlemen present considered the true etiology of ectopic pregnancy. Dr. Oastler made the point that inflammation was present but it was not the real or only cause of this condition. Everybody admitted that a diseased tube was the fundamental factor that must be present in every ectopic pregnancy. He would like to hear why the tube was diseased, and why the fecundated ovum could not leave the tube.

Dr. Grad said the case of Dr. Chase's recalled to his mind a similar condition. The patient began to bleed from the rectum before there were any symptoms of ectopic pregnancy. The blood was sometimes dark, sometimes brighter. The ectopic had ruptured into the rectum. He found evidence of a large pelvic abscess. The cul-de-sac was opened to drain and through the opening there extruded a small fetus.

Dr. CHASE said the point brought out in his case report was that the rupture was directly and primarily into the gut. There was no blood in the peritoneal cavity. Women were sometimes brought into the hospital in whom rupture had taken place into the peritoneal cavity which was followed by sloughing of the membranes and infection which gave very definite symptoms, but here the entire tube became distended and ruptured into the intestine, so that every bit of blood was lost directly into the intestine and through the rectum.

Dr. GRAD, in closing the discussion, reiterated the distinction he had made between collapse and syncope, and said that in the latter condition he questioned whether the patient could be saved whether one operated at home or took the patient to the hospital. The question was could anything be done to save these patients? Could something be put into the circulation that would sustain the patient until she reached the hospital where a donor could be obtained, a transfusion given, and operation performed. There was a difference between the shock of ectopic pregnancy and that seen on the battlefield. In dealing with ectopic pregnancy one must treat the condition of collapse. These patients died while they were being transported to the hospital. If gum solution were introduced it might be possible to save some of these patients. He had made a different classification of ectopic pregnancy from that they had been using because he felt that they had not dealt with this condition as efficiently as they should have done. The cases Dr. Ladin saved were those with severe hemorrhage, and when severe hemorrhage occurred such cases could be operated upon, but the type of cases he was speaking of were those on the verge of death. Here the question was not to stop bleeding, for that had already stopped, but to bring the patient into a state in which she could be operated upon. There had been some difference of opinion in regard to the removal of blood clots from the abdomen. He always removed as much of the blood as he could remove in an expeditious manner, but he felt that a blood clot would not do as much harm as prolonging the operation. A blood clot in the abdomen might cause a rise in temperature but it did not delay recovery.

Dr. LEE asked Dr. Grad if he thought that a blood clot left in the abdominal cavity could be of any benefit to the patient.

Dr. GRAD replied that blood left in the abdominal cavity was absorbed too slowly to do any good; he thought they could do no more damage by keeping the abdomen open longer to clean out the blood clots than we did in leaving some in. The question was, when called into consultation in these cases that were usually fatal and where they were practically helpless, whether there was nothing to be done but what they had been doing.

A New Method of Vesical Anesthesia.—Dr. HENRY DAWSON FURNESS made this presentation. He stated that anesthesia for cystoscopic examination and operative treatment of the bladder, aside from that obtained from general inhalation anesthesia, or nerve blocking, as in sacral, epidural, and spinal, had been most unsatisfactory. Some months ago Dr. Howard Lindeman had read a paper on the treatment of trigonitis by the injection of the trigonum with a solution of urea and quinine hydrochloride, and had exhibited a long needle which could be passed through a cystoscope to accomplish this purpose. In the discussion of Dr. Lindeman's paper Dr. Furness had recalled that he advocated the use of this instrument for the injection of anesthetic solutions into the base of ulcers to be cauterized, and also into the pedicles of papillomata to be fulgurated. Later it occurred to him that in women the same result might be obtained by a more simple method, namely, infiltration of the vesicovaginal septum from the vaginal side. This method was applicable, of course, only to favorably situated lesions. Almost any portion of the vesical wall could be infiltrated by one or both of these methods, although he would hesitate to infiltrate that portion of the bladder wall covered by peritoneum; yet in the absence of infection, even this portion might be safely and successfully anesthetized. He had recently had opportunity to operate upon three patients under infiltration anesthesia. Two of them had papillomata of the region of the ureteral orifice, and one had an ulcer over the trigonum. The two papillomata cases were successfully fulgurated with very little discomfort after infiltration of the portion of the vesico-vaginal septum that underlay the growth. In the ulcer case, cauterization with fused nitrate of silver was done almost painlessly. Previously he had cauterized the ulcer after having attempted to anesthetize the bladder by the instillation of 4 per cent. eucaine solution, but the procedure caused a great amount of pain. In each of these cases ½ per cent. solution of novococaine with adrenalin was used, the amount varying from 5 to 10 c.c. It was essential to have a tightly fitting plunger to the syringe, as otherwise there might be a back leakage and failure to deposit the solution in the tissues. The syringe used by dentists for the infiltration of gums worked admirably. Thus far, Dr. Furness said, he had used this procedure only in the cases mentioned but with each one the result was eminently satisfactory. He saw no reason why the whole mass of the bladder or any portion of it, could not be anesthetized, and any operation that could be done under general anesthesia (where the element of relaxation was not essential) might be performed. In none of these cases was any untoward result noted.

Dr. HOWARD E. LINDEMAN expressed the opinion that for the purpose mentioned Dr. Furness's method was much simpler than the one he had been using in the treatment of trigonitis. But his object was not to obtain anesthesia. In trigonitis the outstanding feature was the congestion, hypertrophy, and hyperplasia of the subepithelial blood vessels, and he attempted to cause a destruction or at least a constriction and compression of these vessels. Knowing that quinine and urea solution when injected into the tissues for the production of local anesthesia caused a deposit of fibrin and a considerable induration at the point of injection, he decided to employ this in the treatment of trigonitis, avoiding necrosis. He had never made the injection from the vaginal side, but believed this could be done by having a cystoscope in the bladder at the

same time to watch the point of the needle and control its location, and see that the point did not come through the mucous membrane, because one wished to deposit the solution in the submucous tissues. It might be simpler to give the treatment in this way, because it was not an easy procedure through the cystoscope and took considerable time; to cover an area the width of the trigone and for a distance of one-half an inch from before backward took one-half hour or more, but he believed it would be more difficult to localize the injection in the trigone unless a cystoscope were used coincidently in the bladder to control the site of injection.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

WEST VIRGINIA STATE BOARD OF HEALTH

July 13, 1920.

(*Concluded from page* 882.)

SURGERY.

1. Describe femoral hernia and give radical operation and details.
2. Give diagnosis and treatment of early carcinoma of the cervix.
3. Describe briefly the common symptoms of intestinal obstruction and the best methods of treatment.
4. What is cellulitis; give treatment.
5. Give symptoms of enlarged prostate and advise best form of treatment.
6. Differentiate toxic from simple goiter, and give treatment.
7. What are the causes, and give treatment of hepatic abscess.
8. Give treatment of a compound fracture of the rib.
9. Describe Colles' and Pott's fractures.
10. Give your treatment of a compound fracture of the lower third of the femur.
11. Give treatment for postoperative shock.
12. What is sepsis, and give treatment.

SPECIAL MEDICINE.

1. Describe the mechanism of accommodation.
2. Give cause, symptoms, and diagnosis of iridocyclitis.
3. Give cause, symptoms, and treatment of blepharitis marginalis squamosa.
4. Give signs, symptoms, and treatment of acute suppurative otitis.
5. Describe fully the rational treatment of aural polypi.
6. What is tinnitus aurium and its direct cause?
7. Give signs, symptoms, and treatment of antral sinusitis.
8. Under what conditions should the nasal turbinates be removed.
9. Causes and treatment of epistaxis.
10. Describe fully the clinical diagnosis between acute follicular tonsillitis and diphtheria.
11. Causes, signs, symptoms, and treatment of chronic pharyngitis.
12. Causes, signs, symptoms, and treatment of Vincent's angina.

ANWSERS.

SURGERY.

1. "A *femoral hernia* protrudes through the crural canal, and presents through the saphenous opening. It is more common in women, especially in those who have borne children. The coverings are: (1) Skin and subcutaneous tissue, (2) cribriform fascia, (3) anterior layer of the femoral sheath, (4) septum crurale and extraperitoneal fat covering the peritoneal sac. The femoral vein lies immediately to the outer, and Gimbernat's ligament to the inner, side of the neck of the sac. An irregular obturator artery may pass between the neck and the femoral vein ,or along the free border of Gimbernat's ligament. A femoral hernia, after leaving the saphenous opening projects upward and outward along Poupart's ligament, and may even project above it, but the neck is always below Poupart's ligament and outside the pubic spine."—(*Aids to Surgery.*)

Radical Cure of Femoral Hernia.—An incision is made parallel with Poupart's ligament; the coverings are divided and retracted so as to expose the sac which should be cleared from the surrounding fat right up to where its neck disappears under Poupart's ligament. The sac is opened and any adherent omentum tied off and removed. The neck of the sac is exposed above Poupart's ligament by a small incision through the aponeurosis of the external oblique, and the sac is brought out through this, and its neck occluded and fixed by sutures. If omental adhesions extend above the level of Poupart's ligament, they are more easily dealt with if the ligament is cut across and the sac laid open throughout its extent. The opinion is gaining ground that no attempt should be made to close the femoral canal.—(Thomson and Miles' *Manual of Surgery.*)

2. *Early carcinoma of the cervix:* The symptoms are hemorrhage (which gradually becomes more constant and profuse), pain, and discharge (this is at first serous and odorless, later becoming bloody, mucopurulent, and of a fetid odor). The diagnosis is made on the physical and microscopical examination. The cervix is hard and nodular, and the mucous membrane seems immovably fixed to the underlying tissue. These nodules break down, the entire cervix becomes ulcerated, or large cauliflower-like masses may fill the upper part of the vagina. The diseased tissue is friable and bleeds upon touch.

The treatment is removal of the uterus, provided the disease is limited to the cervix.

3. *Symptoms of acute intestinal obstruction:* "Sudden severe pain referred to the umbilicus comes on, perhaps, after an effort. Shock, evidenced by a weak pulse, a cold, clammy skin, and a subnormal temperature, accompanies the pain. The pain, intermittent at first, becomes continuous. Vomiting is persistent, and soon becomes fecal smelling. The patient becomes exhausted by the vomiting and inabliity to take food. The abdomen becomes distended, and if the obstruction is not relieved, perforative peritonitis follows, so that the patient dies in about seven to ten days from the onset. Constipation is usually absolute, though the lower bowel may empty itself at first."

Treatment: The only thing that can give the patient the chance he ought to have is immediate operation. It is advisable to wash out the stomach before the operation, so that intestinal contents may not be vomited and inhaled during the operation. Three objects are aimed at: (1) To empty the distended bowel above the obstruction; (2) to relieve the obstruction; (3) to treat the strangulated intestine. In cases that are almost moribund, the abdomen should be opened with cocaine or eucaine anesthesia; a distended coil is pulled out and tapped, a Paul's tube being subsequently tied in. The peritoneal cavity is protected with gauze packing during these manipulations. The bowel is stitched to the abdominal wound after the feces and flatus have drained away. No attempt at relief of the obstruction can be made in these cases till a later date, and, of course, a high death-rate must be expected.

In less severe cases the abdomen should be opened in the midline below the umbilicus, and a systematic search made for the cause of the obstruction. The hernial orifices are first examined, then the cecum. If the cecum is distended, the obstruction lies below it; if collapsed, above it. In the former case the sigmoid should next be examined. If collapsed, the colon must then be traced backwards till the obstruction is found. If the cecum is collapsed, the intestine must be pulled out a foot at a time and examined, beginning with the ileum, and replacing it as each part is done with. If the intestine is much distended, several coils may be tapped and emptied, to facilitate the search."—(*Aids to Surgery.*)

4. *Cellulitis* is diffuse spreading inflammation in the subcutaneous tissues. *Treatment: Local*—Free and early exit to the pus and sloughs must be given. Incisions exposing the whole area are essential, and no pockets should be left. The part should then be dressed with gauze fomentations of 1 in 40 carbolic or 1 in 2000 perchloride. The continuous bath must be used if fomentations do not answer. Injection of antistrep-

tococcic serum, 10 c.c. three times a day, is sometimes useful. *General Treatment* consists of feeding the patient well with milk and eggs and giving plenty of stimulant.—(*Aids to Surgery.*)

5. *Enlarged prostate is characterized by:* Slowness in starting urination; difficult micturition; frequency of micturition, particularly at night; the presence of residual urine, as may be demonstrated by catheterizing the patient just after he has urinated; dull, aching pain in the perineum and above the pubes; enlargement of the lateral lobes of the prostate; there may be cystitis and retention of urine. *Palliative treatment* consists in: Mild and unirritating diet, avoidance of alcohol, taking plenty of milk or water, or other diluent. Alkalies and sedatives should be taken, also urotropin or other antiseptic so as to prevent cystitis. Regular catheterization, at least once a day, preferably in the evening, and with due aseptic precautions. *Operative treatment* is excision of the prostate gland.

6. *Simple goiter:* Fulness in the neck; thyroidal tumor moving with deglutition, the enlargement being either uniform or irregular as the whole thyroid or only a part of it is affected; and evidence of pressure on the trachea, esophagus, sympathetic, or recurrent laryngeal nerve. Sometimes there may be paroxysmal dyspnea, which may prove fatal.

Toxic goiter: The cardinal symptoms are exophthalmos, thyroid, hypertrophy, tachycardia, and muscular tremor. *Tachycardia* and cardiac disturbance appear early and very constantly. The pulse rate varies from 100 to 200 or more per minute. There is anemia, and from this and the rapid, violent action of the heart, dilatation and hypertrophy may follow. Hemic murmurs and murmurs of relative insufficiency are therefore common. Palpitation is frequent and distressing; the carotids pulsate visibly. *Exophthalmos,* or protrusion of the eyeballs, may be but slight, or so marked that the lids cannot be completely closed. It imparts a staring look of fear or horror to the face. It is sometimes unilateral. It may be caused by (1) venous congestion, or dilatation of the retro-bulbar arteries, (2) overgrowth of the orbital fat, (3) contraction of Müller's muscle. It is attended by certain classical signs—(1) Retraction of the upper lid, so that the sclerotic is seen all around the cornea. (2) When the patient looks down, the upper lid follows the movement of the eye slowly and imperfectly, so that a larger area of sclerotic is seen above the cornea. *Von Graefe's sign.* Other ocular phenomena may occur. There may be ptosis; imperfect convergence on near vision; temporary paresis or paralysis of the third, fourth, or sixth nerve, causing strabismus. The fundus is usuallly normal. *Thyroid enlargement* is moderate in degree, the right side being usually the larger. It may occur early or late. The gland is soft and elastic at first, later firmer and nodular. Systolic thrill may be felt over it, and systolic murmur heard. *Tremor* may affect the limbs only, or the whole body. It is most notable on holding out the hands, palms downward, and consists of rapid, fine rhythmic movements of the whole hand, but not the fingers separately. Any one of these symptoms may be absent at a given stage of the disease; of them all, tachycardia is the most constant. Other symptoms that may occur are digestive disturbances—variable appetite, sometimes vomiting, often diarrhea; wasting; polyuria, glycosuria, albuminuria; flushing of the head and face, free sweating, occasional pyrexia; cutaneous eruptions; mental alterations—depression, melancholia, or even mania."—(Wheeler and Jack's *Handbook of Medicine.*)

Treatment of Innocent Goiter. Removal of the patient from goitrous district, iodine and iodides, thyroid extract. This drug treatment only acts in parenchymatous cases in young patients. Marked diminution will occur in one month or not at all. Local applications—iodine and mercuric iodide ointment—may be applied to the goiter, but the effect is very slight. EXTIRPATION.—The operation of choice in diffuse goiter. One half or more of the gland is removed in its capsule. RESECTION is similar to the above, but the gland is cut through, so as to leave behind the part so intimately connected with the recurrent laryngeal nerve between the cricoid cartilage and esophagus. Both lobes may be removed in this manner. ENUCLEATION is the operation for cysts and adenomata, which are shelled out from a capsule formed by thinned gland substance.

Exophthalmic Goiter.—Treatment. PARTIAL THYROIDECTOMY has a mortality of 12 per cent., and in only about 30 per cent. of cases does a cure result. The patients die from shock or from acute thyroidism. ARTERIAL LIGATURE. Both superior and one inferior arteries are tied, and some improvement results. SYMPATHECTOMY. Removal of both cervical sympathetic cords, including the superior ganglia. The mortality is high (12 per cent.), and the results are uncertain. The operation should be performed under local anesthesia. —(From Grove's *Synopsis of Surgery.*)

7. "*Abscess of the liver* is most frequent in the inhabitants of tropical countries and in alcoholics. Infection may be direct, as in wounds or when it extends from neighboring organs; it may travel up the bile ducts, particularly when they are obstructed; and it may be carried by the blood stream, either hepatic, as in general pyemia, or portal, as in abscesses following infective lesions in the area drained by the portal vein, *e.g.* appendicitis, and dysentery, or other forms of intestinal ulceration. Hydatid cysts may suppurate, and in tropical countries a contusion may be followed by an abscess. The organisms most frequently found are streptococci, staphylococci, and the colon bacillus. In that form following amebic dysentery (*tropical abscess*) the pus is frequently sterile, the organisms probably having perished as the result of the chronicity of the case. Ascarides, distoma, and coccidia are possible, but rare causes of hepatic suppuration. Tropical and traumatic abscesses are usually solitary and occupy the right lobe; pyemic abscesses small, multiple, and hence rarely amenable to treatment.

"The *treatment* is *hepatotomy* by the abdominal or thoracic route, depending upon the situation of the abscess. If the former is chosen, the abdomen is opened, usually by a longitudinal incision, below the costal arch. If the liver is adherent to the abdominal wall, the abscess may be opened without danger of contaminating the peritoneal cavity. In the absence of adhesions the peritoneal cavity must be protected by gauze packing. The abscess is located with a hollow needle, and opened by passing a knife or a cautery blade along the needle. The abscess is irrigated, and drained with a rubber tube, the free portion of the cavity being lightly packed with gauze. After removing the gauze which protects the peritoneal cavity, the liver below the opening of the abscess may be sutured to the abdominal wall. When the abscess is high on the dome of the liver, the transpleural or thoracic operation is indicated. The abscess is located with the needle as directed above, the rib below the needle excised, and, if the pleural cavity is obliterated at this point by adhesions, the abscess opened as previously described. If there are no adhesions, the two layers of the pleura should be stitched together with catgut."—(Stewart's *Manual of Surgery.*)

8. *Treatment of fracture of the ribs:* Strips of plaster reaching from the spine to the sternum should be placed over the injured side during deep expiration. The strips should overlap, and a bandage should be put on over the plaster. If the fracture is due to direct violence, no strapping should be used, but the patient kept still by placing sand bags on either side. Ribs always unite readily.

"Fracture of the ribs complicated with visceral injury is highly dangerous, and requires confinement to bed. The treatment is that of the visceral injury. If there be bloody expectoration, apply adhesive strips as above indicated, put the patient to bed reclining on a bed-rest, keep him quiet, subdue the circulation, and employ opium, diaphoretics, and expectorants (a good mixture consists of squill ipecac, ammonium acetate, and chloroform; opium is given separately). Inflammations of the lung or the pleura, fortunately, are apt to be localized, and are treated as are ordinary inflammations of these parts. If signs of pulmonary injury are severe from the start or become worse under medical treatment, incise, resect a rib, arrest hemorrhage, and drain the pleura. In laceration of an intercostal artery incise and try to ligate; if unable to ligate, resect a rib and apply a ligature. If the signs point to internal bleeding, resect a rib, search for the bleeding point, and ligate. Emphysema usually soon disappears; but if it does not, make many small incisions in the cellular

tissue, dress antiseptically, and employ pressure. When there arises a sudden attack of dyspnea, which is prone to happen in these cases, and in which the face becomes blue, the heart labors, and suffocation seems imminent, bleed the patient almost to syncope."—(Da Costa's *Modern Surgery.*)

9. *Colles' fracture* is a transverse fracture at lower end of radius; it is due to falls on the outstretched palm. The line of fracture is about an inch above the wrist, and runs obliquely downward from behind. The lower fragment is driven backward and upward, and rotated to the radial side, carrying the hand with it into the position of abduction, and leaving the tip of the radius at the same level as, or higher than, the tip of the styloid process of the ulna. The internal lateral ligament of the wrist is ruptured or the styloid process torn off. The fracture is usually impacted, the upper fragment being driven into the lower. The deformity is characteristic, viz.: (1) the hand is abducted; (2) the styloid process is on the same level as, or lower than, the tip of the radius; (3) the upper end of the lower fragment projects above the back of the wrist; on the front is a corresponding depression, while above it the upper fragment projects forward. Union occurs readily, but it is common to get deformity and adhesions about the site of fracture.—(*Aids to Surgery.*)

Pott's fracture is very common, and is due to indirect violence, such as turning over on the inside of the foot. The strain tears through the internal lateral ligament of the ankle or tears off the tip of the malleolus; then the astragalus is pressed against the inner side of the external malleolus by the continuation of the violence. The fibula is overbent, and breaks about three inches above the tip of the malleolus. At the same time the foot is displaced outward or outward and backward. In many cases, however, the displacement is slight.—(*Aids to Surgery.*)

10. In *compound fracture of the thigh* the edges of the wound are cleaned, bleeding is stopped, dead tags of flesh or bone are removed, and the fracture reduced. Care must be taken to preserve the normal line of the leg and thigh; the anterior superior spine, the inner edge of the patella and the great toe must be in a straight line. Extension by weight and pulley will be required. The limb is cleansed and shaved, and a broad strip of adhesive strapping is applied to each side, extending from two inches above the knee to an inch or two above the malleoli. "Large pads of wool should be introduced between the malleoli and the sides of the strapping, to prevent the skin over these processes becoming chafed. A cord is fixed to the stirrup and passes over a pulley at the end of the bed, and is there secured to a tin can which is filled with shot up to the required weight. If now the foot of the bed is raised on blocks, extension and counterextension are obtained, the patient's body acting as a counter-extending weight. When the fracture has been manipulated into a good position under an anesthetic (it is always necessary to control the fracture with some splints before the anesthetic is given), the extension apparatus is applied, and Liston's splint is bandaged to the limb. A proper splint of this kind should extend from the axilla to below the foot, and it is secured to the patient in three places: (1) round the thorax, (2) round the limb at seat of fracture, and (3) to the leg and ankle. In securing the thorax it is necessary to take the first turn of the bandage round the splint from within outward and then round the back of the patient's thorax, the direction of the bandage in this way preventing the natural tendency of the splint to rotate forward. Several turns should be taken round the thorax in order to retain it in position. The remaining bandages should be secured from without inward, in order to check the tendency of the foot and leg to roll outward. In order to prevent the rotation of the limb a method devised by Cheyne and Burghard may be adopted. This consists in securing the limb at the level of the popliteal space to a short splint, 8 by 4 inches, by means of a plaster of Paris bandage. The presence of this splint effectually prevents any rotation, either inward or outward. Special care must be taken to see that the malleoli and the skin over the heel are not subjected to any great pressure. If the fracture is put up in this way it must be kept up for six to eight weeks, and the amount of weight applied to the limb must be varied according to the age of the patient and the tendency to deformity. Roughly, half a pound a year will be found to answer most purposes, but if there is much spasm the amount can be increased up to 20 pounds. At the end of six weeks, during which period the limb should have been regularly massaged—this can usually be done without disturbing the extension—the patient should be got up, and some form of retentive apparatus applied. A Thomas' splint is a very valuable form of apparatus, since it enables the patient to get about, and allows of active movements being undertaken, while he himself can hobble about on crutches. If such treatment is not considered advisable, he should be kept in splints for eight weeks, and then allowed to lie in bed without any apparatus on at all, while the limb is regularly massaged, and he should be encouraged to get up for a short time on crutches, gradually exercising the limb, until at the end of about ten weeks he is walking on it as before."—(Pye's *Surgical Handicraft.*) Some surgeons advise immediate operation, and cut down on to the fractured bone and, after reduction, fix the fragments by two or three Lane's plates. If gangrene results from injury to the popliteal vessels, amputation may be necessary.

11. *Treatment of shock:* Place the patient in the recumbent position, with the head low, apply warmth to the body, administer a stimulant, and give a hot saline infusion; morphine, hypodermically, may be necessary for the relief of pain. Adrenalin solution is administered into the arterial system.

In surgical operations *shock may be largely prevented* by reassuring nervous patients, keeping the patient warm, the avoidance of the excessive catharsis, and semi-starvation that often prevail before operations, the administration of strychnine and atropine before operation, the avoidance of delay and undue exposure handling of parts during the operation, prompt checking of hemorrhage, and by using the utmost gentleness. With a view to preventing the passage of exciting afferent impulses, Crile advocates "blocking" of the nerves by the injection of a 1 per cent. solution of eucaine into their substance on the proximal side of the field of operation.

12. *Sepsis* is a general term which indicates that an operation wound or an accidental wound has become infected with bacteria. These may be either putrefactive or pyogenic organisms.

The putrefactive organisms can only grow in dead tissues, but the toxins formed by them are so irritating as to be able to cause sloughing of the surrounding parts, as in phagedena. If absorbed, a high temperature is produced, as when a portion of putrefying placenta is retained in the uterus.

The pyogenic organisms can grow in living tissues, and also produce toxins. The organisms may invade the tissues in the neighborhood and give rise to erysipelas or cellulitis, or get into the circulation and cause pyemia of septicemia. Hectic fever, septic fever, and sapremia, are terms used according to the amount of absorption of toxin, but the process is the same in all. Once a barrier of granulation tissue is formed by the reaction of the tissues, and so long as the septic material is not retained under pressure, the fever subsides. The symptoms are proportionate to the dose absorbed.

Treatment.—Remove the putrefying mass or open the abscess and provide free drainage. Administer stimulants and plenty of food. If the patient be very bad, intravenous injection of 2 pints of saline solution repeatedly, produces diuresis and diarrhea, and helps to eliminate the toxins. Purgatives also have the same effect."—(*Aids to Surgery.*)

SPECIAL MEDICINE.

1. "*Mechanism of Accommodation*—The lens is an elastic structure, and when released from the flattening influence of its suspensory ligament tends to assume a spherical shape. During accommodation the ciliary muscle (especially the circular fibers) contracts, drawing forward the choroid and relaxing the suspensory ligament; this diminishes the tension of the lens capsule and allows the inherent elasticity of the lens to increase its convexity. The change in curvature affects chiefly the anterior surface of the lens. This is Helmholtz's theory and the one usually accepted. Lately

Tscherning has advanced a different theory; he maintains that the ciliary muscle increases the tension of the suspensory ligament during contraction and that this causes peripheral flattening of the lens with bulging anteriorly at its center. The act of accommodation is accompanied by contraction of the pupil, and (in binocular vision) by convergence of the visual lines." —(May's *Diseases of the Eye.*)

2. IRIDOCYCLITIS. *Causes:* — Syphilis, traumatism, rheumatism, eyestrain. *Symptoms:*—The most characteristic symptom is the deposit of exudate on the posterior surface of the cornea; it is distributed in isolated dots arranged in a triangle, with its base at the lower margin of the cornea, and its apex upward; opacity may ensue; the pupil may be sluggish, and the tension slightly increased. *Diagnosis:*—This is made by the addition of the spots of exudate on the posterior surface of the cornea and the tenderness of the ciliary region to the symptoms of iritis.

3. BLEPHARITIS MARGINALIS SQUAMOSA. *Causes.*—Uncorrected ametropia; some inflammatory process, such as conjunctivitis, keratitis, etc.; inflammation of the roots of the cilia; or the condition may be the result of strumous diathesis. Lice are sometimes a cause. There is also reason to attribute it to special bacteria. Dirty children are very susceptible to blepharitis. Continued eyestrain undoubtedly lies at the bottom of many obstinate cases. Obstruction of the lacrimal apparatus is a cause not to be overlooked.

Symptoms.—The lid-edges are swollen and reddish, and may cause intolerable itching and soreness. There is a gummy and yellowish secretion in the lashes and on the skin near the lid-edge, which, when dried, deposits as scabs and crusts. The lids are glued together after being closed for some time, particularly in the morning. The eyes tire easily. Eczema may be present about the lid-edge, and possibly in other parts of the body. The cilia are often dwarfed or entirely absent, causing a disagreeable disfigurement.

Treatment.—These cases are sometimes very obstinate, and despite all efforts at relief they cause the patient long years of discomfort, and produce a most annoying facial blemish. First of all, search for one of the causes enumerated. It is advisable to examine the refraction of the affected eyes, and be sure that the lacrimal apparatus is unaffected. Treat any possible cause. All the scales should be removed and the lid-edges kept clean and fresh. For this purpose warm water or a weak boric or bichloride solution (1:5000) should be used. In the eczematous variety bichloride in itself is an efficient remedial agent. The local treatment by massage, with a weak Pagenstecher ointment, is probably the best at our command.—(Gould and Pyle's *Cyclopedia of Medicine and Surgery.*)

4. ACUTE SUPPURATIVE OTITIS MEDIA. The signs and symptoms are: Pain (lessened when drum perforates), fever (100° to 104° F.), tinnitus, deafness (usually partial only), and purulent discharge (after perforation). *Treatment:* Dry heat allays the pain. Warmed water or warmed carbolic acid solution (1:40) may be used. Inflations, aspirations, etc., should be avoided. If the nares are filled with tough secretions, a spray of Dobell's solution may be used. If the pain continues over six hours in a child or over twelve hours in an adult without spontaneous perforation of the tympanic membrane, paracentesis of that structure should be performed. The concha and meatus should be smeared with petrolatum to avoid chapping, and the secretions should be gently mopped off as they appear.—(*Pocket Cyclopedia.*)

5. *Removal of aural polypi.*—"Whenever a polypus is large, and particularly if it have a pedicle, the best method of removing the same is by means of Blake's snare. . . . Before attempting to snare a polypus, the canal should be carefully syringed with a bichloride solution, 1:3000, to remove all secretion, and then carefully dried. Cocaine solution, 10 per cent., should then be instilled warm into the ear, and after a few moments the surgeon should make out with the probe the point of attachment of the polypus. It requires considerable practice and skill to apply the loop of wire about the growth. The removal of the latter may be followed by considerable hemorrhage, which can be controlled by tamponing the canal with styptic cotton."—(Bacon's *Manual of Otology.*)

6. *Tinnitus aurium* is the name given to any subjective sounds heard in the ear. The chief causes are: neurasthenia, impacted cerumen, otitis, and other ear diseases; Ménière's disease, obstruction of the Eustachian tube, anemia, leukemia, cerebral hyperemia and anemia, arteriosclerosis, gout, digestive disorders, excessive use of alcohol or tobacco, and the use of certain drugs such as quinine or salicylic acid.

7. *Acute catarrhal inflammation of the antrum of Highmore. Symptomatology.*—There is usually a history of acute rhinitis and pain in the region of the antrum, extending into the nose and angle of the jaw. There may be headache and some tenderness upon pressure in the canine fossa. The cheek of the affected side is frequently swollen. The discharge from this nasal cavity sometimes produces smarting and burning about the meatus of the nose. If the affection is due to diseased teeth, there may be pain and redness in the region of the tooth. With the enumeration of the above symptoms the diagnosis is usually simple. There is seldom any shadow to be detected upon transillumination. The nasal cavity of the affected side is observed to be congested. The middle turbinated body is swollen and impinges upon the lateral wall. There is usually little or no discharge to be detected coming from the region of the ostium.

Treatment.—The general treatment is directed to the restoration of the general metabolism. The patient should avoid exposure to cold and damp weather and be warned against the general conditions predisposing to acute catarrhal inflammation. The bowels should be flushed with a saline and the patient given salicylate or benzoate of soda or aspirin in ten grain doses, three times daily. The local treatment by the physician consists in applying a five per cent solution of cocaine and 1/5,000 adrenalin solution to the middle meatus. Following this, the nasal cavity should be thoroughly cleansed by spraying with a mild alkaline, antiseptic solution. A fifty per cent. solution of argyrol should be applied to the region of the ostium with a cotton-tipped probe. The nose is then sprayed with a two per cent. solution of camphor and menthol in albolene. The patient should be instructed to cleanse the nose with a Dobell's or Seiler's solution, three times daily, before meals. Hot applications in the form of a hot-water bag should be applied to the region of the antrum for one-half hour, morning, noon, and night.—(From Kyle's *Manual of Diseases of the Ear, Nose and Throat.*)

8. *The nasal turbinates should be removed,* in some cases of hypertrophic rhinitis, cystic conditions or polypi when they cause nasal obstruction.

9. *Epistasis,* "or bleeding from the nose, has a variety of causes. Traumatism, ulceration, tumors, and foreign bodies, are local causes. A small abrasion on the anterior part of the septum is commonly found. General causes are increased arterial tension, as in chronic nephritis; blood changes, as in hæmophilia, purpura, and scurvy; mitral obstruction."

Treatment:—"A local cause should always be looked for, and if a bleeding-point be found, it can be stopped with the galvano-cautery or a solution of chromic acid on a swab. Cold applied to the root of the nose stops many cases. Occasionally the injection of adrenalin hydrochloride solution will stop the bleeding. If these measures fail, the nose must be plugged with gauze after placing a pad over the posterior nares. For this purpose Bellocq's sound is often used to get the piece of silk which holds the plug into place."—(*Aids to Surgery.*)

10. In *diphtheria* the onset is more gradual; the temperature rises to about 102° to 103° F.; the tonsils are not much enlarged; there is an exudate of a thick, grayish membrane which is very adherent, is removed only with difficulty, and leaves a bleeding surface; this membrane soon re-forms and may be found on the fauces and pharynx as well as on the tonsils; in the exudate the Klebs-Loeffler bacilli may be found. In *follicular tonsillitis* the onset is more sudden; the temperature may be a little higher than that of diphtheria; there is no membrane, but the tonsils are red and swollen, and in the crypts are seen white, cheesy spots or plugs, which consist of broken-down epithelium and are easily brushed away; Klebs-Loeffler bacilli are never found.

11. CHRONIC PHARYNGITIS:—"Chronic inflammation of the pharynx follows repeated acute attacks, prolonged irritation, long-continued overuse and improper use of the voice, chronic rhinitis, and digestive disturbances. It is common in hucksters, public speakers, singers, and smokers. It is more common in adults than in children; and the inhalation of dust and irritating gases may also induce the trouble. In the early stage the mucous membrane is in a state of chronic hyperemia; and is thick, swollen, and studded with distended follicles and enlarged lymphatic glandules which give to it a granular appearance. In the later stage the mucous membrane undergoes atrophic changes, and is anemic, glossy, and dry. As a result of these changes the voice is husky, and the throat is dry. Distress follows the use of the voice and there is a constant desire to clear the throat."

Treatment:—"The underlying causes should be promptly removed. Tonics such as iron, quinine, strychnine, and cod-liver oil, together with plenty of fresh air, should be prescribed. Locally, Dobell's solution and similar antiseptic solutions should be used in the pharynx and nose. When the granules are present, astringent applications, such as zinc sulphate (gr. v to f ʒi) and silver nitrate (gr. x to xx to f ʒi), or the galvanocautery may be employed. A spray, consisting of menthol (gr. ii), eucalyptol (gr. i), and liquid vaseline will be productive of great relief. The condition may prove very resistant to treatment."—(Hughes' *Practice of Medicine.*)

12. VINCENT'S ANGINA:—"This is a form of sore throat due to two organisms, the fusiform bacillus and the spirocheta darticola. It occurs chiefly in children and young adults; the eruption of the wisdom teeth is said to be a predisposing factor. Bad hygiene, and the use of alcohol and tobacco are favoring conditions.

Symptoms:—Two forms are recognized: (1) The ulceromembranous variety, which is the most common and in which both the bacillus and spirochete are found. In this form there are malaise, sore throat, headache, fever, dysphagia, and fetid breath; later ulceration of one or both tonsils occurs. (2) The diphtheroid variety, which occurs in about 2 per cent. of cases only. This form is due to the fusiform bacillus alone, and is characterized by a distinct false membrane on an inflamed base. Otherwise the symptoms are the same as those found in the ulceromembranous variety. A smear and culture will decide whether the case is one of diphtheria or not.

Treatment:—An antiseptic mouth wash, and the application of tincture of iodine twice a day are indicated. The disease is not amenable to antitoxin. On account of the presence of a spirillum, salvarsan has been tried, and (it is claimed) with satisfactory results."—(Hughes' *Practice of Medicine.*)

BULLETIN OF APPROACHING EXAMINATIONS.

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†	
Alabama*	S. W. Welch, Montgomery	Montgomery	Jan. 11
Arizona*	A. Martin, 207 Goodrich Building, Phoenix	Phoenix	Jan. 4
Arkansas	T. J. Stout, Brinkley	Little Rock	
California	C. B. Pinkham, Sacramento	Los Angeles	Feb. 14
Colorado	David A. Strickler, Empire Building, Denver	Denver	Jan. 4
Connecticut*	R. L. Rowley, Hartford	Hartford	March 8
Delaware	H. W. Briggs, Wilmington	Wilmington	Dec. 14
Dist. of Col'bia	E. P. Copeland, Washington	Washington	Jan. 11
Florida*	W. M. Rowlett, Tampa	Gainesville	Dec. 6
Georgia	C. T. Nolan, Marietta		June ..
Idaho*	Robt. O. Jones, Boise	Boise	April 5
Illinois	F. C. Dodds, Springfield	Chicago	
Indiana	W. T. Gott, Crawfordsville	Indianapolis	Jan. 11
Iowa	G. H. Sumner, Des Moines	Iowa City	
Kansas	H. A. Dykes, Lebanon	Topeka	Feb. 8
Kentucky	J. N. McCormack, Bowling Green	Louisville	
Louisiana	E. W. Mahler, New Orleans	New Orleans	
Maine	F. W. Searle, Portland	Portland	March 8
Maryland	J. McP. Scott, Hagerstown	Baltimore	Dec. ..
Massachusetts*	W. P. Bowers, 1 Beacon St., Boston	Boston	
Michigan	B. D Harrison, 205 Whitney Building, Detroit	Ann Arbor	June 14
Minnesota	T. McDavitt, St. Paul	Minneapolis	Jan. 4
Mississippi	J. D. Gilleylen, Jackson	Jackson	
Missouri	G. H. Jones, Jefferson City	St. Louis	
Montana*	S. A. Cooney, Helena	Helena	April 5
Nebraska	H. H. Antles, Lincoln	Lincoln	June 8
Nevada	S. L. Lee, Carson City	Carson City	
N. Hampshire	C. Duncan, Concord	Concord	
New Jersey	A. MacAlister, Trenton	Trenton	June 21
New Mexico	R. K. McClanahan, E. Las Vegas	Sante Fe	
New York	G. M. Wiley, Univ. of State of New York, Albany	New York / Albany / Syracuse / Buffalo	Jan. 24
No. Carolina	K. P. B. Bonner, Moorehead City	Raleigh	June ..
No. Dakota	G. M. Williamson, Grand Forks	Grand Forks	Jan. 4
Ohio	H. M. Platter, Columbus	Columbus	Dec. ..
Oklahoma	J. M. Byrum, Shawnee	Oklahoma City	Jan. 11
Oregon	B. E. Miller, Portland	Portland	Jan. 4
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia / Pittsburgh	Jan. ..
Rhode Island	B. U. Richards, Providence	Providence	Jan. 5
So. Carolina	A. E. Booser, Columbia	Columbia	June 28
So. Dakota	H. R. Kenaston, Bonesteel	Pierre	Jan. 18
Tennessee	A. B. DeLoach, Memphis	Memphis / Nashville / Knoxville	
Texas	T. J. Crowe, Dallas	Dallas	
Utah	G. F. Harding, Salt Lake City	Salt Lake City	
Vermont	W. Scott Nay, Underhill	Burlington	Jan. 11
Virginia	J. W. Preston, Roanoke	Richmond	Dec. 14
Washington*	W. M. O'Shea, Spokane	Spokane	Jan. 4
W. Virginia	S. L. Jepson, Charleston	Charleston	
Wisconsin	J. M. Dodd, Ashland		Jan. 11
Wyoming	J. D. Shingle, Cheyenne	Cheyenne	
National Board	S. Rodman, 1310 Medical Arts Building, Philadelphia		

*No reciprocity recognised by these States.

†Applicants should in every case write to the secretary for all the details regarding the examination in any particular state.

Books Received.

The* MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.

DIABETES. By PHILIP HOROWITZ, M.D. 196 pages with illustrations. Published by Paul B. Hoeber, New York.

THE SCHOOL OF SALERNUM. By Sir JOHN HARINGTON. 213 pages. Published by Paul B. Hoeber, New York.

UNTERSUCHUNGEN ÜBER DIE MYELOMKRANKHEIT. By Dr. ARVID WALLGREEN. 151 pages. Published by Almqvist & Wiksells Boktryckeri-a-b, Uppsala.

PUBLIC HEALTH LABORATORY WORK. By HENRY R. KENWOOD. 420 pages with illustrations. Published by Paul B. Hoeber, New York.

TASCHENBUCH DER KNOCHEN UND GELENKTUBERKULOSE. By Dr. H. SCHWERMANN. 150 pages with illustrations. Published by Curt Kabitzch, Leipzig.

PHYSIOLOGY AND BIOCHEMISTRY IN MODERN MEDICINE. By J. J. R. MACLEOD, M.D. 992 pages with 243 illustrations, including 9 plates in colors. Published by C. V. Mosby Co., St. Louis.

ANNIVERSARY TRIBUTE TO GEORGE MARTIN KOBER IN CELEBRATION OF HIS SEVENTIETH BIRTHDAY. By FRANCIS A. TONDORF, M.D. 381 pages with illustrations.

HANDBOOK OF PULMONARY TUBERCULOSIS. By JEFFERSON DEMETRIUS GIBSON, M.D. 130 pages with illustrations. Published by the Denver Scientific Publishing Co., Denver.

AN INTRODUCTION TO BACTERIOLOGY FOR NURSES. By HARRY W. CAREY, M.D. 142 pages with illustrations. Published by F. A. Davis Co., Philadelphia.

SHORT TALKS ON PERSONAL AND COMMUNITY HEALTH. By LOUIS LEHRFELD, M.D. 271 pages. Published by F. A. Davis Co., Philadelphia.

PRACTICAL MASSAGE AND CORRECTIVE EXERCISES. By HARTVIG NISSEN, M.D. 225 pages with 68 illustrations. Published by F. A. Davis Co., Philadelphia.

REFRACTION AND MOTILITY OF THE EYE. By ELLICE M. ALGER, M.D. 394 pages with 125 illustrations. Published by F. A. Davis Co., Philadelphia.

DIAGNOSTIK UND THERAPIE DER MAGENKRANKHEITEN. By Prof. Dr. I. BOAS. 670 pages with illustrations. Published by Georg Thieme, Leipzig.

STUDIES FROM THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. Reprints Volumes XXXIII and XXXIV. 1220 pages with illustrations. Published by the Rockefeller Institute for Medical Research.

PATIENTS' HANDBOOK ON THE TREATMENT OF DIABETES MELLITUS. By THOMAS W. EDGAR, M.D. 100 pages. Published by Richard G. Badger, Boston.

PHYSIOLOGICAL CHEMISTRY. By ALBERT P. MATHEWS, M.D. 1154 pages with illustrations. Published by William Wood & Company, New York.

Miscellany.

Summary of the Morbidity from Contagious Diseases in France During the War.—Bonnette sums up this subject in *La Presse Médicale* for July 14, 1920, xxviii, 48. The simple eruptive fevers were neither more numerous nor more fatal than normally, and this means that their pulmonary complications were as usual and no more. Diphtheria was fought throughout the war period. During the five-year period there occurred in the army of the interior 15,271 cases with 378 deaths, and in the civilian zone occupied by the army 11,433 cases with 228 deaths, the percentages being respectively 2.4 and 2. Healthy carriers were treated with dried serum, otherwise known as Martin's pastilles, which was insufflated into the rhinopharynx. Cerebrospinal meningitis was quite prevalent, but not more contagious than usual in peace; disinfection of the rhinopharynx was effected with Vincent's solution —a mixture of idodine and guaiacol. Dysentery was common in the estivoautumnal season and was combated effectually with Dopter's serum and emetine.

Vincent's campaign against typhoid fever was so successful that it was credited with the victory of the armies. The results of antityphoid vaccination has been sufficiently quoted elsewhere. In regard to smallpox but 20 cases occurred during the entire war (as contrasted with 10,000 in the Franco-Prussian war), thanks to Jennerian vaccination. As for malaria it had no incidence in France worthy of mention; on the Macedonian front, however, it stole a march on the sanitary forces, but Sergent and Visbecq were thoroughly successful finally in their somewhat belated crusade against the anopheles. Spotted typhus hardly crossed the frontier, although France was almost surrounded by it. This result was attained only through a most strenuous campaign by the Marine as well as by the ordinary sanitary services. To sum up, everything was well in hand except the influenza, the course of which showed it to be quite inevitable in all countries.

The Disease and Death of General Gallieni.—A brochure has just been issued on this subject by Dr. Laval which is reviewed by the *Bulletin Médical* of July 10, 1920, xxxiv, 35. The deceased is admitted to have been one of the great figures of the late war, he having acquired the sobriquet of the "savior of Paris." In passing it may be remarked that he will soon be honored by a statue of bronze cast from Teutonic guns. The death of the General called forth a whole body of reports comprising more or less of legend and myth, which recalls the death of Skobeleff many years ago. Despite improbability and want of evidence the watchword became "cherchez la femme." It was "certain" that the deceased had a strong penchant for a well-known lady. There had been an assignation in the studio of a prominent sculptor, etc. He had undergone an operation because of approaching marriage. He had committed suicide with a revolver. He was a sufferer from cancer of the prostate, a disease which is hardly conducive to matrimony. He had even succumbed to an operation for this disease and the anesthetic was accused as well as the poor judgment of the surgeons. The author is able to dispel this cloud of rumors. In April, 1919, he was consulted by Gallieni and found an hypertrophy of the prostate, so that the basis of the rumor is apparent. Death occurred a little over two years later and was, to say the least, premature. It was thought best to delay the book until the present time. When Laval saw the General in December, 1915, he was struck by the great change in his appearance. He looked cachectic, which he himself attributed to the hardships and responsibilities of war—for example, he had hardly slept for three months. Prostatectomy in two stages was performed in the following spring with an interval of twenty-eight days. Dr. Marion, the genitourinary surgeon, was in charge. Laval gave the anesthetic. Death occurred three days after the second stage, of hemorrhage, while making the first change of dressings. Dr. Marion gave his own blood for transfusion. Madame Gallieni died a few hours after the declaration of war in 1914.

Goat's Milk.—According to the annual report of the California Development Board, the only goat milk condensery in the world is located at Pescadero, San Mateo County, Cal., where a herd of 6,000 milk goats is maintained by the Widemann Goat Milk Laboratories. The demand for canned milk for tuberculous patients is said to far exceed the supply, goat milk having been found a particularly valuable nutrient for consumptives. The number of milk goats in California has increased 50 per cent. in the last two years. A large farm at Cool, Eldorado County, was recently stocked, and the production is to be used exclusively in the manufacture of goat milk cheese. That goat's milk is exceptionally rich in vitamines undoubtedly accounts for its growing popularity for food purposes, especially when high nutritive value is desired.—*American Medicine.*

Laboratory Activities in South America.—The *Revista Sud-Americana de Endocrinologia, Immunologia y Quimioteraphia* is now in the third year of its existence. It is published in Buenos Aires in monthly issues and covers all national as well as foreign activities in endocrinology, immunology, bacteriology and parasitology, serodiagnosis, sero therapeutics, and chemiotherapy. In addition to human and animal pathology the periodical has departments for vegetable pathology and industrial chemistry. The personnel comprises a scientific director, Dessy, who is also in charge of the laboratories of the Italian Hospital and who directs the departments of pathological anatomy and bacteriology; Professor Krogh, who is director of the department of serums and vaccines; Professor Spegazzini, an agricultural engineer, who directs the department of vegetable biology, and Engineer Sourbeck, director of industrial chemistry.

The institution appears to represent a centralization of the analytical activities of the metropolis. Another publication of the same scope, the *Archivos de Biologia,* is a monthly review of the activities of the Paulistic Laboratory of Biology, published at Sao Paulo, Brazil, and in its fourth year. This institution prepares sera, vaccines, internal secretions, ferments, and pharmaceutic products such as intravenous solutions, etc.

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HOW "TUBERCULOSIS SCHEMES" FAIL, AND WHY.*

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BY "tuberculosis schemes" I mean—and I suppose the designers of your programme meant—only such attempts at prevention or treatment as have been sanctioned or adopted by a considerable number of the serious leaders of civilization's anti-tuberculosis campaign.

One who surveys "tuberculosis schemes" from the cooler altitudes of the office of a board of health, or of a registrar of vital statistics, can contend with force and figures and some truth that "tuberculosis schemes" have not failed.

"Certainly," he can argue, "the death-rate from tuberculosis is only about half as high as it was forty years ago. All 'tuberculosis schemes' deserving of consideration are less than forty years old. The 'tuberculosis schemes' of living in the open, of sleeping in rooms with open windows, of sending consumptives to sanatoria, of establishing tuberculosis dispensaries, of condemning tuberculous cattle, of teaching the contagiousness of tuberculosis, of providing occupational therapy for sanatorium patients, of establishing farm colonies or villages for the graduates of sanatoria, of conducting tuberculosis surveys, of penalizing the filthy habit of expectorating in streets and trains and other public places, none of these tuberculosis schemes has failed. All have succeeded. It is true that they have not banished tuberculosis from the earth, but they have succeeded in keeping millions of human beings free of active tuberculosis who otherwise would have died of tuberculosis. And as the preventing of deaths from tuberculosis was the sole object of all these 'tuberculosis schemes,' how have these 'tuberculosis schemes' failed?"

I would answer that question in this way: All these "tuberculosis schemes" have failed because (1) even in the countries where all or some of these "tuberculosis schemes" have been in operation for twenty years or more, every tenth or twelfth funeral is still caused by tuberculosis; and because (2) in spite of the functioning of any or all of these "tuberculosis schemes," tuberculosis continues to drag its victims from the ranks of the rich and the educated as well as from the ranks of the poor and the ignorant; and because (3), while we must admit that these "tuberculous schemes" have reduced the tuberculosis death-rate, there is very little proof that they have reduced the tuberculosis death-rate any more than they have reduced the general death-rate. In other words, "tuberculosis schemes" have simply caused the people to focus their attention on the need of cleanliness—clean air, clean homes, clean food, clean drink, clean streets, clean hands, clean mouths, clean bodies, clean barns, clean cattle, and perhaps clean lives. The "tuberculosis schemes" of the past twenty years have furnished most of the foundation on which rests the present remarkable democratic endorsement of board of health activities. In that way and to that degree "tuberculosis schemes" have been a success, but as they have had no more success in preventing or curing tuberculosis than they have had in preventing or curing scarlet fever, and less success than they have had in preventing and curing typhoid fever, they have been failures. As measures for promoting the general health of the community they have been worth while, but as "tuberculosis schemes" they have been failures and unworthy of the name they bear.

Why Tuberculosis Schemes Fail.—When the doctors and the other superior persons of the beginning of the next century look back smilingly at the history of our frantic efforts to stamp out human tuberculosis, what will they say was the matter with our "tuberculosis schemes"? They will say:

"Oh yes, they were a very enthusiastic lot, those doctors and officials of the first quarter of the twentieth century, but their very enthusiasm was their undoing. They knew thoroughly the tragedies and the desolation wrought throughout the earth by tuberculosis. They knew that in all cases of tuberculosis the tubercle bacillus was found. They knew that by injecting tubercle bacilli into animals they could cause tuberculosis in the injected animals. They, therefore, concluded that tuberculosis was an ordinary contagious disease, and that in order to prevent tuberculosis all that was necessary was to get rid of all the tubercle bacilli on earth. With this object in view the tuberculosis authorities of the civilized countries of the world began a campaign for discovering and publishing and segregating all tuberculous men and animals. It was not until after many years, and after the expenditures of enormous amounts of energy and vast sums of money, and after the erection of a tremendous machine for purposes of propaganda, that it began to be realized that these results were impossible of accomplishment.

"Then it was taught that during childhood practically all civilized human beings became infected with tuberculosis, and that this childhood infection,

*An address delivered October 8, 1920, in St. George's Hall, Liverpool, England, at the Eighth Annual Conference of the British National Association for the Prevention of Tuberculosis.

though it frequently flamed out into clinical tuberculosis in adult life, had usually the effect of rendering human adults immune to any new infection of tuberculosis. This teaching led of course to the abandonment of all tuberculosis schemes that had for their object the prevention of the tuberculous infection of adults, and led to the intensifying and enlarging of all tuberculosis schemes that had for their object the safeguarding of children from tuberculous infection.

"The new strategy had the immediate effect of reducing considerably the general morbidity of children, and slightly the tuberculosis morbidity of children, but still throughout the civilized world one funeral in every ten or twelve funerals continued to be from tuberculosis.

"Despairing of solving the problem according to any accepted formula, many of the leaders of the anti-tuberculosis forces began about the middle of the last century to look for a new formula. At first cautiously, they permitted themselves to listen to certain uninfluential medical radicals, who for years had been asserting (1) that the tubercle bacillus was only one phase of a bacterial cycle; and (2) that if all the tubercle bacilli and all the tuberculous animals, human and brute, were killed to-day, there would be new tubercle bacilli and newly tuberculous animals in every civilized land before another twelvemonth had rolled around; and (3) that in order to prevent tuberculosis it was necessary simply to prevent the appearance of the tubercle-bacillus phase of the bacterial cycle; and (4) that in order to cure tuberculosis it was not necessary to kill the highly resistant tubercle bacilli, but it was necessary to cause tubercle bacilli to pass as bacilli into the next phase of their bacterial cycles, a less resistant, non-acid-fast phase in which they were easily dissolved by the cells and secretions of the infected animal. The simplicity of this new formula aroused a smiling incredulity almost everywhere, but some of the less sceptical took up the matter seriously and instituted elaborate research along the lines suggested by the new formula.

"The trouble with the tuberculosis campaign up to that time, or in other words, the reasons of the failure up to that time of all tuberculosis schemes, were—

"A. The over-emphasis given to the value of the activities of the non-medical anti-tuberculosis workers.

"B. The disinclination of most physicians to join heartily in a medical campaign dominated by non-medical functionaries.

"C. The disinclination or inability of these non-medical officials to endorse or utilized medical research.

"D. The obtuseness of even the medical officers of the tuberculosis campaigns to the importance of the following facts:

"(1) Aside from its specific toxic power, the most important character of the tubercle bacillus is its waxy, resistant capsule.

"(2) Serological tests prove that there is a family relationship between the tubercle bacilli and all bacilli that possess these waxy capsules.

"(3) Many ordinary non-acid-fast bacteria, when subjected to an unfavorable environment, develop waxy capsules, and thus become demonstrably family relations of the tubercle bacillus. This was known to be true of colon, *subtilis*, *typhosus*, *mycoides* and streptothrix.

"In this twenty-first century it is easy to see the importance of these things, but it is probable that even now the world would not have been convinced if the results of the great experiment carried out in the year 2031 and '32, simultaneously by Great Britain, France and the United States, had not been so conclusive. This experiment consisted in subjecting one-half of a herd of 100 proven non-tuberculous cows, for a period of two years, to a rigidly controlled insanitary environment such as obtained everywhere at that time in most dairy farms. The cows were kept knee-deep in their own manure in new but unlighted or badly lighted, and unventilated or badly ventilated, barns. The fifty control cows were, of course, properly housed, pastured and groomed. In all thee countries the results were the same. The tested animals became tuberculous, and the controls remained free of tuberculosis.

"Of course there could be no blinking of the great light that shone from this experiment. Soon the public and private laboratories of the world were busy making vaccines, not against the tubercle bacillus, but against the precursors of the tubercle bacillus; and sera, not in the expectation of killing the tubercle bacilli *in sitû*, but in the expectation of forcing the tubercle bacilli *in sitû* to vegetate without their waxy capsules and thus to become easy victims of phagocytosis. The tuberculosis officials, realizing that nothing more could be accomplished by tuberculosis schemes that merely made for general cleanliness, devised in addition measures that had for their object the securing of such special conditions of person and domicile as prevented the transformation of the digestible or innocent, thin-skinned forms of bacterial life into the hard-shelled, disease-producing tubercle bacilli.

"After the forging of these new weapons for the prevention and cure of tuberculosis, the white plague, as it was called, was soon conquered. This was a victory not only of supreme intrinsic importance, but it was a victory that led to many others because of the insight it gave of the causes and source of disease in general; by showing that the death-dealing strains of tubercle bacillus were derived originally from harmless bacterial forms, it drew attention to the theory that all disease-producing germs are simply abnormal developments from forms of bacterial life that under ordinary and favorable conditions of environment are harmless or beneficial to human and other animals. And, of course, it made it clear to all, particularly to the medical historians, that all 'the practical difficulties in connection with the carrying out of tuberculosis schemes' in the first decades of the twentieth century were due to the false hypothesis on which they were all based, namely, that all tubercle bacilli must of necessity have been born of other tubercle bacilli."

APPENDIX.

As a visible argument in favor of my contentions, I have brought from my laboratory in America a few cultures that may interest you. I will not take time to give their detailed life histories, but I will be glad to answer now, or later, questions concerning them.

Avian B.—A strain of Avian tubercle bacilli, that ten years ago grew entirely acid-fast and only at blood temperature, now grows at room temperature and almost entirely non-acid-fast.

Bovine B.—A strain of Bovine tubercle bacilli, that ten years ago grew only at blood temperature, and as pure small acid-fast rods, now swollen into granular and streptothricial rods and coccoids. In very recent years it grows only at room temperature.

Red KI—The first culture of tubercle bacilli ever seen in America was the one sent to Trudeau by Koch nearly forty years ago. This strain, known as KI at Saranac, was, at its best, only mildly pathogenic. Here it is with chromogenic power and growing at room temperature, and non-pathogenic, and, except in milk, almost non-acid fast.

R. R. H.—A strain of ordinary pathogenic human tubercle bacilli, sent to me from England by Dr. Nathan Raw, grown for long periods on glycerine-broth potato. Its first modification was its development of chromogenesis, the second its gradual loss of acid resistance, and the third its acquiring the power to grow at room temperature. In its present condition this strain is ten years old. It does not now cause tuberculosis. On some media it loses almost entirely its bacillary form and becomes coccoid.

512.—Acid-fast bacilli, derived from spores of *Bacillus subtilis*. These spores, made acid-fast by age and lowered temperature, were subjected to the slightly stimulating but difficult environment of normal salt solution and a temperature of 37.4°, and were thus coaxed to vegetate abnormally as very short acid-fast rods. They do not cause tuberculosis. Intraperitoneal injections in guinea-pigs give rise, in ten days, to small nodules that are not fatal, and that disappear in three weeks.

212 ORANGE STREET.

THE EPIDEMIC OF LETHARGIC ENCEPHALITIS.

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IN the winter of 1916-17 there occurred in Vienna an epidemic disease which von Economo named lethargic encephalitis. According to the descriptions given by him and later by von Wiesner, this disease usually began with fever and headache; somnolence followed, which was succeeded by delirium, or which deepened into coma that changed sometimes to death, sometimes to a mild confusion. The afflicted as a rule showed signs of cranial nerve palsies.

News of this strange plague had scarcely escaped from the beleaguered Central Empires when the disease itself suddenly appeared in the outer world. An epidemic, which was described by J. H. Mathewson and Oliver Latham, began in February, 1917, in the Province of New South Wales, Australia; whence it spread to Queensland and to Victoria. It persisted till the following May. The Australian observers described the disease as characterized by fever, rash, sweating, nasal catarrh, headache, somnolence, convulsions, and coma, together with signs of implication of the brain coverings and of the cranial motor nerves. France was next attacked. Netter, Claude, Chauffard, and others studied and described the epidemic there. On February 11, 1918, the first recognized case occurred in England, and an outbreak followed which, with remissions, lasted until January, 1919. Then the disease appeared in Ireland. In 1918 the epidemic was reported as raging also in Uruguay and in Algeria, in Germany and in Greece (September and October).

So far as is known the first recognized case of this epidemic disease in America entered Mount Sinai Hospital, New York City, in September, 1918. October 23, 1918, Major Pothier detected a case at Camp Lee. October 27, a third was discovered by Dr. Ely at Des Moines. Some weeks later Dr. Bassoe in Chicago recognized the fourth case. And their number thereafter quickly multiplied. By January, 1919, the disease had appeared at far apart points all over the United States; but New York City, the initial site of the invasion, remained the point of its maximum concentration. The number of reported cases increased until March, 1919, and thereafter decreased, the epidemic practically disappearing toward June, 1919. In the following September fresh cases began again to come to hospital clinics and their number steadily grew.

Published accounts leave no room for doubt that the epidemic which appeared in Europe was similar to that which broke out in Australia, and later invaded America. Just as the epidemic leaped from continent to continent, and from country to country, so, in the same country, it hopped from place to place. The locality in which the epidemic first appeared tended to remain the area of its greatest intensity. The epidemic invasion of any one area tended to be relatively brief, seldom exceeding three months; but it commonly recurred after a quiescent period of about the same length as the duration of the original invasion. And it affected those of both sexes and of every station. In this epidemic, wherever it occurred on the earth's surface, people were attacked by a febrile catarrh, lethargy, somnolence, or stupor, cranial nerve palsies, and great feebleness. Of these symptoms, that which usually focused the attention of the patient's friends and physician was somnolence. Hence the disease became popularly known as sleeping sickness.

Epidemics of sleeping sickness punctuate the history of medicine. Since the discovery of printing, drowsiness and fever are repeatedly recorded in the epidemics of sweating fevers that have scourged Europe, and that have been studied and described by Jean de Troyes, Ambrose Paré, Ballonius, Willis, Sydenham, Camerarius, Gruner, Hecker, Sennert, Creighton, Hamer, Crookshank, and others. The sweating sickness, *pestis Britannica*, of 1529, was characterized by *somnolentia inevitabilisque sopor*. The Belgian influenzas of 1557-58 produced slumberous patients with half closed eyes. In 1580 both Saxony and Rome were attacked by an epidemic of fever and lethargy, and in 1597 a similar affliction overtook all Germany and Italy. In 1657 an epidemic of febrile lethargy occurred at Copenhagen. From 1672 until 1675 the comatose fever of Sydenham raged in England and in Europe. During 1691 it recurred throughout Germany. In 1712 there broke out in Tuebingen an epidemic of sleeping sickness in which the afflicted showed also signs of morbid changes in the structure of the brain.

Camerarius' description of the Tuebingen epidemic was followed in 1729 by Becaria's account of a plague which attacked Bologna, and in which fever and sleep were the characteristic symptoms. Ozanam relates that in 1745 a considerable outbreak of a catarrhal fever with *soporosité* occurred in Germany. In 1768 an epidemic of fever followed by *coma somnolentium* afflicted France, and was described by Lepecq de la Clôture. In Ozanam's work there is also mention of an epidemic which occurred at Lyons in 1800; and of another, at Milan, in 1802, similar to the 1745 epidemic in Germany.

The accounts of the epidemics which raged before the last century are usually too meager to permit us to determine with certainty the precise nature of the plague. Since these days clinical observation has greatly improved. Recurrent symptom groups have been identified, segregated, and dignified as disease entities. Thus, from the sweating sickness or influenzas, Heine (1840) and Medin (1887) separated the disease which is variously known as poliomyelitis, infantile paralysis, and Heine-Medin's disease. Thereafter, old-time epidemics of socalled influenza were suspected to have had at least a dual nature. And when later (1875) cerebrospinal meningitis was also separated from the influenzas and from poliomyelitis, clinicians realized that what we loosely term influenza is a group of infectious fevers mistakenly confounded with the fever caused by the bacillus of Pfeiffer.

Throughout the war one or more of these obscure fevers laid waste the world. We called it epidemic Spanish influenza. It had come to be of the essence of conservative epidemiology to attribute to the same disease all illnesses in the course of an epidemic, of which the clinical types were within the established scale of variation of the prevailing epidemic disease. This clinical convention, together with the ignorance and isolation in which we were maintained during the war, caused me to communicate the first observations of lethargic encephalitis in America to the New York Neurological Society on January 7, 1919, as observations on the lethargic encephalitis syndrome in the epidemic of Spanish influenza. Subsequently, when I observed that concurrently with the decline of the influenza epidemic, and with the absence of any increase of the other syndromes which the socalled Spanish influenza produced, the number of cases of lethargic encephalitis steadily grew, to an extent that suggested that we were in the midst of another epidemic distinct and different from the Spanish influenza plague, I brought the matter before the February meeting of the society, which thereupon named an investigating committee.

But in thus identifying lethargic encephalitis as a new clinical entity capable of epidemic occurrence, merely the existence of a newly recognized syndrome and not necessarily of a new disease was established. The syndrome of lethargic encephalitis is a physiological manifestation of certain morbid changes in the normal anatomical structure of the human body. Pathologists studied these changes and made inferences from them concerning the individuality of the lethargic encephalitis lesions. Breinl of Australia, by inoculation of disease matter from fatal cases of lethargic encephalitis, reproduced in two monkeys a malady which he described as identical with poliomyelitis. Some competent and careful observers, basing their judgment on facts which will later be mentioned, stressed the dissimilarity between the lesions of poliomyelitis and those of lethargic encephalitis. Others emphasized the resemblance, still others the difference, between the morbid anatomy of so-called Spanish influenza and lethargic encephalitis. And Bassoe, in his admirable article on the pathology of this condition, noted the similarity of the lesions he studied to the lesions reported by Spielmayer and Mott in the sleeping sickness of trypanosomiasis. Mott, however, had had opportunities to study the lesions of lethargic encephalitis before Bassoe, and Mott did not mention any relationship between the two conditions.

In judging the inferences of various pathologists, due weight must be given to their established reliability. Other things being equal, demonstrated similarities with the lesions of recognized and accepted diseases, although valuable, are of less importance than demonstrated differences. Not the similarities but the differences determine the existence of a new disease. Similarity of lesions is not proof of the identity of the agents causing the lesions. Analogous lesions may be produced by very different exciting agents. But differences in the nature of the lesions, not due to differences in the severity, site, extent, or duration of the infection, imply differences in the agents producing the lesions.

Bacteriologists have sought the exciting cause of lethargic encephalitis. Von Wiesner, by intracerebral and intraperitoneal inoculations of brain extract from fatal cases, communicated the disease to monkeys. McIntosh in England, various French observers, and in this country Ayer and Wegeforth, unsuccessfully attempted to repeat von Wiesner's experiment. Failure to transmit a disease by inoculation may arise from many causes. The experimental technique may be faulty. The inoculated virus may have depreciated in virulence below the threshold of pathogenesis. The experimental animal or group of animals may be immune to the infection, or may possess a resistance greater than can successfully be overcome by the injected virus and antecedent or concomitant infections may be needful to sensitize the inoculated animal. Such factors as these cause failure to be referred rather to experimental faults than to inherent impossibility of achievement. Hence a multitude of failures are outweighed by a single incontrovertible success. One successful inoculation established the transmissibility of the infection. Von Wiesner's experiments with monkeys placed beyond reasonable doubt the communicability of lethargic encephalitis. And Cleland and Campbell of New South Wales finally settled the matter.

These brilliant Australian observers made over one hundred and thirty experiments, in the course of which the monkey, the sheep, the horse, the calf, and other animals were successfully inoculated. The virus containing matter consisted of a suspension either in glycerin or in normal saline solution, of portions of the brain, spinal cord, pons or medulla, of human or animal victims of the disease. The virulent suspension or solution was injected

within the brain of the experimental animal. In this way the disease was conveyed from three human beings to five monkeys; from monkey to monkey through fourteen generations; from monkey to sheep and horse and calf; from sheep to sheep, and back again from sheep to monkey. As Flexner and others had demonstrated that the virus of poliomyelitis is transmissible to the monkey but not to the sheep, or horse, or calf, Cleland and Campbell inferred that the virus of lethargic encephalitis differs from the virus of poliomyelitis.

Von Wiesner was able to cultivate, both from animal and from human victims, a Gram positive coccus which was found especially in the leptomeninges. With "pure" cultures of this coccus he reproduced the disease in monkeys. McIntosh followed the technique of von Wiesner, but was unable to find the incriminated coccus. Marinesco of Bucharest, working on material obtained from England, frequently found a Gram positive bacillus, and rarely an associated diplococcus. The Marinesco bacillus was discovered in the meninges, in the superficial nuclei of the pons, and in the walls of blood vessels within inflammatory areas. McIntosh successfully cultivated this bacillus and found it to be an anaerobe for mice. He reported that this short thick bacillus of Marinesco has nothing in common with the bacillus of botulism: and that, in the inflammatory areas, karyokinetic changes gave rise to cell chromosomes so distinct as readily to be mistaken for diplococci. Welsh found no organisms in the portion of the brain and upper cervical cord examined by him for Mathewson and Latham. Wegeforth and Ayer also sought for causal organisms in vain. At Mount Sinai Hospital the search for the exciting agent was fruitless until one day I noticed in a certain case a peculiar green nasal secretion to which I called the attention of the bacteriological staff. A Berkefeld filtrate of a saline solution of this secretion was obtained, which on injection into the brain of a monkey, *Macacus rhesus*, reproduced the disease.

Subsequently, Loewe, Hirshfeld and Strauss, working on the Mount Sinai material, reported that this filtrable virus, obtained from nasal washings and from the mucous membrane of fatal cases, could reproduce the disease both in rabbits and in monkeys. From this filtrate, by the Noguchi method for the cultivation of the *S. pallide*, they obtained cultures of small globular bodies, which appeared bluish or purple when stained with Giemsa solution, or with methylene blue. This filtrable organism they carried to the twelfth generation. They announced that it resembled in morphology, appearance of colonies, and in growth the organism described by Flexner and Noguchi as the exciting agent of poliomyelitis. "It differs in results obtained with animals and particularly in the susceptibility of rabbits to it." (Loewe and Strauss.)

Flexner and Amoss in a series of one hundred and forty experiments were unable to verify the existence of the filtrable organism which Loewe and Strauss had reported or to transmit the disease. There the matter at present rests. The identity and even the existence of a special organism of lethargic encephalitis still remain to be definitely demonstrated. But the characters of the disease indicate it is organismal. And although the actual organism still eludes us, its distinctive and constant pathogenic properties are clearly established. Cleland and Campbell reported that the virus they studied "bred true," reproducing the same disease in one after another of fourteen monkeys. And Loewe and Strauss report that eleven generations of the globular bodies they describe, although cultivated *in vitro*, successfully reproduced the same disease in monkeys and rabbits. This virus of lethargic encephalitis differs from that of poliomyelitis in being transmissible to the sheep, the horse, and the calf (Cleland and Campbell) and in the susceptibility to it of rabbits (Loewe and Strauss). Clinical skill such as was displayed especially by von Economo and von Wiesner; geographical isolation such as occurred in Australia in the epidemic studied by Mathewson and Latham; and the time incidence in America, enabled physicians to recognize the presence in epidemic proportions of a lethargic encephalitis syndrome. Careful examination of the morbid changes which this syndrome expressed showed that these changes resembled but were at the same time distinguishable from the changes produced by poliomyelitis. Bacteriological research demonstrated that the causal virus possessed specific, distinctive and constant characteristics. We are justified, therefore, in concluding that lethargic encephalitis, although related to poliomyelitis and probably also to other protozoon affections, is a separate disease entity, a disease *sui generis*.

It is reasonable to suppose that conditions that predispose a community to epidemic attack should predispose it to attack by all existing microbic agents capable of epidemic attack. It is reasonable to suppose that in lethargic encephalitis we are dealing not with a newly developed epidemic disease syndrome, but only with a newly recognized epidemic syndrome, and further it is reasonable to believe that epidemic manifestations of the lethargic encephalitis syndrome have previously occurred, probably participating in the epidemics of sweating or influenzal sicknesses which historians have recorded, and to invoke a retroactive knowledge to identify cases once diagnosed as botulism, as influenzal meningitis, as poliomyelitis superior acuta, or labeled in some other fashion, now as sporadic cases of lethargic encephalitis, is an inevitable if not very profitable form of speculative activity.

Crookshank has pointed out that it was the custom of the early chroniclers to attribute each epidemic to a general cause, in the search for which they were easily satisfied. The national opprobrium implicit in *Spanish* influenza is detectable in the pestis *Britannica* of 1529. The geographical culprit was followed in the popular mind by the nutritive. The sweating sicknesses were then distinguished as sausage disease, grain disease, radish seed disease, and so forth, according to the prevailing dietetic prejudice of the afflicted people. Then the cause of the epidemic disease became to some extent a matter of interest secondary to the form. The disease entity, the symptom complex, the syndrome, was sought. New diseases were discovered and labeled like other biological specimens. The old accounts of the sweating sicknesses were naturally the domain in which each infectious disease, as it succeeded in compelling recognition of its distinctive epidemic

dignity, contended with its longer known rivals for historical precedence. The respective heralds of influenza, of poliomyelitis, of cerebrospinal meningitis, and of lethargic encephalitis have in turn claimed for the particular disease they championed lineal descent from the sweating and sleeping sicknesses of the Middle Ages.

Since these days medical science has demonstrated the existence of microbes and the means to identify them; has demonstrated that microbes are the agents that bring about infectious epidemics; that conditions of nutrition may enhance or depreciate both the average virulence of the epidemic agent and the average resistance of the community exposed to epidemic attack; and that epidemic invasion occurs when the average virulence of the microbic agent exceeds the average resistance of a conspicuous number of the members of any community where the microbe exists.

The mode of spread of the inciting microbic agents from one victim to another at the original epidemic area has been in part made clear to us. We recognize direct transmission of microbes from one vulnerable person to another, through contact either mediate or immediate. And we realize that persons who are not vulnerable or who are so slightly vulnerable as to remain ambulatory when attacked, and also more vulnerable victims at early and convalescent stages of the attack, may harbor the microbic agent and carry it within them. Through both animate and inanimate carriers epidemics may spread. The direction and extent of the spread of any epidemic depends partly upon the direction and extent of the dispersal from the original epidemic focus of the carriers of the microbic agent, and partly upon the resistance encountered by the microbic agent in the communities into which it is carried.

While medical science was discovering the cause of communicable disease and the manner of its diffusion, engineering science was placing every region of the globe in more or less intimate communication with every other region. As our knowledge of epidemics multiplied, steamships and steam engines multiplied also the channels by which epidemics might spread. At the same time clinical and bacteriological knowledge made us more sensitive to detect these diseases, even when they varied greatly from the usual type; and our professional zeal, with the instinct for self-preservation, combined to make us enemies of concealment, so that the universal aspect of an epidemic was made manifest as well as the national and the parochial. Hence, as the world became more liable to epidemics, more sensitive to detect them and more frank in disclosing them, epidemics tended to seem and to be more massive and more widespread than were their precursors in the Middle Ages. But so far as we know, epidemic succession throughout the centuries has been maintained unimpaired.

An organismal disease does not arise *de novo*. In this sense a new epidemic does not occur. There remains the possibility that an organism which for ages has been harmless to man may acquire characters pathogenic to man. Our knowledge of this possibility is too vague to permit of discussion. But we do know that microbic agents that only exceptionally affect human beings in certain periods may at other periods acquire power of attack to which only the exceptional human being of the time is immune; and that in our ignorance we have failed both to recognize the true nature of sporadic cases which have occurred among the exceptional, and to realize the true nature of epidemics. The ratio of the sporadic or epidemic cases to the total morbidity from infectious fevers may be taken as an index of the susceptibility of the population exposed to the exciting agent of the disease. This ratio sinks to insignificance in the quiescent intervals and rises to disastrous magnitude at epidemic periods. Three variables determine its value: one the organism; two, the host; and three, circumstances. Of these only the third is capable of sudden change. Throughout the ages weak strains of organisms and of hosts tend to perish, and the survivors to become modified to insure persistence. Such modifications doubtless imply adaptability on the part of the organisms and a tendency to protean forms suitable to protean circumstances. And in the host likewise the nature of the resistance tends to change in response to the changes in the method of attack. These changes on the part of the host are slowly acquired through generations of successful survival: on the part of the organism the change is more speedy and less fixed. A change in the circumstances governing the relations of the organism and its host, a sudden change in the biological integrity of the host such as arises in war with its famine and distress, confers a strategic advantage upon the more adaptable attack of the organism and a disastrous disadvantage upon the less adaptable powers of resistance of the host. Under certain circumstances one of the protean endemic forms of the organism prevails and flourishes and gives its character to the resulting epidemic. Under certain other circumstances, another form of the organism prevails. And as the circumstances change, one form may follow another, each attaining in unbroken sequence epidemic dignity. In the epidemic period that is now subsiding, as in so many similar periods in the past, war and famine existed over large areas of the earth's surface. In 1916 we were passing through one of a long series of minor and almost annual epidemics of poliomyelitis. To it succeeded in the war areas the epidemic of Spanish influenza. Then the first epidemic of lethargic encephalitis occurred, lasted about three months, died down and recurred. And now poliomyelitis is again prevalent.

From the accounts of the epidemics of long ago, from the events of the epidemic period from which we are now emerging, from the soft border that unites even if it separates influenza, poliomyelitis and lethargic encephalitis. It seems probable that these diseases are caused by the attack of organisms derived from the common protozoon stock.* It is well that we should collate all evidence of differences between these epidemic diseases. But it is

*I have already observed in the present epidemic of poliomyelitis among syndromes which are transitional between poliomyelitis and lethargic encephalitis unmistakable cases of poliomyelitis with the mental attitude of lethargic encephalitis and with lymphocytosis. (For example—Case A. B., spinal fluid, 149 cells to the cmm., 90 per cent. lymphocytes, excess of albumin and globulin and marked power to reduce Fehling's solution.)

also well that we should as carefully collate all evidence of their resemblances. And it is essential that we should investigate the factors which determine their epidemic rise and fall and sequence, for in knowledge of these factors alone lies the power of prevention.

129 East Sixty-ninth Street.

CHEMICALLY PURE ANHYDROUS DEXTROSE AS A THERAPEUTIC AGENT.

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THAT properly selected food prevents the development of pathological conditions or tends to remove abnormal states when present, is a theory long held by many able clinicians and internists. But that a particular food form may, in selected conditions, act to all intents and purposes as a definite therapeutic agent comes to most physicians as something, the verity of which requires definite demonstration.

And yet, on a strict basis of physiological chemistry, there is every reason to believe that recently there has been added to our armamentarium a food product which acts as a definite therapeutic agent, and which demonstrates marked utility in the treatment of a wide range of serious metabolic and assimilative disturbances. This product is a 99.5 per cent. pure anhydrous glucose, formed by the hydration of amylose from corn, acted upon by hydrochloric acid.

This method of production develops a product, identified as a $C_6H_{12}O_6$ compound, in which, as Haliburton intimates in connection with other forms of glucose molecules, there is a special molecular arrangement, differing from other $C_6H_{12}O_6$ forms in respect to the fact that there is an entirely different isomeric arrangement of the atoms. Likewise, in these corn sugar molecules, we have in all probability still another isomeric form of $C_6H_{12}O_6$ to deal with.

This difference is peculiarly manifest in the clinical results following the administration of this glycodextrose which are not comparable in the slightest degree with the results secured by the exhibition of $C_6H_{12}O_6$ derived by malting processes or from grains other than corn.

Nor does glucose, in the syrupy or gummy state in which it has been commonly known, seem to possess any properties approaching those peculiar to the glucose of the anhydrous crystalline product—probably because these various glucose molecules are entirely different isomers, with radically different properties.

So, in this article it should be remembered that we are dealing only with results secured from the administration of a chemically pure crystalline glucose molecule—as developed from the corn by a special process of hydration, a product which has a specific rotation $(\alpha)\ D^{20} = 52.7$, and is a pure dextrorotary sugar. This, I am inclined to believe, is identical with the end product, glucose, resulting from the complete digestion of the carbohydrates in the alimentary canal. This also contrasts with glucoses of indeterminate purity, with which we have become more or less familiar in the past, and which have caused those unfamiliar with physiological chemistry to condemn the use of glucoses generally. Yet, the conservation of digestive and dynamic energy, brought about by the special $C_6H_{12}O_6$ product, renders it immensely valuable, both from a dietetic and a therapeutic standpoint.

C. p. dextrose, as is obvious from a standpoint of chemistry, is readily burned and completely oxidized in the system, and apparently requires no expenditure of digestive or dynamic energy. For its complete combustion in the animal economy 100 grams of glucose requires the expenditure of 106 grams of oxygen.

The perfect utilization of the substance is proved by the fact that analyses of both feces and urine, repeatedly made by Prof. W. J. Gies, of the Columbia Medical School, and the writer, show in a large percentage of the cases examined complete absence of glucose, even after 8 to 10 ounces of the product have been added to the normal twenty-four-hour carbohydrate supplied to the patients in the ordinary food ingested. And many of these patients were in the most desperate pathological conditions.

In one instance 10 ounces of the glucose were dissolved in lemon juice and water administered in a single dose to an epileptic child of eight years, without producing the slightest untoward symptom, or without causing any of the glucose to "come over" in either the feces or the urine.

In certain rare instances, however, the glucose is not completely absorbed. In one case the specimen examined contained 2 per cent. of glucose. In none so far examined has any glucose been discovered in the urine, showing that when it is all absorbed it is fully utilized.

In the only two cases in which the glucose was detected in the feces, one patient was taking only 58 grams (or 1.865 oz.); the other 115.97 grams (or 3.729 oz.), showing that it was not the excessive amount of glucose taken which caused it to escape in the feces. For both these patients had repeatedly taken more than this amount without any appearance of glucose in the feces, and have since taken larger amounts without it appearing in the feces or urine.

The explanation probably lies in the fact that in one case there was a decided disturbance in digestion, with probable imperfect general absorption; while in the other there was decided depression of the nervous system. This, reacting upon the digestive system, probably accounted for the non-absorption of the glucose in these two instances.

On the other hand, bottle babies utilize the glucose perfectly, as Professor Gies has shown by repeated examinations of urinary and fecal specimens from the service of Dr. R. G. Dennett, of the Post-Graduate Medical School and Hospital.

The fuel and energy value of this product can best be understood when it is remembered that each 100 grams of this glucose, when completely oxidized, yields 146 grams of CO_2 and 60 grams of water, furnishing 401 large calories of heat. For the most complete oxidation reduction within the animal economy it must be remembered that the fluids and tissues must be kept all the time in a state of high alkalinity.

Of course, the nutritional value of the glucose lies

in its yield of heat and its stimulation of dynamic energy, as glucose does not contribute to the constructive work of the human economy; this being, as is generally admitted, accomplished only by the utilization of protein and by the inorganic salts.

Sugar the Kindling That Starts the Fire Under the Fat.—However, by the production of heat and dynamic energy, the glucose causes a more complete combustion of fats, and consequently decreases the tendency toward the formation of lactic, oxybutyric and other organic acids, as well as the acetone and acetone-forming conditions, commonly found in connection with the condition called acidosis, but which in reality is a state of decreased alkalinity.*

It must always be remembered that there are two forms of the so-called acidosis condition, depending upon the causative factors. One is due to an imperfect supply of the disodic-monohydrogen-phosphate. The other has, in addition to the depletion of the alkaline salts, an insufficient supply of glucose, with an oversupply of protein matter. This latter condition results in imperfect combustion of the fats, followed by a decomposition of proteid substances, the formation of acetone, acetone bodies, and oxybutyric acid. Hence the treatment differs. In the former condition all that need be done is to reestablish the supply of the normal alkaline salts. In the latter the proteids must be cut down and glucose somewhat freely administered.

There is no doubt but that the glucose also prevents the too rapid oxidation of protein, and hence becomes in a sense a conservator of tissue waste, arresting retrograde tissue metamorphosis. At the same time we must not lose sight of the fact that decreased protein oxidation always means a decrease in heat production from this source, proportionate to the decreased protein metabolism.

For when there is complete oxidation of the protein elements, with normal end products, instead of the abnormal catabolism which predominates in retrograde tissue metamorphosis, there is a more complete combustion of the proteid elements. This, in a measure, compensates for the decreased utilization of these products, and thus makes good the loss of heat.

In this connection it may well be emphasized that the present-day attempt to compute food values exclusively in terms of calories is a fallacy, inasmuch as no method of food measurement by heat units can adequately—or even inadequately—estimate the complex metabolic processes functioning in the animal economy. And these especially must most certainly be reckoned with if the true significance of the utilization of food is to be understood.

Having suggested the probable philosophy of action of c. p. dextrose or glucose, it might be pertinent to cite a few instances of what might be termed its therapeutic activity, illustrating, by clinical reports, the efficacy of this food form when added to the normal diet.

This activity is especially striking when it is remembered that, in no instance, was there any change made, either in the diet or in the medication, which would explain the almost uniform improvement noted in the patients on whom this "treatment" was tested out. The only change was to add from 12 to 24—and on some days as high as 48—teaspoonfuls of anhydrous glucose to the prescribed diet and other medication, or 111.97 grams (3.6003 oz.) to 229.5 grams (7.365 oz.)

The Death-Marked Heart Case.—One of the most striking cases treated was that of a woman past 60, who had suffered from cardiovascular disease for more than eight years. During most of this time she was able to attend to her rather light duties as librarian in one of our local libraries. On January 27, 1920, she developed a severe attack of influenza, from which she did not recover until the first of March. Against advice, she returned to her duties before she had thoroughly convalesced, with the result that, at the end of two weeks, she had to give up work. On April 28 she had a number of pyorrhoic teeth extracted, on the assumption that her trouble might possibly be aggravated by focal infection absorption. As a consequence, for the following two weeks, she was able to eat but little, which still further depleted her rather meager store of vitality. Strength and resistance decreased rapidly. Dyspnea due to cardiac exhaustion developed. This was accompanied by terrific precordial pain, simulating a true angina, but centering deep in the chest. On the 29th of May the patient had a very obstinate attack of constipation, with high autointoxication together with a decided increase in the dyspnea, and in the periodic attacks of pain. Dropsy then set in, starting in the feet and ankles, and gradually extending as far as the shoulder blades.

About this time she developed that peculiar reaction to which I have called frequent attention during these past ten years, which consists in the application of the indican test, as described in this article.

The Porter Metabolism Test.—This test, when properly applied and interpreted, also determines the state of the metabolism—whether perfect or imperfect—and also shows the degree of imperfection. For in nearly all the patients in whom I have observed it this reaction indicates a fatal termination of the illness. This peculiar reaction is noticed in connection with the ordinary indican test. It develops as a result of adding equal quantities of urine and chemically pure hydrochloric acid in an ordinary test tube, then adding 8 to 10 drops of ½ per cent. solution of permanganate of potassium, and then—depending upon the size of the test tube—from ½ to 1 dram of chloroform. This test requires from twenty-four to forty-eight hours for its full development, which emphasizes the inadequacy of this metabolism test when superficially and hastily made.

When dissolution is imminent a peculiar flocculent material develops in association with a fairly large amount of indican, or even in the absence of indican, shading in color from a light gray to almost black. This flocculent and oily matter is often observed in the absence of any indican. This flocculent substance, upon microscopic examination, is found to be composed of two distinct types of material—one part consisting of fine granular matter, which, when very abundant, masses together and collects above the level of the chloroform.

The other substance is composed of this same granular material, in conjunction with numbers of large and small globules, resembling fat globules under the microscope. When the latter predominates it collects as a white, snow-like mass, which seems to fall below the level of the junction of chloroform and urine. When the light gray flocculent material forms above the junction of the chloroform and urine, numerous fat-like globules are present in

*Porter, Wm. H., The Therapeutics of Decreasing Body Alkalinity, MEDICAL RECORD, September 18, 1920, p. 471.

some instances, in conjunction with or enmeshed in the simple granular matter.

When this flocculent matter is dark and solid it is usually composed entirely of this granular material, the fat-like globules being absent, thus explaining the various range of colorations which is observed in conjunction with the application of this test. When this matter is very dark and abundant, and formed rapidly and is seen above the level of the chloroform, death is likely to ensue within a very short time. On the other hand, when the flocculent ring is white and "snowy" like, and beneath the level of the chloroform, it indicates varying degrees of disturbed metabolism, depending upon the depth and the density of the ring.

This granular material is probably some form of protein of a colloidal character which has undergone a beginning fatty degeneration, the granulation being due to the large number of and the extreme minuteness of the particles. I might add that the granular material is only partly soluble in ether, as it seems to retain its identity in distinct contrast to the droplets. I have observed that the nearer the patient is to death, the more rapidly the flocculent ring tends to form. This ring may be from ½ to even an inch in height, and, unless it can be diminished or removed by radical and appropriate treatment, death inevitably follows.

Dr. W. J. Gies' report on this peculiar urinary product is as follows: "During the course of this work, you called my attention to a peculiar precipitation you had frequently obtained in applications of the ordinary chloroform-acid test for urinary indican. You observed, you said, that, when such mixtures (that is, urine, hydrochloric acid, a weak solution of permanganate of potassium and chloroform) were allowed to stand, a heavy dark floculent precipitate collected above the chloroform in the urines of the patients suffering from nutritive disturbances who were approaching a fatal termination, but did not appear under similar conditions in the urine of normal people, or of patients whose diseases did not involve serious nutritive disorders. You also stated that a white oily precipitate frequently appears in such mixtures in the upper part of the chloroform *but within the range of the chloroform layer,* this precipitate showing special tendency to adhere to the side of the vessel in which it is separated.

At your request, and because of your desire to determine the effect of administering dextrose on the conditions responsible for the occurrence of the phenomenon, I endeavored to determine the nature of the dark precipitate that forms, under these conditions stated, immediately above (and that rests upon) the chloroform. You sent me urine from several of your patients for this purpose. I found that this substance is a modified form of coagulable protein and that it consists of a mixture of modified albumins and globulins, presumably from the *blood* of the individual affected.

I have been unable to obtain enough precipitated material to determine satisfactorily the character of the white precipitate that frequently is produced in the uppert part of the chloroform zone, under the conditions stated above.

In making tests for dextrose and other constituents of the excreta, I used routine procedures for the effective quantitative detection of small quantities and for the accurate quantitative determination of minute amounts."

It may be noted that while there was no active kidney complication in this heart case, there were, nevertheless, two parts of albumin to the thousand, estimated by the Esbach tube.

This patient had been receiving the usual remedies for dropsy, pain, and dyspnea, in addition to general stimulant measures, notwithstanding which she was steadily losing ground, day by day, although she was eating fairly well.

On the 13th of June, I began giving her eight grams of this chemically pure anhydrous dextrose every two hours. This immediately produced a very decided change for the better. The output of albumin decreased 75 per cent. within 48 hours, and did not rise again so long as the patient was taking the sugar. Pain and dyspnea were less intense, and the condition generally assumed a more favorable aspect. The dropsy also markedly decreased. In fact, all symptoms showed definite improvement.

On the 25th of June the limited dextrose supply was exhausted, and for four days the patient was without sugar. During these four days it was apparent that she was rapidly losing the ground she had gained. The albumin immediately jumped back 75 per cent. to its old mark, while the dyspnea and the general symptoms were aggravated.

On the 29th of June another supply of the anhydrous glucose was obtained. Within 24 hours the patient evidenced improvement in all symptoms. The albumin immediately dropped 75 per cent.—as it did when the glucose was first administered—and has remained at this figure ever since. The peculiar "death line" reaction in the urine decreased, until finally it disappeared. Digestion and assimilation became apparently normal once more. The patient at the end of three weeks was relieved of all distressing symptoms, and was sufficiently recovered to be able to take a one hundred mile trip into the country, which trip she bore very well indeed. After a few weeks she returned to town much improved.

While it is possible that she may never again be entirely well, yet it is clearly evident that, from all indications, she bids fair to live for many years in relative comfort, although she will, no doubt, be obliged to take this dextrose for the remainder of her life, which, by the way, cannot in any sense be construed as a hardship.

In a number of other cases of varying types of disturbed metabolism in which the sugar has been administered in doses ranging from 8 to 12 grams every two hours, there has been a uniform and decided improvement, manifested sometimes within forty-eight hours. Not only have these patients objectively appeared better, but the urinary findings have also shown a definite improvement, demonstrating a better oxidation, apparently as a direct result of the complete utilization of the sugar. For in none of these cases was either the diet or the general medical treatment changed. One very aggravated case of diarrhea of several weeks' standing, which had refused to respond to various lines of treatment, yielded quite readily to the general physical improvement which followed the perfect utilization of this c. p. dextrose.

One of the patients gained 3½ pounds the first week, while a chronic skin eruption from which he had suffered for many months seemed materially improved. Another has gained 7 pounds in a month, and reports a decidedly increased resistance to fatigue, together with a greater capacity for sustained mental and physical effort. The nervous sys-

tem also shows more stability, as evidenced by a lessened phosphaturia. Most of the cases treated seem to develop a better color, as well as an increase in the appetite and in the capacity for assimilating food.

One obese patient has lost 4 pounds, due possibly to an increase in the capacity of the system for oxidizing fat; and one case of chronic catarrh of years' standing has been wonderfully improved.

While, of course, I realize that this dextrose has been used in what might be called a comparatively small number of cases, and over only a relatively short period of time, yet the very pronounced improvement in the cardiovascular case, and in the severe case of diarrhea, and the uniform improvement among the sixty or seventy patients to whom the glucose was administered, leads me to believe that we have in this particular isomeric type of molecule a therapeutic agent which, when more extensively and universally used, will prove of inestimable value in the management of many profound disturbances of metabolism.

I may say that in one or two cases on whom the dextrose was tried there were some evidences of a lack of toleration for this sugar form—manifested in gastric and intestinal disturbances of a transient character, which perhaps is only to be anticipated when dealing with a factor in which idiosyncrasy plays such a prominent rôle.

I am also convinced that this sugar is better oxydized—as, in fact, is any food product—when the fluids of the body are kept in a *high state* of *alkalinity*, and the oxidation reduction of all food products is facilitated.

Glucose Already Well Established as a Surgical Measure.—I am, of course, well aware that Woodyatt, Erlanger, and many other physiologists in this country, as well as in France, Italy, and Austria, have had some exceedingly interesting results with glucose, administered intravenously, and that there is a fairly ample literature concerning the successful subcutaneous and rectal use of the sugar. I am familiar also with the researches conducted in Germany, both in infant feeding and in wasting diseases, as well as in cardiovascular conditions. Also in the treatment of glycosuria, detailed by Grafe (*Münch. med. Woch.*, 1914, lxi, 1433), in which are reported twenty-five cases of diabetes treated with carameled grape sugar, using enough dextrose to produce some 600 to 800 calories, 147.32 grams (4.4737 oz.) to 195.12 grams (6.3085 oz.). All these cases showed a beneficial action on the acidosis, and without increasing the glycosuria. I have verified Grafe's results in all the diabetic cases in which this particular product has been administered.

I feel rather certain, however, that the present is the first extended investigation made in this country with this particular sugar form. This is chiefly for the reason that c. p. anhydrous dextrose has not hitherto been available, except in small quantities for research and laboratory work, or in fractional amounts imported from Germany at almost prohibitive cost.

From what I have seen of the action of this food form, however, and from the preliminary reports furnished me by some of the leading pediatrists of New York, at present conducting an elaborate series of experiments as to its value in infant feeding, the details of which will later be presented in full from their own viewpoint, I feel strongly that we have in this anhydrous dextrose an agent which bids fair to revolutionize the treatment of many conditions now considered grave—or even hopeless.

And what pleases me quite as much as anything else in connection with this matter is the fact that the result of administering this sugar proves what I have consistently contended for forty years, *i.e.*, that food, properly selected and administered, can be made a therapeutic agent second in importance to nothing else in the U. S. Pharmacopœia.

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WHAT IS AN INTOXICATING BEVERAGE?*

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CAPTAIN MEDICAL RESERVE CORPS, U. S. A.; DELEGATE FROM NEW JERSEY TO THE FIFTEENTH INTERNATIONAL CONGRESS AGAINST ALCOHOLISM.

The Supreme Court of the United States has spoken and upheld the constitutionality of the Eighteenth Amendment and the National Prohibition Act, and has decided that Congress has the power of defining what constitutes an intoxicating beverage as a matter of law, regardless of whether or not such beverage is intoxicating as a matter of fact. The question, What is an intoxicating beverage? can therefore now be studied scientifically and free from the bias attending one's views upon the question of prohibition. The question is of particular import at this time, for an eminent authority, credited with having been the author of the National Prohibition Act, has issued a statement to the effect that while the National Prohibition Act expressly prohibits the manufacture for sale of beverages containing as much as one-half of one per cent of alcohol, this restriction does not apply to cider and other fruit beverages made in the home for home consumption. He states that the legal limit of alcoholic content in these home-made beverages is the quantity or percentage of alcohol which will make the beverage intoxicating in fact. As multitudes of homes are being converted into miniature distilleries, wineries, and breweries, and oceans of alcoholic beverages are being produced from numberless formulæ, the question above propounded will naturallly and properly be referred to the physician for answer. Hence this communication.

In attempting to define an "intoxicating" beverage, we are at the outset confronted by the fact that we possess no unit of intoxication, no definite or positive guide as to whether a man is or is not intoxicated. The question is on a par with the one, What is a poison? For example it is well known that common salt is indispensable to life, yet this substance is used in China as the popular method of committing suicide, for when taken in sufficient quantity, salt is highly poisonous and will produce a violent gastroenteritis and may cause death.

We not only possess no unit of intoxication, but we do not always use the term "intoxication" in the same sense. It seems clear however that in

*Read by title at the 154th annual meeting of the Medical Society of New Jersey, Spring Lake, June 15, 1920.

discussing beverages which will cause intoxication, the word is used in its natural and accepted sense and is synonymous with drunkenness. Any other interpretation of the word, such as the farcical attempt to make the term cover "invisible intoxication," would of necessity include not only alcoholic beverages, but such substances as coffee, tea, coca cola, etc.

To meet the difficulty presented by the absence of suitable definitions, the following definitions have been suggested:

"Intoxicating liquors are those liquors which are intended for use as, or capable of being used as, beverages, and which contain alcohol in such proportion or per cent that when consumed in any quantity that may practically be drunk by an ordinary man, or in any quantity that the human stomach can ordinarily hold, will produce a condition commonly known as intoxication or drunkenness. Drunkenness or intoxication is a materially abnormal mental or physical condition, manifesting itself in the loss of the ordinary control of the mental faculties or bodily functions to a substantial extent."

It was with these definitions in mind that the writer and others conducted a series of tests with alcoholic solutions to determine whether or not they are intoxicating in fact. The materials tested were beer with an alcoholic content of 2.75 per cent by weight, and a watery solution of the same alcoholic strength.

While volumes have been written upon the subject of alcohol, it is remarkable that other than the work herein referred to, all of which has been done within the past year or so, that there are practically no data available as to the effects of alcohol in dilute solution and in combination with food substances. Blood studies in alcoholism, conducted by Schweisheimer some years ago, confirmed the belief that intoxication does not occur until the amount of alcohol in the blood reaches a certain degree of concentration. He found in one case of mild intoxication that the blood contained 0.153 per cent of alcohol, and in a case of severe intoxication he found 0.227 per cent. The writer, in association with Dr. Stephen P. Jewett, found in a case of marked intoxication, 0.196 per cent of alcohol in the blood.

With these facts to guide us we at first directed our attention to determine the amount of alcohol which appears in the blood after the drinking of various amounts of beer with an alcoholic content of 2.75 per cent by weight. The blood tests were made by Dr. John Marshall at the University of Pennsylvania laboratory, and by Dr. William John Geis at the New York College of Physicians and Surgeons. Dr. Marshall's subjects were three medical students, extremely moderate in the use of alcohol. Subjects 1 and 2 each drank 1200 c.c. of beer at one time, containing a total quantity of 41.88 c.c. of alcohol. Six specimens of blood were taken from each subject at intervals during a period of about seven hours. The highest degree of concentration of alcohol in the blood of either subject was 0.035 and the lowest point was 0.0075 per cent. Subject 3 drank in about two hours, 1,774 c.c. of beer, containing 61.9 c.c. of alcohol. In subject 3, the highest point of concentration was reached about one hour after the tests were begun, when it was found to be 0.015 per cent, and it was observed that the amount of alcohol in he blood grew less as the drinking continued, being 0.0075 at the conclusion of the experiment.

Dr. Geis experimented with two men and three women. Two of the women were practically total abstainers. The tests made by Dr. Geis confirmed the work of Dr. Marshall and proved conclusively that with forced drinking of beer containing 2.75 per cent of alcohol, the alcohol content of the blood was far below the amount found by Schweisheimer in a mild case of intoxication.

In 1910, Widmark (*Skandiv. Archiv f. Physiologie*, vol. 33, p. 85), published an interesting contribution to the subject of alcohol absorption in which he made the assertion that the amount of alcohol which appears in the urine after taking alcohol, is about equal in amount to that which appears in the blood. We therefore directed our attention to the study of the alcohol content of the urine after drinking beer containing 2.75 per cent of alcohol by weight. The subjects were two college students who were practically total abstainers. They each took 50 ounces of beer in one hour, taking at fifteen minute intervals the contents of a 12½ ounce bottle. Three specimens of the urine taken at intervals for two hours thereafter showed an amount of alcohol practically the same as that reported by Dr. Marshall in his experiments.

The mental processes as affected by dilute alcohol were studied by Prof. Harry L. Hollingsworth, associate professor of psychology at Columbia University. He experimented with beer containing 2.75 per cent by weight of alcohol, and, for purposes of control, used beer containing no alcohol. His tests were most elaborate. The six subjects used ranged from total abstainers through occasional and moderate users, to a fairly regular but not excessive user of alcoholic beverages. They ranged in age from just over twenty-one years to nearly thirty years, and several of them had seen army and navy service. The doses of beer ranged from three 12½ ounce bottles (the capacity of the average adult stomach) to the maximum amount which the heaviest of the six drinkers could consume in a period of 2½ hours. The processes tested and measured ranged from simple tests of motor speed and the reflex involved in the heart beat, through processes involving steadiness of arm and hand, coordination of eye and hand, control of speech processes, forming of simple associative bonds in learning, up to the higher mental processes involved in reacting to logical relations, and in mental calculation. Professor Hollingsworth has summarized the results of his investigations as follows: The effects are most marked in steadiness and in mental calculation. They are next most conspicuous in tapping, in learning, and in naming opposites; and least of all in coordination and in color naming. The maximum influence on the score, that shown in the steadiness test, is only half as great as the influence on this same function of the amount of caffeine contained in two ordinary cups of coffee, and the unsteadiness produced by three or four bottles of beer is approximately equal to that produced by a hearty meal. The striking effect on the pulse rate is considerably less than the similar acceleration that ensues after eating a hearty meal. The influence of the beer on

the remaining processes is entirely comparable in amount (atlhough in some cases different in direction) to the effect produced on the same processes by the amount of caffeine contained in two ordinary cups of coffee. There were none of the symptoms commonly associated with alcoholic intoxication—no falling down, no staggering, no obscenity, no personal untidiness, no fighting, and three of the subjects showed no signs to expert observers of having taken liquor at all.

For the purpose of testing the amount of alcoholic liquids in dilute solutions which it is possible for a man to imbibe within a period of several hours, and for noting whether or not the effect is cumulative under conditions of forced drinking, Dr. Edward M. Pemberton, at the University of Arkansas Medical Department, conducted a series of experiments upon men, most of whom were students and total abstainers. The fluid used was a watery solution of alcohol, 2.75 per cent by weight. Dr. Pemberton made eleven experiments. The ages of the subjects were between twenty and thirty years, one was thirty-six and one fifty-four years of age. The time was about five hours, and the quantities consumed ranged from two quarts to over seven quarts. Dr. Pemberton arrived at the following conclusions:

"At the conclusion of the experiments each of the subjects expressed confidence that he could not hold enough of the 2.75 per cent alcoholic fluid to become intoxicated. This was likewise the observation of the experimenter. Symptoms which appeared during the course or at the conclusion of the experiments were due either to the pressure of the fluid in the stomach or to the reflex stimulation of the alcohol, that is due to the local effect of the alcohol upon the mucous membrane of the throat and stomach before absorption, and consequently before it enters the blood and is taken up by the tissues. This reflex is not systemic and not cumulative, and tends to become less and less. In no instance were the reflexes, conversation, or locomotion of the individual other than normal at the conclusion of the experiment.

The Pemberton experiments indicate that there is a limit to the amount of fluids which the tissues will absorb. Just as a sponge will soon reach its capacity for absorption and cease absorbing, so the human tissues will cease for a time to absorb, after the point of satiety has been reached. Were this not a fact, it would be possible for an individual to drown himself by drinking water.

To determine whether or not an ordinary man can drink enough beer with an alcoholic content of 2.75 per cent by weight, to render him intoxicated, practical tests were conducted by the writer. The subjects were tested in two groups. The first group consisted of thirteen men and comprised mechanics and brain workers between the ages of twenty-three and sixty-six years, representing various types of drinkers. They were furnished with highly seasoned food to stimulate thirst and were encouraged to drink as much beer as they could during the test. The second group comprised men engaged in mental work. They were between the ages of thirty-three and forty-five years, were all extremely moderate users of alcohol and took beer only rarely. They were furnished a regular dinner without soup and were urged to drink as much beer as they could during the four hours of the test. The quantity of beer consumed by the individuals in the tests ranged from 36 ounces to 187 ounces per individual.

Summarizing the results of the test dinners, the experiments lead to the following conclusions:

1. The drinking was forced. Every man drank more than he would have ordinarily drunk had he not been participating in a test.
2. The beverage tested does not compel repetition.
3. Satiety was complete and rapid. The subjects stated that they felt bloated and that further drinking would add to their discomfort.
4. Several of the subjects had been drunk on previous occasions from strong alcoholic preparations, thus showing that they were not immune to drunkenness.
6. Not one of the subjects manifested the slightest signs of intoxication.

A most illuminating contribution to the subject under consideration was published by Edward Mellanby, Professor of Physiology in the University of London (*British Journal of Inebriety* for April, 1920), who conducted an exhaustive series of experiments for the British Control Board. From his work I make a few quotations.

"The alcohol in the blood is at a maximum about one hour from the beginning of the experiment, whereas even nineteen hours later there is still a trace of alcohol left in the blood. . . . Probably in twenty-one hours the blood would be free from alcohol. . . . In fact it can generally be stated that any conditions which depresses the point of maximum concentration in the blood has a great effect in depressing the maximum intensity of intoxication. . . . Except with small quantities of alcohol, the amount in the blood at the maximum points is roughly proportional to the amount drunk. . . . It will be seen that although the amount and strength of the alcohol in the diluted whisky and the stout are the same, yet the whisky alcohol was still more rapidly absorbed. The probable explanation of this result is that stout contains something which slightly inhibits the absorption of alcohol. . . . You can see therefore how difficult it would be to produce a real intoxication with a 3 per cent ale when only a limited amount of time is allowed for drinking. Whereas it is possible for a man to get intoxicated almost to a moribund condition if allowed five minutes with a whisky bottle, the ordinary man could not approach this state if allowed complete freedom of action for four hours surrounded by unlimited 3 per cent ale."

While the foregoing is based upon comparatively few experiments, the results are corrobative of the sociological experiment on a national scale which for some years now has been going on in Norway. In that enlightened land, the people of which are held up to us as models of "sobriety, righteousness and thrift, presenting a refreshing contrast to the unrest of our own country" (Nammack), there is sold, with practically no restriction, beer with an alcoholic content of 2.75 per cent by weight (3.50 per cent by volume).

It would therefore appear that disregarding all fanciful theories and hair splitting definitions and considering all the facts, the seeker after truth, viewing the matter in the broad light of common sense, can safely state, with all reasonable degree of

certainty, that a beverage containing as little as 2.75 per cent by weight of alcohol (practically 3.50 per cent by volume) is not an intoxicating beverage.

40 MILFORD AVENUE.

THE TREATMENT OF CERTAIN GYNECOLOGICAL DISEASES WITH RADIATION.

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RADIATION is being used with marked success in several different parts of the world in the treatment of some of the diseases peculiar to women. Among these diseases which are managed so successfully with radiation are: Cancer of uterus, subperitoneal and intramural fibroids, menorrhagia and metrorrhagia without demonstrable pathology, and amenorrhea.

Cancer of the genital tract appears in three clinical forms: (1) Operable, (2) Inoperable, and (3) Borderline cases.

A cancer of the pelvic organs that is operable should be extirpated, for by removing the new growth we get rid of the source of infection. But our responsibility does not end once the operation is completed and the last surgical dressing has been done. We must use every means at our command to prevent recurrence in the future. Some cases will develop recurrences no matter how we manage them, but a larger percentage can be cured definitely if we devote a little of our attention to the prevention of metastasis. This, we can generally do by subjecting the patient to a careful, thorough course of ante-operative radiation and exhaustive postoperative radiation.

In the case of an operable cancer it is rarely possible to find by ordinary methods of examination any evidence of metastasis. The large percentage of recurrences following operation is however proof that metastases had already taken place, but that we had failed to find them. Careful roentgen examination of the abdomen (both anterior and posterior plates) must be made; the spine and the hip-joints must be carefully examined for evidence of early metastasis. If metastasis is demonstrated we are now in a position to attack it with some hope of final cure.

We know that pathological tissue is about five times less resistant to radiation than is normal tissue and that the application of seven doses of the rays is usually sufficient to stop proliferation in a growth four inches below the surface. We now proceed to cover the front, back and both sides of the pelvis with the roentgen rays, giving through each area treated as much of the rays as the normal tissues can stand. The tube is so tilted over each area that the rays are passed directly into the growth. The filtration that the rays are subjected to by the thick tissues of the pelvis and the bones in the neighborhood makes it necessary for us to treat through more than seven areas. A stout patient will have a greater skin surface, so that we can make up for the increased filtration by treating through more areas. For the usual case from six to ten areas in the front and from four to six in the back are generally sufficient for cross-firing directly onto the growth through each area. Any nodules found in the roentgen examination will have to be crossfired upon through a varying number of areas according to their depth. Sometimes we must cover the entire abdomen, and it is well to go even above the diaphragm, front, back, and both sides. This is a most trying ordeal for both the roentgenologist and his apparatus, as it is apt to take from six to eight or more hours of continuous operation. Because of the nausea and ill-being produced by such intensive treatment it is usually advisable to treat through from four to six areas on successive days until the patient is entirely covered. It is my method usually to treat the more distant areas first, working gradually toward the disease, and finally at one sitting doing the front and back of the pelvis from the navel to the pubis. I consider this method of beginning outside and working toward the growth of great importance in the prevention of metastasis. By such a method it is easily seen that the patient comes up for operation with the cancer cells of lowered vitality and many of them actually destroyed. The patient should be operated upon within twenty-four hours following the last series of radiations.

Physicians and surgeons throughout the world are beginning to realize more and more that a palliative operation is seldom if ever indicated in the cases that are inoperable and those that are questionably operable, and are advising against palliative operations. They know that operations in these cases serve only to relieve for a short time and really hasten the end. These are the cases that should have the advantage of radiation, too. Some of these cases are soon made operable, and some of them are cured by radiation alone. In this class of cases we must be very exacting in our technique. Sometimes the entire body will have to be covered. The entire abdomen must always be covered—front, back and both sides. We must push treatments to the limit of tolorance. Under such treatments the skin will be tanned, and in those cases that are easily tanned we generally get the best final results.

When possible we should always add radium treatments to our roentgen treatments. This can be done in the interval between the roentgen treatments. The radium can be applied directly to the growth in many cases, *i.e.* those that are intrauterine and within the cervix according to the indications. However, it is my opinion that we should never limit our radiations to radium alone, but must also in all cases use the roentgen ray. It is well known that the mortality is higher when radium alone is used than when the roentgen ray alone is used, and that the lowest mortality is obtained when both agents are used. The radium exposures will have to vary according to the amounts of radium available. Nearly all agree that better results are obtained when fairly large amounts are used with shorter exposure than when smaller amounts of radium are used with longer exposure. Whenever possible not less than 200 milligrams should be used, allowing an exposure of 1400 or more milligram-hours as indicated.

Technique: We must have a transformer with a capacity of a backup of the equivalent of 90,000 volts, a broad focus, universal type, Coolidge tube,

and a tube holder that will permit us to bring the target of the tube eight inches from the skin. Over each area we produce an erythema. This is done by letting the tube draw five milliamperes for five minutes according to the pastile. Administering the rays through six millimeters of filter, however, allows us to increase our dosage up to forty milliampere minutes over each area and in some cases as much as seventy-five milliampere minutes may be used over each area. Over each area we crossfire directly onto the growth. After having covered the body, front, back, and both sides, we have completed one series. The entire series is repeated at about monthly intervals, according to the condition of the skin for six or more times as indicated.

Subperitoneal and intramural fibroids, except those that have undergone calcification, are most favorably influenced by the roentgen rays. The radiation method of treatment appeals to many patients because of the fact that it is done without an anesthetic, without a stay at an institution or a hospital, without any pain, and without taking the patient from her duties. The results obtained compare most favorably with other methods of treatment. The hemorrhage will sometimes stop entirely after the first series of treatments, but generally it requires from two to three series before the hemorrhages are entirely controlled. Often the tumor will have disappear9ed by this time, but generally it will require from four to six series of treatments before its complete disappearance.

In the past it was thought that some functional disturbance in the ovaries determined whether or not a fibroid would appear, and so the ovarian region was usually radiated, too. Since this time, however, Pfahler and others have proven beyond doubt that the trouble is limited to the uterus alone. Treatment of the entire pelvis commonly resulted in the permanent suppression of the menses. Nowadays the uterus with its tumor is crossfired upon until the desired result is obtained without producing more than a temporary disappearance of the menses, leaving the patient in a condition to bear children. What more can be obtained with any other method of treatment?

Technique: Set the machine so that it will back-up the equivalent of 90,000 volts, and administer to each area from twenty-five to forty milliampere-minutes at a focal distance of eight inches through six millimeters of filter material. Repeat at about monthly intervals from four to six times. We must keep in the midline and must protect the areas normally occupied by the ovaries with thick sheet lead, otherwise we may produce a permanent amenorrhea.

Menorrhagia and metrorrhagia without demonstrable pathology, the cases that have been curetted and treated otherwise without success, can generally be cured with one series, two at most, of highly penetrating roentgen rays. This is a most acceptable method of treatment to surgeon, physician, and patient. In these cases about the only other method of successful treatment is hysterectomy. Many of these patients are really so ill from the loss of blood that hysterectomy could hardly be expected to yield the results that we have a right to expect, *i.e.* to save life. Here the roentgen rays have first call. The results obtained with radium do not compare in the least with those obtained with the roentgen rays. With correct technique we should cure 100 per cent. We should not attempt the treatment of menorrhagia and metrorrhagia that is thought to be due to a congestive endometritis caused by displacement of the uterus, but should subject these patients to surgery. If replacement and fixation of the pelvic organs is not successful in stopping the hemorrhages then we can look to the roentgen rays for help.

In these cases we shall have to decide just what result we would like to obtain before the treatments are started. If the patient is young, we ought not to produce a permanent amenorrhea unless we have to. We should carefully protect the regions normally occupied by the ovaries with thick lead sheets and then crossfire toward the uterus through the midline of the pelvis from navel to pubis front and back. If the patient is past middle life then we may produce a permanent amenorrhea by treating the entire pelvis, first explaining the whole matter to the patient.

Technique: Same as for fibroids.

We have seen how the roentgen rays will stop proliferation and will finally destroy new growths, both benign and malignant. They will also stimulate cells that are below par to functionate in their normal manner. In those cases of irregularity and infrequent periods in young women we can offtimes bring about a normal state by the application of a stimulating dose of the rays to the ovarian region. Often in these cases the hemoglobin is not up to the normal standard, but gradually increases following roentgen treatment, probably through some action of the internal secretions liberated by the rays.

Technique: Exposure in one area over each ovarian area with the same setting as for fibroids. A stimulating dose consists of ten milliampere minutes.

CASE I.—Mrs. C. A. C. came to me for palliative treatment of an inoperable growth in the pelvis. Examination showed that she had lost sixty-one pounds in four months and that the entire pelvis was filled with an immovable mass at least as large as a baby's head. Roentgen examination failed to show any evidence of metastasis above the false pelvis.

Technique: Transformer set to back up the equivalent of 90,000 volts, 6 millimeters of filter, 8 inch focal distance, fifty milliampere minutes over each area from navel to pubis and a like area over the back. Repeated every month for six months. No treatment since.

Result: There has been no hemorrhage since the second series. Uterus is normal in size and is freely movable. Roentgen examination shows no evidence of recurrence anywhere. She has gained seventy-two pounds since the last treatment, two years ago, and is in perfect health.

CASE II.—Mrs. P. S. C. was sent to me for roentgen treatment of a subperitoneal fibroid arising from the fundus of the uterus posteriorly. The tumor was easily palpated and appeared to be about the dimension of a medium sized orange. The patient complained of severe menorrhagia and metrorrhagia. Roentgen examination showed that the tumor had not undergone calcification.

Technique: 90,000 volt back-up, 6 millimeters of filter, 8 inch anode-skin distance, forty milliampere minutes, over each of six areas in the front and four in the back, crossfiring onto the growth; repeated four times.

Result: The patient stopped bleeding two weeks after the first series and has seen no blood since. The tumor is now hardly palpable.

CASE III.—Mrs. C. A. N. was sent to me for roentgen treatment of menorrhagia and metrorrhagia. The patient usually flowed from twenty to twenty-five days out of each month. Physical and roentgen examination failed to show any cause for the hemorrhages.

Technique: Equivalent of 90,000 volt back-up, 6 millimeters of filter, 8 inch focal distance, forty milliampere minutes over each of six areas, three in the front and three in the back, keeping well within the midline of the pelvis.

Result: The month following the one series the patient had no flow at all. Two months following the one series the flow appeared, lasting five days and saturating two napkins daily; no pain whatever. For the next six months patient had six like periods and at the present time she is five months' pregnant.

CASE IV.—Miss M. S. came to me with the following history: At the age of fourteen she had a normal period, her first; none since in four years. The patient complained of ill-being about every month regularly. Her face would "break out" and she was very nervous. Examination showed the hemoglobin to be 40 per cent., otherwise nothing abnormal was found.

Technique: Equivalent of 90,000 volt back-up, 6 millimeters of filter, 8 inch focal distance, ten milliampere minutes over each ovary once.

Result: The month following treatment the patient had a normal period. Since then she has had eight more normal ones. Hemoglobin 87 per cent. No treatment except roentgen. All symptoms have cleared up most satisfactorily and the patient has gained sixteen pounds.

55 PARK STREET.

SUBLUXATION OF THE HEAD OF THE RADIUS.

BASED ON THE STUDY OF THIRTY-SEVEN CASES.

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SUBLUXATION of the head of the radius, also known as "traumatic palsy" of the upper extremity, occurs only in children between the ages of a few months and five years. It is a condition in which a partial dislocation of the head of the radius results from a mild trauma. The trauma is usually applied to the wrists and not to the elbow. The manner in which the condition is produced and the subsequent picture are characteristic. In some instances swinging the child by the wrists, in others dragging the child by taking hold of the wrists is sufficient to produce the subluxation. Immediately thereafter the upper extremity hangs limply at the side and the child refuses to move it. It resembles a flaccid paralysis, hence it is often called "traumatic palsy." There is no paralysis present. The disability is due to pain which may result from movement of the affected extremity. The minimal pain is experienced when all the muscles, especially those below the elbow, are relaxed. It is the relaxation of the muscles which makes this condition simulate a flaccid paralysis.

Many of the cases are overlooked. In a number of instances the patients are brought to us with their forearms encased in splints. In other instances they are brought to us with their shoulders immobilized. On questioning the parents of these patients we learned that they were treated for a sprain of the shoulder or a fracture of one of the bones of the forearm or a sprain of the wrist. In one instance a diagnosis of anterior poliomyelitis was made.

Etiology.—In our series of thirty-seven cases, eleven, or about 29.5 per cent., were in males and twenty-six, or about 70.5 per cent., were in females. The youngest patient was eight months of age and the oldest was six years. There was only one who was six years of age. The majority of them were between two and three years of age. Seventeen were of that age, fourteen of them were below two years of age, one was five, one was six, and four were four years of age.

The manner in which the injury is sustained is characteristic. The child is either raised by the wrists or is dragged along, being gripped by the wrists.

Symptoms.—Immediately thereafter the affected extremity hangs limply at the side. The muscles, especially those below the elbow, become relaxed. The picture resembles that of a flaccid paralysis. Any attempt to move the forearm passively is very painful. Flexion and extension at the elbow cannot be performed. Supination and pronation of the forearm are restricted and painful. Upon forcible extreme supination a clicking sound is heard at which time the head of the radius assumes its normal relationship within the orbicular ligament. Shortly thereafter there is resumption of all the normal functions of the elbow and forearm. The parents are astounded at the sudden change in the picture of the patient.

There are no signs of injury present. Ecchymosis is never present. There may be slight swelling and tenderness in the region of the radio-humeral joint.

Comment.—An *x*-ray examination was made in a number of the cases after the subluxation was reduced. As would be expected it was negative. What occurs is that head of the radius changes its relationship to the orbicular ligament during which time it (the head) slips a little out of its normal position and becomes locked, thereby arresting supination and pronation. Forcible supination overcomes this locking, permitting the head of the radius to slip back and resume its normal movements within the orbicular ligament.

Treatment.—The treatment consists in reduction of the subluxation. It is accomplished by forcible supination of the forearm. No other measure was necessary in our series of cases. As relapses are common the parents are warned to refrain from dragging the children by the wrists or raising or swinging them holding the wrists while doing so.

CASE I.—Baby S., two and a half years of age. Three days before being brought to our clinic the patient was dragged, her mother gripping her right wrist. Shortly thereafter the right forearm hung limply at the side and the child refused to move it. She was taken to the emergency ward of a hospital where a diagnosis of a sprain of the right shoulder was made. The shoulder was immobilized and the child sent home. The patient was brought to the Orthopedic Clinic of Lebanon Hospital three days later.

Examination showed that the right shoulder was immobilized. Upon removal of the dressing the upper extremity fell limply to the side. The child made no attempt to move the arm or forearm. Attempts at passive movements were painful. The muscles below the elbow were relaxed. Upon extreme forcible supination a clicking sound was heard and immediately thereafter movements of the elbow and forearm were painless and free. No further treatment was necessary. When seen one week later, the functions of the elbow and forearm were found to be normal.

CASE II.—Jeanette S., two and a half years of age. A few days before being brought to the Orthopedic Clinic of Lebanon Hospital, the child was swung in the air by her father who gripped her by the wrists. After this incident the child refused to move the left upper extremity. She was taken to a physician who made a diagnosis of sprain of the wrist. Her left wrist was immobilized and she was sent home. She came to us a few days later. Examination showed that the left wrist was immobilized and the forearm was supported in a sling. Upon removal of the bandage and the sling the left upper extremity fell limply to the side, and there was absolute loss of function in it. There was no evidence of an injury. Upon extreme supination of the forearm a clicking sound was heard and immediately thereafter there was resumption of the functions of the upper extremity. No after-treatment was necessary. When seen one week later, there was normal function of the forearm and elbow.

The histories of the other thirty-five cases are similar to the foregoing, and report in detail is unnecessary.

Summary and Conclusions.—1. Subluxation of the head of the radius is a fairly common condition and is often overlooked. It is often diagnosed as sprain of the shoulder and wrist or fracture of the forearm.

2. It occurs only in children, generally between the ages of eight months and three years.

3. The mode of production and the subsequent picture, namely raising or dragging the patient by gripping the wrists and the apparent flaccid paralysis, are characteristic of this condition.

4. It is often called "traumatic palsy" of the upper extremity.

5. Extreme forcible supination is all the treatment required to overcome the subluxation. After care is not necessary.

6. As relapses may occur parents should be warned of the risk of dragging or lifting their children by gripping the wrists.

1182 JACKSON AVENUE.

A METHOD FOR STANDARDIZING THE KNEE JERK TEST AND ITS MEASUREMENT.

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To attempt to advance another method for the elicitation of the knee jerk would seem presumptuous, especially as it seems to be the easiest of all tendon jerks to obtain, or at least so all text-books would give us the impression. Yet all of us have been embarrassed at times when we attempted to demonstrate a change in this phenomenon in some patient, to find our results contradictory, or else have been annoyed by the refractory behavior of our patient. Apparently, under nervous strain or excitement, inhibitory impulses modify the condition of this neurotendon reflex, and all the ordinary tricks to elicit the characteristic sign are abortive, or did not avail us. Especially is this true in certain types of medicolegal cases, those following trauma, in which a quite intelligent patient attempts to simulate injury to a leg.

To date the following methods of obtaining the knee jerk have been described:—

1. The patient is seated in a chair and he is instructed to cross one knee over the other, allowing the swinging leg *"to go loose," to relax.* The quadriceps tendon is then struck with the flexed fingers of the examiner, the ulnar border of the hand, or a specially devised hammer (chosen by each examiner according to his own particular predilection). The extensor reflex is obtained when the leg "jerks" forward. Now in a certain type of cases the following occurs:—The patient is tense, is unable "to relax," to let the leg "go loose," and no or a very slight reflex occurs. I have had physicians and nurses say to me, "You can't get my reflex that way," and this is true.

2. Again a second method described is to have the patient seated comfortably, well back on a high chair or table, with both legs "hanging loosely." The tendon is then struck ("and at the same time his attention is diverted," says "Church-Peterson") and the reflex is elicited. Here again the same difficulty occurs—"his attention is diverted"; but this is far from easy in a patient who is being examined by a physician, for under these circumstances the average patient is "all attention," and then again inhibitory impulses change the character of the reflex.

3. By reinforcement—Jendrassik's method. The test is performed as usual, with the difference that an attempt is made by having the patient pull upon his hands, with his eyes closed, to relieve the lower spinal reflex from inhibitions from above by directing these inhibitory impulses into the arms; and this method, in my experience at least, while being of great assistance in overcoming a refrectory reflex, yet fails in a great many instances, for in some individuals the knowledge of the attempt to "make his knee jump" in conjunction with the intensification of his directed attention, adds intensification to the inhibition of the knee jerk. That these patients are frequently of hysteroid types with hypnoid tendencies is undoubtedly the case.

4. In bed-ridden cases, the method commonly employed is to flex and elevate the knee, and place one arm in the popliteal region. The leg is then allowed to drop. The extensor tendon is then percussed and the jerk elicited. The important essential here is the "complete relaxation" of the leg by the patient. Or again the limb to be examined is lightly placed over the other limb and the knee percussed. Here again total relaxation is essential and frequently cannot be obtained.

We note in all these methods the following:—

1. The absence of total relaxation in the examined limb. The actual state of the muscles is entirely dependent upon the patient's ability to control inhibitory or other psychic processes that affect the jerk.

2. An inconstancy of position of the limb examined.

3. A lack of knowledge on the part of the examiner of the state of tension in the extensor quadriceps (although placing the hand on the muscle

group while carrying on the test gives some criterion of this condition).

During the past year I have experimented with a method which I believe overcomes all these difficulties, in all except ankylosed knee or hip joint cases, although the method can be applied even here, always taking into account the anatomical limitations.

The test is performed as follows:—

1. The patient is laid upon his back on a regular examining table.

2. The thigh is flexed upon the abdomen to complete flexion.

3. The knee is flexed upon the thigh to a right angle. This position seems to give just the right amount of tension on the quadriceps to allow of the execution of the test. I have tried lesser and greater angles but with less success.

4. The leg is held with the non-percussing hand preferably grasping the ankle, holding the total limb in the position described.

5. The quadriceps tendon is then carefully palpated to locate the tendon between the lower angle of the patella and the tibial tubercle. It will present a moderate degree of tension.

6. The area described is then percussed with the percussion hammer, when an extension movement of the leg on the thigh occurs. The spontaneousness of the reflex, the intensity, etc., can then well be measured by the hand holding the leg in position.

This measure gives us a method of testing the knee jerk with constant factors:—(1) As to position of the limb. (2) As to tension on the quadriceps. (3) As to mental inhibition.

Having all these factors constant a method measuring the difference in the two knee jerks (if there is any) has been employed. Further reports on the actual measurements will be forthcoming in a paper to follow.

The ordinary blood-pressure cuff is carefully bound about the middle of the thigh, the inflated bag crossing the extensor muscle. The instrument is then inflated to 100 mm. (an arbitrary figure, but one with which I have obtained best results). The jerk is then elicited as described and the amount of oscillation of the needle or mercury is read. Normally this seems to be between 7 and 12 mm. of Hg.

I do not know of any method that will give as constant results as the one described. I have searched for a description of a similar method, and not being able to find one, I offer it to the profession.

ROOM 234, CONSOLIDATED REALTY BUILDING.

Amenorrhea and Marriage.—Siredey answers the question "Should a young girl with amenorrhea marry?" It is embarrassing for the physician to assume the responsibility in some of these cases. He must always carefully exclude error of sex and hematometra as well as infantilism. In this connection he must consider from all angles the question of endocrine motivation which is very common; during the war there were many of these cases traceable to shock. Intensive opotherapy should be pushed in doubtful cases, both for diagnosis and treatment. To put the case in a nutshell, if the examination reveals perfect sexual development and normal organs of copulation, it is best to sanction marriage.—*La Presse Médicale.*

DRUGS AND THEIR ACTIVE PRINCIPLES IN RELATION TO THE TREATMENT OF DISEASE.

BY BEVERLEY ROBINSON, M.D.,

NEW YORK.

NOTHING has impressed me more lately than the learned discussions which have been carried on by prominent English practitioners in their treatment of malaria. Many of them dwelt solely, or almost entirely, upon the use of quinine in different ways in its treatment. A limited few, and only after the debate was near its end, dwelt upon the importance and advisability of giving the united alkaloids of cinchona bark to obtain the best effects of treatment in, at least, some forms of malaria.

To me it has been a great regret that no mention was made of the remarkable efficacy of Huxham's tincture of bark, and especially because, over one hundred years ago, this prominent physician of England emphasized its great therapeutic value and rightly so. When quinine and even the combined alkaloids fail to do good work in curing malaria, the compound tincture of bark will, I believe, do the trick and bring to a rapid end all evidences of malaria, so far as symptoms are concerned, and also, at times, any evidences of it that can proceed from laboratory research.

This statement leads me to question closely the value of some refinements in medication, which the modern physician is too apt to abide by in the treatment of not a few diseases; hence, in my judgment, a great and serious loss to useful medication.

In days gone by opium in some form was frequently used to abolish pain and to lessen, or bring to an end, inflammatory disease. Anyone who is familiar with Alonzo Clark's treatment of acute peritonitis with large and frequent doses of opium, must see in this doing much that has value, even to-day, and when operations galore are the password of most physicians. Alas, the pity of it!

Does morphine take the place effectively of opium in this and other acute inflammations? Surely it does not. It is more convenient, and at times, to be sure, the ready hypodermic syringe may be seemingly used with advantage. But I question the advantage of putting aside the use of extract of opium or laudanum except rarely, and then only to tide over a most urgent occurrence.

If pain is at all continuous; if it means, as often it does, disease of some duration, then opium is still the master key in disease. In their foolish and wrong legislation the controllers among us have so limited and obstructed the physician's use of narcotics that to-day not a few of the older as well as the younger physicians have simply abandoned the use of this most beneficent drug.

Again, it would seem from some late experiences among men of tried value in our profession that to prescribe narcotics even with wisdom and rectitude is fraught with danger of prosecution or even imprisonment. Only lately the London *Lancet*, in an editorial on drugs and their true

principles, showed unerringly how misguided are the physicians, clinically, who abandon the galenical preparations of former days for the powerful alkaloids, which to-day have, as it were, the front seat in the practice of medicine.

Of course we occasionally see a prescription for nux vomica, or the tincture thereof, where a tonic is required. But how much oftener do we find the ominpresent strychnine in all prescriptions! Are they the same and do they fill the same indications? I am confident they do not. There is a something in the crude plant, or in the elements of it which are extracted with alcohol that is not measured up to with the alkaloid alone. A late writer asks very pertinently whether we should expect to obtain the same good effects from a few grains of caffeine in hot water that we should certainly get from a well-made infusion of tea.

What are the modern vitamines and where are they always found?

We do not know, but we do know that polished rice when eaten to the exclusion of other food, will give beriberi. When eaten in its natural form it is one of the very best vegetables and serves, by itself almost, to give energy, activity, and working brains to millions of Japanese.

In the so-called inert matters those indeed that are not extracted by any chemical means, we have some form of energy which may be swallowed by humans, often to their very great benefit.

My subject is a big one and I shall not attempt to handle it at any length. But I beg that a halt may be called to the too general use of the alkaloids, at the expense of many drugs and combinations, which our forebears told us were of very great service in the relief of human ills.

129 East Thirty-fifth Street.

MENINGITIS SEROSA.

By ROBERT A. KILDUFFE, A.M., M.D.,

PITTSBURGH, PA.

DIRECTOR OF LABORATORIES, PITTSBURGH HOSPITAL, DIRECTOR OF LABORATORIES, MCKEESPORT HOSPITAL, BACTERIOLOGIST TO THE CITY OF MCKEESPORT, SEROLOGIST, PROVIDENCE HOSPITAL, FORMERLY MAJOR M. C., U. S. A

CONCERNING this condition — first described and named by Quincke—some confusion exists, both as to its occurrence and as to what conditions shall be so designated. Comparatively little is to be found regarding it in the literature, in all probability not because it is so infrequent, but because, perhaps, it is not recognized or reported as such. It is possible that, were it looked for, the condition would prove far from infrequent. Some confusion appears to exist, also, as to the terminology, the terms "toxic meningitis" and "sympathetic meningitis being applied to it; although, if we define it to mean simply a state of irritation without a definite inflammatory reaction, the term meningitis serosa is probably to be preferred.

Looked upon in this light, meningitis serosa is a condition characterized by pronounced and evident symptoms of meningeal irritation, in which the ependyma is stimulated to over-activity with resultant marked increase in the amount of cerebrospinal fluid secreted, which, however, upon laboratory examination, shows little or no change from the normal. The condition is, apparently, due to the action of a toxin or toxins the source of which is not always evident. It has been noted as a concomitant of alcoholism and as accompanying gastroenteritis in infants. In this connection, one is tempted to speculate upon the possibility and frequency of its occurrence in cases of "convulsions" in children apparently following dietetic indiscretions, and to wonder to what extent it may follow toxemias arising in the intestinal tract.

The case herewith reported occurred during the writer's service as Chief of the Pathological Department of Camp Hospital No. 72, A. E. F., and is of some interest as illustrating a fairly typical picture even though, owing to lack of laboratory facilities, the laboratory examinations were not exhaustive.

Case Report.—Corporal L. D. S. was admitted to the hospital without definite history other than that on the previous evening, in a French hotel, he had eaten a dinner of somewhat mammoth proportions. There was also an indefinite history of constipation extending over a period of some few days previous to the present illness. The following morning he reported for duty but was relieved on account of headache and general languor. He went to his quarters where, he remembers, the headache became very intense. His next recollection is of vomiting profusely—the emesis apparently being of a projectile character—and he has a somewhat hazy remembrance of being helped into his clothes.

None of this history was obtained at the time of entrance, the patient being in a semiconscious condition, extremely irritable when handled, constantly trying to lie on his side, and unintelligible in speech, but indicating by gestures severe frontal headache. Practically no information could be obtained from him.

The physical examination was negative except for the presence of a doubtful Kernig sign. There was no Babinski. A lumbar puncture was done, a large amount of spinal fluid under well-marked pressure being obtained. A striking feature of the case was the immediate and spectacular relief of the symptoms following the puncture, the patient becoming oriented almost immediately upon the withdrawal of the needle and being able to give a history and to complain of the headache.

The examination of the spinal fluid gave results as follows: Quantity: 50 c.c. Appearance: clear and limpid; no macroscopic blood, pus, nor fibrin. Cell Count: 250 cells per cu. mm. Culture: negative for meningococci or other organisms. Microscopic: bacteria absent. Numerous polymorphonuclear leukocytes; moderate numbers of small mononuclear lymphocytes. Globulin: Ross-Jones test: faint haze. Pandy's test: faint haze.

Owing to lack of laboratory facilities it was not possible to do a Wassermann test or colloidal gold reaction.

The day following the puncture the symptoms had practically disappeared and the patient complained only of marked constipation. Forty-eight hours afterwards he was perfectly well.

In the interpretation of this case several possibilities are to be considered and eliminated: A *Meningococcic meningitis:* Negatived by the character of the fluid, the negative cultures and microscopic examination, and the subsequent course of the case. B. *Tuberculous meningitis:* Negatived by the laboratory findings and the favorable termination of the case within forty-eight hours. C. *Poliomyelitis:* Negatived by the course of events and the laboratory findings. D. *Cerebral tumor:* Negatived by the history, physical findings, laboratory findings, and the immediate clearing of the symptoms. E. *Pyogenic meningitis* (organisms other than the meningococcus): Negatived by the laboratory findings and the clinical course of events. F. *Meningitis serosa:* A condition occurring more

frequently in adults, characterized by symptoms of meningeal pressure and irritation, apparently non-inflammatory in character, fairly acute in onset with varying degrees of increased pressure in the cerebrospinal fluid, accompanied by negative laboratory findings — conditions fulfilled in this case. There is only one minor discrepancy: the cell count. Recalling, however, the immediate response to the injection of serum by an outpouring of leukocytes—a condition frequently noted and referred to—it seems justifiable to look upon the increased numbers found as simply a response to a pronounced toxemic irritation which, if we are to consider the history, would seem to have arisen in the intestinal canal.

THE PITTSBURGH HOSPITAL.

ACUTE VERONAL POISONING SIMULATING LETHARGIC ENCEPHALITIS.

BY ERNEST MACLEOD,

CENTRALIA, WASH.

THE following case presents some points of interest which seem to warrant a report:

Male, æt. 44, suffering from insomnia for which he was using bromidia—called for examination of the lungs on April 6, 1920. This examination showed chronic bronchitis and healed tuberculous lesions; breath sounds absent at the base of both lungs posteriorly. Liver dullness increased below. The man had been constipated for years; mental torpor, probably from long use of bromides. On April 9 his wife phoned he had been asleep since April 7 and could not be aroused.

Examination showed profound unconsciousness—pupils slightly dilated, no reaction to light, no conjunctival reflex, Babinski, knee jerk, and ankle clonus absent. Resp. 20, P. 84, T. 98°. Jaw rigid. No bowel movement nor urine passed since going to sleep the night of the 7th. The pain of catheterizing a strictured urethra aroused him sufficiently to swear. Only 6 oz. of urine was obtained. Feeding per rectum was instituted.

There was low muttering delirium. Profuse salivation night and day, the saliva dribbling from the mouth saturating the pillows. He remained in this condition until 6 P. M. April 14, when he could be aroused momentarily. April 16 he was completely conscious and said he had taken 14 5-grain barbital (veronal) tablets in divided doses over a period of 36 hours. The temperature was normal throughout; the pulse varied from 80 to 100; the respirations were 20 to 44. Urine examination negative.

This prolonged sleep from veronal suggested its use in status epilepticus with happy results from 30 grains in divided doses. In probably other mental conditions as morphinomania, etc., a week's sleep would eliminate the pain and suffering from withdrawal of the drug.

ZIMMER BUILDING.

Obsolete Warships as Laboratories for the Study of Foot and Mouth Disease.—The British Admiralty has assigned to the Ministry of Agriculture obsolete warships to be used as laboratories for the investigation of foot and mouth disease. The warships proceed to sea, and the research work is carried on in the open ocean. Perfect safety against the dissemination of infection is thus secured. The virus of the disease is supposed to be ultramicroscopic; there is also a possibility that the infection is air-borne. The elucidation of the problem constituted by the cause of foot and mouth disease is comparable with that of cancer—elusive, difficult, and affording but little prospect of a definite solution.—*The Medical Press and Circular.*

Medicolegal Notes.

Competency of Expert Medical Witness, How Shown.—On a murder trial, the coroner, himself a physician, had described, as a witness, the wound on the deceased's body, and the bones broken by the blow. He stated, without objection, that the wound was produced by a blunt instrument, and had been inflicted for some time, probably a number of hours, before death, and had given his reasons therefor, which were the technical reasons of a physician and surgeon. He described the condition of the brain with relation to the external matter collected therein, and its effect. After he had thus testified, he was asked whether he found any other evidence that would lead him to believe the injury causing the death had been inflicted for some length of time, to which he replied: "There was not so very much blood in the body. The body had bled a good deal; and it must have been bleeding from a small place, because that was the only place it had to bleed from." On appeal, the defendant complained of the admission of this answer. It was held that the question scarcely called for the expression of an opinion; but, even assuming that the witness' belief was merely an impression formed from the condition in which he found the body, there was, nevertheless, sufficient prior testimony from this witness to admit the answer as the opinion of an expert. Moreover, the witness was subjected to a searching cross examination by the defendant's counsel on all technical matters pertaining to the injury and its probable effect, and, had the former not been a physician of some ability, it would have been readily perceived as a result of such examination. While the competency of the witness should first appear before he is permitted to express an opinion, and the general practice is to interrogate him on this subject before his testimony is received, yet when the opposing party knows that a witness is about to give testimony which should come from an expert, and specifically objects on that ground, he should exercise his right to cross examine as to the qualifications of the witness. If he does not do so he cannot be heard to complain. The defendant did not offer to cross examine the witness on this subject.—Commonwealth v. Johnson, Pennsylvania Supreme Court, 109 Atl. 218.

Charitable Hospital Not Liable for Injuries to Pay Patient.—In an action for personal injuries sustained by the plaintiff from having received from a nurse a massage with carbolic acid instead of alcohol at the defendant hospital, the Missouri Supreme Court holds that a corporate hospital, organized to nurse the sick and to exercise care for the poor and aged by deaconesses, and to found and support a deaconess home, where nurses should be trained, and which issued no stock and paid its members no profits, is a charitable organization. The charitable character of the hospital was not lost because it received pay patients, from whom the greater part of its income was derived. Being a charitable hospital, the defendant was not liable for the plaintiff's injuries, the doctrine of respondeat superior not applying in such cases. The fact that the plaintiff was not a charity patient, and that she paid for all the services rendered and for supplies and medicines was held immaterial, and to give the plaintiff no greater right to divert a trust fund than if she had been a charity patient.—Nicholas v. Evangelical Deaconess Home and Hospital, Missouri Supreme Court, 219 S. W. 643.

Award Without Requiring Examination by Physician Held Erroneous.—In a Workmen's Compensation proceeding, whose claim was made and compensation awarded for the loss of 25 per cent. of the vision of both eyes, it was held on appeal that the commission erred in not requiring the claimant to submit to an examination by an eye specialist. In the first place, the employer is entitled, under the act, to obtain from a man of skill an opinion as to the workman's condition for the purpose of determining whether or not he will settle the claim without litigation, and in the second place, if a settlement cannot be reached he is entitled to this information so that he may present it to the arbitrator or industrial commission for its consideration in determining the amount of compensation to which the employee is entitled.—Hafer Washed Coal Co. v. Industrial Commission, Illinois Supreme Court, 127 N. E. 752.

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THE X-RAY TREATMENT OF TUMORS OF THE HYPOPHYSIS.

THE radiographic exploration of the sella turcica, the study of its shape and size, the presence or disappearance of the clinoid apophyses furnish for the diagnosis of the presence, size, and extension of a tumor of the hypophysis elements of appreciation of the highest order. Other than those cases in which an antisyphilitic treatment is indicated, tumors of the hypophysis come under surgical treatment or treatment by radiotherapy. Hypophysectomy must of necessity remain incomplete since the hypophysis is an organ indispensable to the organism. It is a blind operation at the best and has a heavy mortality; and even when it is successful, the results are so often nil, insufficient or temporary that many excellent surgeons prefer simply a decompressive trepanation.

Radiotherapy is not merely inoffensive, but has given unquestionable proofs of great efficacy and durability of results. Béclère of Paris has obtained by this complete disappearance of headache, vertigo, nausea and vomiting, in other words of all the symptoms of intracranial hypertension. The amelioration of the visual disturbances which is all the more marked the earlier radiotherapy is begun, before irremediable atrophy of the optic nerves has taken place, is made evident by an eccentric increase of the narrowed visual field, by the recovery of the ability to read and write and a return to the possibility of walking alone in the streets. Of course the acquired skeletal lesions do not retrogress, but they no longer increase.

On the other hand, in a mixed case of exaggerated growth with obesity and genital infantilism in a girl of sixteen, whose hypophysary tumor was made evident by an enlarged sella turcica with symptoms of intracranial pressure and serious ocular disturbances, Béclère was able to reduce the adiposity, while menstruation returned accompanied by development of the breasts and growth of the pubic and axillary hair. In other words, the ovarian functions and secondary sexual characters returned. In patients who have been followed after treatment with the *x*-rays, the therapeutic results obtained have persisted two to six years and, in one case, eleven years.

Radiotherapy is imperiously indicated when symptoms of a mechanical order appear, such as intracranial hypertension or compression of the chiasma of the optic nerves, when the former persists and the latter progresses. This also applies to trophic symptoms indicating hyperfunctions of the hypophysis, namely hyperosteogenesis of the giant or acromegalic type.

On the other hand, treatment should be stopped when the amelioration of the ocular disturbances has ceased for several months and when the hyperosteogenesis has reached its point of arrest. Radiotherapy is even contraindicated in gigantism and acromegaly, at the phase of decline when the hyperplastic lesions of the pituitary cells take the place of retrogressive destructive lesions and when the glandular hyperfunction is succeeded by functional insufficiency, which may be incompatible with life. In principle, radiotherapy is contraindicated in the simple types of adiposogenital dystrophy, because this syndrome is attributed to a hyperfunction of the posterior lobe of the hypophysis. But in reality this syndrome, which is dependent upon various and multiple lesions, may be the indirect consequence of a pituitary or juxtapituitary tumor, causing compression of the posterior lobe, occlusion of the infundibular canal, or ventricular hydropsy, which is revealed by symptoms of intracranial pressure and ocular disturbances. Consequently it is these symptoms that indicate resort to radiotherapy.

Briefly, the *x*-ray treatment will bring about retrogression of intracranial hypertension and visual disturbances resulting from tumors of the hypophysis, and being devoid of danger is a therapeutic method to be seriously taken into consideration.

THE PROBLEM OF MALARIA.

ALTHOUGH one hears less of malaria than of some other widespread and destructive diseases, it is a question whether on the whole malaria does not do more injury to health than any disease. In the first place, there is no disease more widely disseminated than malaria and no disease, given favoring conditions, which will spread more rapidly. In these days it is not regarded as an especially destructive disease, but if history is read aright it was largely responsible for the fall of ancient Greece and its civilization. Malaria is an active disease in many parts of this country and taxes the abilities and resources of the members of the Public Health Service to hold it at bay.

Of course, so far as malaria is concerned, preventive measures are the only sure means of ridding an area of the malady. However, while destruction of the breeding places of the anopheline mosquito is the only certain method of extirpating the disease root and branch, such measures are not always feasible and in any event take time. Therefore curative, or rather remedial and prophylactic measures still hold sway. Of all the therapeutic and prophylactic remedies for malaria none has approached in reputation that of quin-

ine. For years it has been the sheet anchor of treatment and prophylaxis, and the faith reposed in its efficacy has been almost touching. Now and then cold water has been thrown upon its claims, but, as a rule, it has retained its reputation in a remarkable manner.

During the war a good deal of experience was gained in the prophylaxis and treatment of malaria. Some of the military operations were undertaken in notoriously malarious districts, notably in Macedonia, a part of that ancient Greece of which mention has been made, in Egypt and Palestine, and elsewhere. From the experience thus gathered views as to the virtues of quinine in the treatment of malaria have varied considerably, but speaking generally it may be said that quinine has fallen somewhat from its high estate.

In the *Medical Press and Circular* of November 3, 1920, Dr. J. C. McWalter has an article concerning the prophylactic treatment of malaria, dealing chiefly with the effects of quinine as witnessed by him as specialist sanitary officer, R. A. M. C. According to him, the net result of the collective experience of the officers of the R. A. M. C. is that, despite the use of quinine, in fact and practice 90 per cent. of the men who were in Salonica, especially those in the Lake Doiran district, got malaria, and but few, probably not more than 20 per cent, of those who served in Egypt or Palestine escaped. McWalter regards the prevention or cure of malaria and dysentery as not only the most urgent question of tropical preventive medicine, but one on which depends the future history of the British Eastern empire. He further points out that investigation or research on the subject is not solely a matter for the laboratory, the question must be treated clinically on a large scale. He does not believe that quinine is quite useless or inert, for at a certain very early stage in the onset of an attack, it prevents its development. It has probably some antiperiodic effect, but it cannot be relied on as a prophylactic. It does not, he says, even prevent recurrence of attacks when there is no fresh infection. It seems in many instances to prolong the interval between attacks, but this is so dependent on the weather and other causes that it is hard to eliminate everything but the action of the drug. McWalter records his opinion that in spite of all that has been written and said about malaria and quinine, one finds that the question needs to be studied afresh as an actual problem affecting great armies.

Another point in the dissemination of malaria where McWalter diverges from the beaten path is with regard to the mosquitos which propagate malaria and when they do their evil work. He draws attention to the fact that the anophele is not the only species of mosquito which transmits malaria; some species of culex also give it. Also, it is incorrect to say that malarial mosquitos bite only in the dark or at dew-fall; that is the worst time, but they bite all day. He found, moreover, that the quotidian, tertian, and quartan types of malaria are largely traditional.

THE SYMPTOMATOLOGY AND COMPLICATIONS OF SPERMATIC CYSTS.

CYSTS of the epididymis are by far the most frequently met with in practice of the spermatic cysts, and all develop slowly and painlessly so that their onset is overlooked. It is only by mere chance that the patient makes the discovery of a small nodule, the size of a pea or filbert in the epididymis which gives rise to no functional disturbance or pain. This small nodule progresses with extreme slowness and ordinarily requires from two to five years or even more to attain the size of a pigeon's egg. When fully developed, the cyst may cause some discomfort in walking on account of its weight and size, but it is painless. If the patient is examined at this time, inspection will show that one side of the scrotum is—as in hydrocele—the seat of an evenly rounded tumefaction which is more or less pronounced. Usually there is no appreciable development of the subcutaneous veins of the scrotum and the skin covering the tumefaction is always normal. Percussion gives absolute dullness, while palpation shows that the tumor is a regularly rounded oval body, elastic or fluctuating. The scrotal skin is freely movable over the tumor, while at the lower pole of the latter the testicle can be readily made out.

The local lesion formed by the cyst and testicle frequently assumes the characteristic shape and seems to be a single mass, but if the cyst is drawn upward and immobilized with fingers of one hand while the testicle is held with the fingers of the other hand, this organ will usually be found to be independent of the tumor and can be moved transversely over it. The epididymis is less easy to recognize as the cyst develops in its substance or in its immediate proximity. However, if the testicle is firmly held and drawn slightly downward so as to put the cord on the stretch, the tail and body of the epididymis may sometimes be made out. The head is always indistinguishable from the cyst. The vas deferens and most of the elements of the cord are usually easily recognized over the posterior aspect of the pathological production. The cyst is not translucent, or if partially so it is never as perfect as in hydroceles. Rectal examination reveals a normal prostate and seminal vesicles.

The prognosis of these cysts is good, and the disturbances of spermatogenesis to which they sometimes give rise are of little moment.

Complications are likewise rather the exception. The cyst has been known to rupture into the vaginalis or cellular tissue of the cord following traumatisms, while an instance of torsion of the pedicle has been recorded where the cyst was attached to the head of the epididymis by vessels of unusual length. The contents of the cyst may be bloody but this transformation of the fluid is usually the result of trauma and is very rarely due to the classical mechanism of spontaneous hematocele. Inflammation of the cyst is somewhat more frequent, but it is discrete and subsides in a few days, leaving a little induration in the walls of the cyst. Very

large spermatic cysts have been known to cause varicocele or marked atrophy of the testicle; or the cyst may be complicated by hydrocele, in which case the latter completely conceals the cystic process, thus making its diagnosis difficult. It is undoubtedly due to a direct action of the cyst which irritates the serosa like a foreign body. Some years since, Aubert advanced the theory that rupture of small spermatic cysts into the vaginalis was a frequent cause of hydrocele because his cystological examinations of the fluid of this process revealed the presence of spermatozoa.

LO, THE POOR INTERNE!

THE hospital interne is generally conceded to have a hard lot. Responsible to attendings, to superintendents, to patients, to relatives; often (perhaps deservedly) abused by all; working, if he be at all conscientious, many hours a day; with blame for mistakes and often with scant praise for work well done; one may well wonder that the breed persists. Many months of the interne's career must be spent in doing what he himself is prone to call "scut work"—*i.e.* uranalyses, blood counts, and all the rest of clinical pathology; or dressing the uninteresting surgical cases; giving anesthetics; and, all too often, "riding the bus." In these days of residents and assistant residents, many of the men just graduated from medical schools look askance at the hospitals which have installed the "resident system" and turn their attention to hospitals which are perhaps less desirable, on the ground that they can there "get more to do." This point of view is particularly popular with men seeking surgical internships. It is the fashion with even the least experienced to scorn the lowly hemorrhoid and to long for a chance to "do a gall-bladder" or a hysterectomy.

What the interne wants (of course leaving the lazy ones out of consideration) is "plenty to do." He is tired of being taught, tired of standing round while other men prescribe, tired of pulling out stitches someone else has put in. He wants so much first-hand experience in the hospital that when he is turned loose upon the sick public, he will have confidence and ability enough to "get away with it."

Some hospitals cling to the idea that in the ambulance service the interne gets valuable first-hand experience in meeting emergencies. Requiring trained doctors to spend many hours a week "riding the bus" is something which more and more hospitals are coming to regard as foolish and unprofitable. For the interne who clings to the tail-end of an ambulance is practically never called upon to use his store of medical knowledge. A little common sense, presence of mind, and the ability to tell whether or not a case really requires hospital care are the only qualifications which rank the "ambulance surgeon" higher than a footman. Many progressive hospitals are clearly demonstrating that drivers or orderlies with a working knowledge of first aid can do creditable and satisfactory work as ambulance surgeons. Thus the interne is kept in the accident and admitting rooms, where he spends more time on his cases than he does on street traffic. Only a chance emergency obstetrical case would require the presence of a doctor; and this could be very well provided for without such unwarrantable loss of time as on the ordinary run of ambulance cases. When an interne in any of our accredited hospitals, with first-class attending physicians and surgeons, begins to complain of having too much laboratory work to do, or of having too little responsibility, the voice of his complaint may well merit little consideration. Given honesty and industry on his part, his interneship will be as profitable as he could wish. But when he begins to complain of being obliged to waste his time and energies on the city streets, hospital authorities may well listen to him, or else keep silent when they find themselves equipped with second-rate interne staffs.

LINITIS PLASTICA AND ITS CLINICAL SYNDROMES.

PLASTIC linitis is characterized by a general infiltration of woody hardness in the gastric walls. The wall is greatly thickened, forming a rigid carapace and reducing the capacity of the stomach. Its thickness is one or two inches, and it has even attained three or four in some instances. On the other hand, the cavity of the stomach is so reduced that it can hold only a few spoonfuls of liquid. Finally the shell formed by the gastric wall is so rigid that it can neither distend for receiving the slightest amount of solid food nor contract for expelling solid contents in the intestine. A stomach of very small dimensions, with very thick, rigid walls, is therefore characteristic of gastric linitis.

At the present time this process is classified among neoplasms, especially since characteristic cancer cells have been found to exist in the morbid structure. This process is a peculiar type of cancer that does not involve the surface epithelium, but cleaves the subjacent structures by means of a sclerous tissue, which surrounds the muscular fibers. There may, perhaps, be other sclerous processes of the same type, due to tuberculosis or syphilis, but it appears that malignancy is usually the course.

Gastric linitis may be limited to the body of the stomach or may involve the body and either the cardia or pylorus as well. If the linitis is localized to the body of the stomach, without participation of either the cardiac or the pyloric orifice, one will find a microgastria with rigidity and thickening of the stomach walls. If the syndrome of dysphagia and regurgitation exists and the case is one of pseudostenosis at the cardiac end of the esophagus, the diagnosis can readily be made by giving a bismuth test meal, which will be found to fill the gastric cavity and esophagus. If the linitis has invaded the cardia as well, the rigidity of this orifice will be made evident by a true cardiac stenosis and will symptomatically overshadow the insuffiient capacity of the stomach. Finally, if the morbid process involves the pylorus, there will be rigidity of the pyloric orifice, which will counteract any tendency to stenosis.

Certain Symptomatological Aspects of Pulmonary Cavities in Tuberculosis.

Among the anatomicoclinical phases of pulmonary tuberculosis, the cavitary phase is the one that best retains its clinical individuality. In some patients who have reached the cavitary stage the general health remains good, and many do not present any of the classical signs of cavity on auscultation, the pulmonary lesion being detected by radiography. In the first place there are silent cavities giving rise to no clinical signs, in which auscultation is almost normal so far as they are concerned. At the most does one find some incomplete percussion dullness and respiratory changes in these subjects. But there are cases of pulmonary cavitation with most deceptive symptoms and to these we would particularly call attention. There are cavities giving rise to evidences of dryness in which auscultation reveals only some crackling, an increase of the vibrations, and respiratory roughness. There are cavities giving rise to moist signs, with subcrepitant râles, moist crackling sounds, and a blowing expiration. In these circumstances there are certainly no characteristic signs of a pulmonary cavity. The subcrepitant râles and dry crackling do not figure in the classical picture of pulmonary cavities, and in reality they usually merely indicate the condition of the pulmonary parenchyma lying between the cavity and the examiner's ear. From these facts some interesting conclusions can be drawn. The first is that the Roentgen rays alone are able to reveal with certainty all pulmonary cavities, and Masselot of Tunis has shown that the frequency of unsuspected pulmonary cavities should lead to better prognoses in many cases. Once again is confirmed the general principle that the functional condition rules over the physical condition, and that in pulmonary tuberculosis in particular, the degree of tuberculous impregnation and the state of organic resistance of the subject are prognostic factors of far greater importance than the physical state of the patient. A tuberculous patient is not always to be condemned to death simply because he presents pulmonary cavities, but the condition is much more grave when the subject is hectic, no matter what may be the anatomical degree of the lesions present.

The Hyperkinetic Form of Epidemic Encephalitis.

Since it is Economo of Trieste who is credited with having published the first account of encephalitis lethargica, it should be of interest to read his experience with the hyperkinetic form, which was practically absent in the outbreak of 1916. His article appears in the *Wiener klinische Wochenschrift* for April 15 and 22, 1920, xxxiii, 16-17, and the conclusions are as follows, with especial reference to the nature of the virus and its relationship to grippe. The hypothetical virus of encephalitis may also be that of influenza, and this view explains the epidemiology of the disease, but in the clinic the bacteriology and pathology show wide discrepancies. The compromise view would be that the relationship of influenza to encephalitis agrees with that between lues and progressive paresis; were it not for the fact that in the majority of cases of encephalitis there is no history of grippe. One might imagine further that the diplostreptococcus of Wiesner, believed by the author to be the cause of encephalitis, is able to cause influenza; as a matter of fact it was frequently encountered during the grippe. But the most plausible view is that encephalitis has its own special cause as stated above, and that coincidentally it must be associated with the unknown causal agency of influenza, either in a true symbiosis or a more casual association. The separate prevalence of each affection without the other could thus be explained as well as the coincidences and sequences and hybrid cases of the two affections. Economo does not believe in the existence of a grippe located in the brain. Clinically the myoclonic form means that the cause of encephalitis has attacked the spine, which it did not do at the outset, causing a poliomyelitis.

Hyperparotidia.

Dalche, writing in *La Presse Médicale* for November 3, 1920, xxviii, 80, makes an attempt to increase the number of diseases of internal secretion by including certain affections of the parotids, some of which at least belong under Mikulicz's syndrome. This is not, of course, the first attempt in this direction. An hypertrophy, or as one might say, a condition not unlike exophthalmic goiter in the thyroid, appears to attack women by preference, and the author narrates two cases of this sort. One woman who had reached the menopause had attacks of pain in the parotid regions—one or two a month. First one then the other of the glands was complained of. There was some sensitiveness on pressure. No enlargement was specified, but the author excluded mumps. In the other case there was swelling of the glands which included both parotids and submaxillaries. In this second case salivation was a feature. Mumps was excluded as in the first case. Neither woman presented any disturbance of the lacrymal glands. The elevated blood pressure in the women could hardly be regarded as due to increased internal secretion of the salivary glands, for both subjects were at the menopause when hypertension would be expected. The lacrymal glands have been known to swell during the menses. The simplest explanation is that the ovary was in some way responsible for the glandular manifestations; just as we see the thyroid swell during menstruation and pregnancy, the pituitary undergo alterations during gestation, and other similar phenomena of ovarian suppression. The close connection in man between the salivary glands and gonads is also suggested. The glands in question do not often figure in pluriglandular syndromes, but a careful study of Mikulicz's syndrome might serve to reveal certain overlooked cases.

News of the Week.

Tuberculosis Increases Alarmingly in Vienna.—The American Red Cross in Vienna reports an increase of 200 per cent. in the number of tuberculosis cases over that of last year, when 16,000 patients were treated in the dispensaries of Vienna and 12,000 were visited in their homes. This year there have been 23,000 cases of tuberculosis under treat-

ment in the Red Cross institutions, while 37,000 patients have received American relief in their homes. The so-called advanced cases number 13,000, as against 10,000 last year. Vienna hospitals have just received American gifts valued at 50,000 Austrian crowns, 50 per cent. of them being in hospital supplies and medicines.

Physicians Admitted to Turkey.—A dispatch from Constantinople reports that the Turkish Nationalists, who for a time past have denied the Near East Relief permission to carry on their work in the interior parts of the country or make an investigation of conditions, have finally agreed to permit physicians to proceed into the interior. Relief workers will not benefit by this favor which had been extended to physicians only.

Teaching Trades to Ex-Service Consumptives.—The *Army and Navy Zone,* in a recent issue, describes the way in which many former Service men are benefited by the helpful charitable work of the New York Tuberculosis Association and the National Tuberculosis Association. In a model workshop in Long Island City, N. Y., convalescent tuberculosis patients are taught the trades of watch and jewelry repairing and cabinet making. These trades are deemed more desirable because not injurious to the lungs. The work is carried on under the best sanitary conditions, a rest room is provided, and meals are served at cost. Schools for pre-vocational training are conducted by the association at the sanatoria of Loomis, Otisville, and Gaylord Farm, and as soon as the patient's physical condition permits he is transferred to the workshop in New York City, or, if an ex-service man, to Long Island City.

The Cause of Infantile Paralysis.—The Minnesota University Farm School, in cooperation with certain medical authorities, has been carrying on an investigation which seems to have demonstrated conclusively that the larva of the bottle-fly is responsible for hog paralysis and limberneck in poultry. A statement has also been issued expressing the belief that infantile paralysis is traceable to the larva of the green bottle-fly. On the basis of the information gained by these investigations, the University officials have sent out a bulletin to Minnesota farmers urging them to protect their live stock and poultry and possibly human health, by burning or burying deeply all carrion. The results of this work are cited as an additional argument for farm and home sanitation.

To Curb Sale of Narcotics.—The Registration Department of the State of Massachusetts has drawn up a bill to be submitted to the Legislature which aims to curb the sale of narcotics disguised as medicine by grocery and other stores unless they take out a State license. Another recommendation for legislation provides for the appointment of investigators and prosecuting officers for the protection of the public against the illegal practice of medicine, pharmacy, dentistry, optometry, chiropody, veterinary medicine, and embalming.

Red Cross Wins Drive in Manhattan.—The Red Cross drive for 400,000 members in Manhattan has closed, there being sufficient pledges to indicate that the 400,000 mark set for the city has been passed.

Addition to Broad Street Hospital.—Plans have been filed with the Manhattan Bureau of Buildings for building an addition and making necessary alterations to the Broad Street Hospital, New York. The new building will be located at 123 and 125 Broad Street, and will cost approximately $300,000.

Few New York Doctors Renew Liquor Permits.—According to an announcement made by Charles R. O'Connor, Federal Prohibition Director, applications for renewal of permits to prescribe liquor have been filed by only one-sixth the physicians of the State, New York City included, who held 1920 permits. There is a shrinkage not only in the renewals to prescribe and manufacture liquor, but also in the number of permits for druggists and perfumers. Of 6,131 physicians who had permits this year, only 985 have obtained renewals.

Rent Free Houses for Worthy Blind.—Patrick H. Vaughn of Harrisburg, Pa., known as the "model landlord," because he refused to raise the rents of his numerous properties during the war, in his will recently probated, set aside ten of his houses in which the families of worthy blind may be permitted to live rent free. His will also provides a home for aged women and for other local charities.

Jewish Memorial Hospital.—It is planned to hold the dedication exercises of the Jewish Memorial Hospital, New York, which is to be erected as a memorial to Jewish soldiers who lost their lives in the war, upon a site which has been selected in the upper section of Washington Heights, some time this month. There are already several buildings on the site suitable for hospital purposes. The total estimated cost of the building is $500,000. The institution will be non-sectarian and the surgical department will be at the service of all registered physicians.

Thieves Use Ruse to Get Doctors' Clothing.—A scheme is being tried in New York City whereby, in one instance at least, a doctor lost no inconsiderable part of his winter wardrobe. The *modus operandi* is something as follows: The telephone bell rings and someone inquires whether the doctor is in and when he will be home. If told he is gone for some time, there is a wait of twenty minutes or half an hour, when the telephone bell rings again. This time a message comes saying that the doctor has met with an accident and is in need of clothing and naming certain articles of wearing apparel, for which a messenger will call in fifteen or twenty minutes. At the appointed time the messenger appears, and if in the meantime someone in the doctor's household has not been keen witted enough to become suspicious, bears away the articles of clothing that have been asked for.

The National Committee for the Prevention of Blindness held its annual meeting in New York City recently. William Fellowes Morgan presided. It was reported that there are now nearly 4,000 persons aiding the work of the committee in all parts of the country.

Dr. Thomas J. MacFarlane has removed to 1730 72d Street, between 17th and 18th avenues, Brooklyn.

Dr. Julian Bourguet of Paris has arrived in New York to study American methods of plastic surgery.

The Associated Out-Patient Clinics will hold its annual meeting at the New York Academy of Medicine on the evening of Dec. 15. The address of the evening will be delivered by Dr. W. Gilman Thomp-

son, who will speak on the "Present Inadequate Dispensary Service for the Treatment of Industrial Accident Cases."

Obituary Notes.—Dr. CHARLES INFROIT of Paris, a distinguished *x*-ray expert, chief of the Central Radiographic Laboratory of the Saltpétrière, like many of his predecessors in this field, died a martyr to science on Nov. 29. Dr. Infroit was 45 years of age, and for the past twenty-two years has suffered from the results of *x*-ray burns, having undergone during that time twenty-four operations, twenty-two of which were performed during the past ten years. Despite his suffering, he continued to lecture and to attend to his professional duties until very recently.

Dr. FRANCIS A. SCHLITZ, a graduate of New York University Medical School in 1878, died at his home in Brooklyn, N. Y., Nov. 28, at the age of seventy-five. He was for years connected with the old German Hospital and the Deaconesses' Hospital, in Brooklyn.

Dr. NICHOLAS THOMAS BOLEN of Brooklyn, N. Y., a specialist in skin diseases, died of a complication of ailments, on Nov. 28, at the age of fifty-nine. He graduated from the University of Munich in 1891, and came to Brooklyn in 1902.

Dr, JOHN W. COUGHLIN, who served four terms as Mayor of Fall River, Mass., died on Dec. 3, at the age of sixty years. Dr. Coughlin was a graduate of the College of Physicians and Surgeons, Baltimore, in 1885, was a member of the Democratic State Committee from June, 1901, until last June, and was his party's candidate for Lieutenant Governor in 1903.

Correspondence.

POTASSIUM NITRATE IN CANCER.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—I must again request the privilege of using your columns to answer Dr. Bell's questions propounded to me in his letter of November 13, as published in the MEDICAL RECORD of that date. I wish also to take this opportunity to assure the Doctor of my sincere appreciation of his courteous remarks and well wishes; to thank him for the expression of his amicable views and to further assure him that there is no reason why we may not both express our opinions on the subject of cancer, or any other pathological condition, without raising the ire of either.

Dr. Bell, referring to the chemical reactions between potassium nitrate and sodium chloride, says, "When KNO_3 enters the blood, and when it comes in contact with NaCl, their separate formula becomes altered into $NaNO_3$ and KCl while circulating in the blood. Now these are two basic salts, both having an equal affinity for their acids. How then does the transference take place?"

In 1918 I wrote "A Plea for the Use of Potassium Nitrate in the Treatment of Cancer," which was published in the MEDICAL RERORD for May 4. From it I take the following, and for which most excellent chemical authority can be mentioned; for I might add that before I submitted any problems in chemistry for publication, in relation to a subject as important as cancer, I fortified myself by having such problems verified by chemists whose opinions are considered final. However, the best men may err and the following abstract is submitted for Dr. Bell's consideration.

According to the principle of maximum work in thermo-chemistry, which was demonstrated years ago, whenever several chemical reactions are possible, as the result of the admixture of various chemical reagents, the reaction which takes precedence over all the others is that which leads to the greatest development of heat; or in other words, the particular chemical compound will be formed first whose so-called "heat of chemical formation" is highest; and that compound will also be the most stable, or the most difficult to decompose or displace. When nitrate of potassium composed of potash and nitric acid ions, enters the plasma of the blood, which always contains chloride of sodium, it is possible for a double decomposition to take place, by which potassium chloride and sodium nitrate are formed. Now, it so happens that the heat of formation of potassium chloride is higher than that of sodium chloride, or any other chloride, except that of lithium (which is only about 1 per cent. higher, and is of no special interest in the present connection because it is not a natural constituent of blood or tissue); consequently, according to the established recognized principles of thermochemistry, not only will there be a tendency to the formation of chloride of potassium (by virtue of the principle of the tendency to maximum heat development just mentioned) but this salt will be a more stable constituent of the blood or of any of the fluids or tissues of the body than chloride of sodium.

At the same time that chloride of potassium is formed by the union of the potassium ions with the chlorine ions of the chloride of sodium present in the fluids of the body, the nitric acid ions, let loose or released from the potassium nitrate, will combine with the sodium ions of the chloride of sodium, forming nitrate of sodium. This substance can pass out of the cell tissue into the blood and take part in other chemical reactions in which nitrogen plays an essential role.

An interesting circumstance in connection with the exchange of ions taking place between chloride of sodium and nitrate of potassium, is that the sum of the heats of formation of the two end products remains substantially the same as the sum of the heats of formation of the two initial products. This means that very little energy needs to be supplied from the blood, or from other sources of physical or chemical energies of the body, in order to effect the double reaction just mentioned.

A few abstracts from A. R. Cushny's Monographs on Physiology "The Secretion of Urine" might aid in substantiating the above.

Sollman (1903, page 425) confirms the finding that nitrate injection increases both the percentage and the absolute amount of chloride in the urine previously poor in chloride.

Loewi (1902) observed diuresis from intravenous injection of nitrate, which resembled that from phosphate, except that the chloride excretion in the urine remained high under nitrate.

There seems no question that under nitrate diuresis a larger excretion of chloride in proportion to the other constitutents occurs than under sulphates. Loewi ascribes this to the nitrate dislodging the chloride in the tissues and thus increasing its partial pressure in the

blood; and Langlois and Richet have shown by actual analysis that the chloride of the tissues falls under nitrate treatment. In other words, the nitrate, like the bromide, is not differentiated from the chloride by many tissues, and these exchange part of their chloride for nitrate.

So far I have dealt with the displacement of the chlorides by the nitrates and think I have given good reasons to believe that a transfer between these elements takes place, sufficient to allay any doubt Dr. Bell may feel.

The conclusions arrived at by Bock (1907) after the experiment of injecting "an isotonic solution of potassium salt intravenously in rabbits" is, briefly, "* * * that potassium displaces some of the sodium in the tissues and thus increases its concentration in the plasma and filtrate."

In further substantiation of the displacement of the elements under discussion I would draw attention to the fact that human milk taken from the lactating female, living on a diet containing an excess of salt, is free from potassium. From this fact I am led to surmise that the sodium has displaced the potassium. Might this not be of significance in relation to the fact that sarcoma is found to a greater degree in youth than in middle age, and somewhat strengthen my hypothesis on the physicochemical nature of cancer? For in infancy the nursing child has no access to vegetable matter as food and is deprived therefore of the potassium salts which would, if taken, supply the potassium in sufficient quantity to stabilize the sodium and thus maintain the proper ratio of these two elements. A child reared on a potassium-free diet cannot possess the natural power of resistance to diseases of any nature and would therefore be both deficient and defective.

According to Matthews (Physiological Chemistry, page 310) * * * "all growing organisms need potassium, since potassium in nearly all forms of living matter is present in larger quantities than sodium."

The analysis of human milk by Bunge (Physiological Chemistry, Hammarsten, by Mandel, page 310) shows that the relationship of the two bodies, potassium and sodium, varies considerably (1.3-4.4 equivalents to 1 of soda). "By the addition of salt to the food the quantity of sodium and chlorine in the milk increases, while the quantity of potassium decreases."

In a previous letter Dr. Bell asks, "Does Dr. Robinson believe that the cause of cancer is an excess of salt?" To this I replied that such was my belief; for how can I otherwise believe, when by the displacement of salt with potassium nitrate I see the manifestations of cancer disappear? Dr. Bell in his latest letter says, "My old friend, Dr. Braithwaite of Leeds, advanced the same theory that Dr. Robinson now propounds, over twenty years ago. He believed cancer was due to the ingestion of too much salt, NaCl. But this theory, so far as this country was concerned, fell to the ground as untenable." Unfortunately the Doctor does not give any scientific reasons why Dr. Braithwaite's theory fell to the ground. It therefore gives me great pleasure to defend this theory by offering scientific facts in its support, which I would be glad to have Dr. Bell refute. I am not familiar with Dr. Braithwaite's writings and my premise was not based on his theories. However, history abounds with instances of the revival of old theories once considered untenable, which today are acknowledged facts. Shall we forget that Harvey once said that the blood vessels carried blood and how for one hundred and fifty years physicians insisted that these vessels carried air? Do we not recall that more than twenty-five years elapsed before Lister succeeded in convincing surgeons that pus was produced by germs and that antiseptic treatment was the proper surgical method of treating wounds? Nevertheless, the theory of salt and cancer is tenable and the cure of cancer by the displacement of salt with potassium nitrate is demonstrable and should therefore survive. However, its employment to be effective must be based on known principles and I take the following from my article of May 4, 1918, previously referred to:

There are many important reasons why nitrate of potassium should be administered in minute doses and highly diluted in water. On the one hand, *the introduction of salts of potassium into the blood at too great a rate is objectionable because of the toxic action on the heart;* this action becomes more marked when the quantity of potassium salt contained in the blood exceeds about 1/20th of one per cent. The moment the quantity of potassium salt present in the blood exceeds the proper physiological limit, the excess is worked off through the kidneys by increased secretion of urine containing a higher percentage of potassium than normal. On the other hand, dilution of the solution containing potassium nitrate accomplishes several important objects. First, the process of osmosis by which alone this salt can pass through the walls of the intestine into the blood is greatly facilitated. A strong solution of the salt would indeed pass through only quite slowly, if at all, and the more it is diluted the more readily it will pass. As a matter of fact, the more nearly the solution approaches the specific gravity of pure water the more readily it will pass. What is true of the osmotic action by which passage is effected into the blood from the intestines, is even more true in the case of the osmosis by which substances are transferred from the blood into cell tissues through the walls of the capillaries. It is quite conceivable that although the blood may contain a given salt in considerable amount, very little, if any, of it may pass into the tissues. Indeed, paradoxical as it may seem, in certain circumstances the greater the quantity present in the blood, the slower the rate of its transfer, and therefore the smaller the amount transferred in a given time. This underlying principle of physical chemistry is perfectly well established and should be employed more generally when administering substances whose medicinal effects are dependent upon the property of osmosis.

Second, the chemical reactions on which the therapeutic actions depend are also much facilitated by dilution. The effect of dilution, it is well known, is to produce a state of partial "dissociation" or "ionization" in the elements of a salt held in solution in water, so that some of the atoms are less tightly linked, or less intimately bonded together, in other words, they are partially freed from each other, and exist as "ions," and when in that ionized state they are more susceptible to the action of all reagents and reactions, whether chemical or physiological, which tend to cause chemical changes in them. It is well known that dissociation and ionization render possible many chemical changes and reactions that cannot be produced otherwise.

The foregoing considerations are logical and scientific, applicable not only in this case, but almost in every case where therapeutic agents are to be administered in liquid form. They point to the desirability, in the general case, of not letting the remedial agent cause congestion and crowding, either at the entrance-gate through which they pass into the blood, or at the outlet-gate through which they pass out of the blood into the tissues or into the secretory or excretory organs. A cardinal principle that should be borne in mind is that

it is not the amount administered, but the quantity which can be effectively utilized that counts. Whatever portion has no chance of being effective had better not be administered, for the dual reason that not only is it in the way and prevents the action of the rest, but the task of eliminating the excessive and useless portion may impose more or less serious, and at best always objectionable, work on the heart and the other organs of the body.

Therefore, Dr. Bell will now realize why his prescription of potassium nitrate mixed with molasses and used in the Battersea Hospital in cancer eight years ago was, as he says, "productive of unfortunately only negative results." Applying the adage of Bruce, "Try again," the Doctor might employ potassium nitrate in minute doses.

With the exception of the use of potassium nitrate there seems little difference between Dr. Bell's treatment and that which I employ. The calcium and magnesium are given and I depend on the vegetable substances of the diet to supply iron and other biochemical salts. A very low hypotonic solution of potassium nitrate, whose exact dilution should be determined, (say about 1/120 to 1/60 gr. in 2 to 4 c.c.) is injected intramuscularly not oftener than every other day for a few doses, then every fourth day for a few more doses, and so on increasing the intervals between injections. However, the exact posology is one for the physician to settle. I also give another solution of potassium nitrate orally in doses of one twenty-fifth of a grain in four ounces of water three times daily and this is also gradually reduced. There is no reason to suspect that such doses are toxic, and I have seen no such symptoms. This statement, however, applies solely to the doses and to the solutions I am using. I think it is advisable to mention here that I have seen, on several occasions, considerable swelling at the site of an injection accompanied with tenderness and some heat. A wide hyperemic area with red blotches has been observed in a number of instances. These symptoms I have discovered are due, not to anaphylaxis or to the action of the potassium nitrate, but to the fact that the solution I used was old and improperly made. Accidents of this sort would naturally cause the patient to lose confidence and their frequent recurrence would bring discredit upon an excellent therapeutic agent. Therefore, home-made solutions should not be used unless freshly made and should not contain a preservative agent. The injection of potassium nitrate is free from irritative properties.

It should always be borne in mind however, that, according to Cushney, potassium "is highly poisonous to the heart in anything over 0.05 per cent." He does not state if it is the potassium nitrate salt referred to.

A rest of a week or more and then a renewal of the treatment seems to give the best results. If the injections are too rapidly given some patients may complain of a feeling of lassitude and lose a little weight, while in nearly every instance under this treatment they gain weight. A permanent restriction of salt in the diet is not physiologically wise, for sodium chloride is essential to the economy. An occasional taste of salt, much as animals obtain it, should be allowed. After a restricted salt diet a patient will develop a natural craving for salt which should be satisfied but not to the extent of salting to excess. Ham, bacon, salted fish, and cheeses, and in fact all foods preserved with salt, should be prohibited; otherwise the patient is allowed all other foods, fruit especially.

In my hands this method of treating cancer has shown remarkable results, but I would like Doctor Bell and other physicians to try the treatment so that by the experiences of many we may know whether to accept or discard it.

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LONDON LETTER.

(From Our Own Correspondent.)

LONDON, November 12, 1920.

The Annual Report of the Chief Medical Officer of the Ministry of Health.—Sir George Newman, the chief medical adviser to the Ministry of Health, has issued the first annual report of the Ministry. It is a document of the first importance and is besides of considerable literary value. Sir George is the most conspicuous exponent in Great Britain of the principles of the practice of medicine and especially of the principles of preventive medicine. He is, at the same time, eminently sane in his survey of the conditions in this country as regards public and industrial health, and warns his readers not to expect too much from the establishment of a centralized health department. It is impossible to solve at once all the problems of local autonomy and local administration; it is but a step in what he and his colleagues consider the right direction. As he says, "Our business at the Ministry of Health is not to build up for to-day or to-morrow, but for the future; not to attempt to settle forthwith this or that or the other local specific health problem, but to view such problems as parts of a whole, and slowly but surely to lay foundations which will endure. Some of the Ministry's friends and supporters hailed it as an end in itself, as the goal of their desire, as a species of millennium. They expected too much of it, as its enemies expected too little. It represents a reform in central health government, the establishment of a means rather than an end. It cannot provide a remedy for a thousand claims made upon it by well-intentioned persons who have largely misunderstood its purpose. It is a complex piece of machinery which can be judged only in its working, and over a long period of time; to overload and overpress it is to place upon it burdens for which it was not designed. Moreover, it must not be forgotten that the Ministry as such is but a part of an organized scheme for the national health. An organized scheme in any country must include (a) a central supervising department; (b) local authorities or representative bodies for the actual carrying out of the policy of such a ministry in the local divisions or areas; (c) voluntary societies and agencies; (d) an educated people willing and able to practise the way of health. These are four factors, but the foundation of their operations, as well as their direction, must be the advance of our knowledge of the science and art of medicine. Hence there is a fifth factor, the medical practitioner, in some ways the most important and es-

sential factor of all. Upon him, the State has been steadily imposing, for many years, specific duties in regard to the communal health, though it has been slow to associate him closely with its operations. One of the principal objects of a Ministry of Health is to secure his cooperation as an integral and active force in the physical well-being of the nation. The introduction, or part of the introduction, to the report contains the gist of the gospel of preventive medicine and, on the whole, is a good answer to the many criticisms which have been launched against the Ministry and its policy. It is obvious that salvation cannot be found immediately by the establishment of a Ministry of Health, but if wisely directed and not used too much as a political machine, such a department undoubtedly can safeguard the health of a nation to a very considerable extent. Sir George, from a consideration of the available data with regard to British health conditions, draws the conclusion that some gains have been made in the health of the nation, and while the death-rate is declining, there yet remains a serious amount of preventable sickness and disease and avoidable disablement, the tendency of which must inevitably be to have a very deleterious effect upon the physical stamina of the people, reducing their capacity for work and shortening their lives. The broad deductions which may be drawn from the existing state of affairs seem to be as follows: (1) There is a steadily falling birth-rate, which, in 1919, reached the figure of 18.5; (2) there is a death-rate, 13.8, which shows a steady decline at all ages, which raises the expectation of life from birth upwards; (3) the infant mortality rate, 89 per 1,000 births, is one of the lowest recorded, but there is still much unnecessary loss of life both of mother and of child; (4) although the number of cases of epidemic and infectious disease exceeds half a million per annum, the primary burden is relatively light, yet the ultimate results are grave; (5) tuberculosis, measles, acute rheumatism, and influenza are still prevalent, and, with venereal disease, lead to much disablement and mortality; (6) there is also a large mass of disability and incompetency from relatively trivial sickness, much of which is neglected, and thus leads to more serious conditions; (7) the systematic medical inspection of school children has revealed a substantial degree of physical and mental impairment, both the existence and effect of which have been abundantly confirmed by the examination of recruits; (8) the expenditure on sickness and disablement benefit and other similar returns denote that a very serious amount of time is lost from employment, amounting to not less than 260,000 years per annum for the insured population only. It is added that the problem lying immediately before preventive medicine is, first, to rear and maintain a healthy race of people, and, secondly, to continue its attack upon infection and all forms of preventable sickness and invalidity. It is pointed out that the remarkable decline in enteric fever continues to constitute one of the hopeful signs in preventive medicine. In 1869, the year in which typhoid was distinguished from typhus, the former disease had a mortality in England and Wales of 390 per million. In 1918 this figure had fallen to 26 per million. The decline is attributed largely to improved water supply, sanitation, and the protection of food. Water, milk, fish or shell-fish are not inherently concerned with the etiology of typhoid fever. They became concerned as they are polluted, and usually at the source. Gathering grounds of water supplies, dairy farms, shell-fish beds, these are the principal vulnerable points. The writer lays particular emphasis on the need for adequate provision for the care of mothers and infants. Despite the fact that much has been achieved in this direction, the services which have been organized are not complete as yet. The report states, however, that the death-rate of women in childbirth remains approximately what it was twenty-five years ago, and there are lost by death every year upwards of 3,000 women in the fulfilment of one of their principal and most vital duties to the State, a mortality almost entirely preventable. Then, in the next place there is a large volume of abortion, miscarriage, still-birth, and ophthalmia neonatorum, much of it directly avoidable. Again, a substantial number of the 700,000 mothers who gave birth to children in 1919 were so injured or disabled in pregnancy or childbirth as to make them chronic invalids and to bring them in very large numbers to the gynecological clinic or the hospital ward, an excessive burden of preventable invalidity, incapacitating in its immediate and deterrent in its remote effects. It would be difficult, according to the report, to overestimate the vast mass of suffering, disability and incapacity which is thus caused and which ought not to be caused. Lastly, there is still lost by death not less than 60,000 infants in the year, excluding 19,000 still-births. In order to successfully cope with these conditions it is urged that the efforts put forth persistently and consistently in every district throughout the land must be concerned with the efficiency and adequacy: (1) Of methods for the supervision of pregnancy; (2) of midwifery; (3) of maternity homes and hospitals; (4) of home nursing and health visitors; (5) of infant welfare centers and institutions, and (6) of the sound administration and wise use of maternity benefit. Stress is laid on the point that no panacea will meet the situation which can be met only by a comprehensive movement, universally accepted and steadily pursued. Sir George further holds that the final issue can never be in doubt. The State cannot afford to be careless or negligent of motherhood, it cannot afford to leave its infant life to chance or the misfortune of circumstances. There must come a time when civilization means that no child-bearing woman is without adequate and skilled assistance, and no infant without a birth-right of health. That time should come in England first among all nations.

I shall refer to this report again because, while it concerns Great Britain most intimately, it really is of the first interest to every civilized nation.

Scarcity of Nurses.—A report of quite exceptional interest with regard to the shortage of applicants for training as nurses was presented recently by the matron of the London Hospital to its House Committee. It was pointed out that

nursing to-day is not merely a matter of making beds and smoothing pillows. For years past doctors and nurses have worked together for the benefit of their patients, and never more so than at the present time. Whatever new schemes of reorganization may change the systems of the hospitals, it is manifest that they cannot exist without their efficient staffs of nurses, while in national health and the fight against preventable disease they will also be essential. But what, perhaps, neither the head mistresses of girls' schools nor the girls themselves are quite realizing as yet, is that if the nurse is to take her right place among the professions she must be placed on a higher level than the cook and the scullery maid as regards pay. She must see more good appointments ahead of her. Some real inducement is needed to encourage people to enter the nursing profession and to remain in it, something to work up to and worth striving for. The nursing profession cannot be ignored in this fight to improve the health of the nation, and it is imperative that it be given its right status with other professions. It was with this end in view that the Weekly Committee of the London Hospital agreed to a reorganization of their entire system of nursing, with increased salaries extending to the whole staff, from the highest ranks down to the last joined probationer. The matron is, in future, to be relieved of much detail and routine work by the appointment of two assistant matrons at adequate salaries. The scale of pay, which is generous, places nursing on a more satisfactory basis than ever known before. The nurse has now her own private bedroom, comfortably furnished, and has the use of spacious living rooms. Board and washing are provided, as well as medical treatment if necessary. And last but not least, there is a pension assured after twenty years' service, a pension adequate to provide ease and comfort for declining years. Under this scheme of reorganization, nursing offers favorable possibilities and may be compared with advantage with such work was teaching, for example, on the business office or private secretarial work—no longer will nursing be regarded as of yore as a vocation of self-sacrificing devotion, in which money rewards played no part. Nursing is now looked upon as a profession working in alliance with medicine and surgery and paid accordingly.

Progress of Medical Science.

Boston Medical and Surgical Journal.

November 25, 1920, clxxxiii, 22.

1. What Shall Be the Attitude of the State Toward Hospital Standardization? Michael F. Fallon.
2. Some Practical Hospital Problems Encountered in an Industrial Community. E. MacD. Stanton.
3. How Can the Shortage of Nurses Be Met? Joseph Howland.
4. An Historical Note on the Relationship of Digestive Disturbances and Psychoses. Charles Greene Cumston.
5. The Early Orthopedic Treatment of Infantile Paralysis. Arthur T. Legg.
6. A Four-Way Stop-Cock. G. T. Tyler.

5. The Early Orthopedic Treatment of Infantile Paralysis.—Arthur T. Legg describes the methods of treatment which have been found successful in caring for the victims of the 1916 epidemic, and emphasizes the principles brought out by a careful study of the progress of more than one thousand cases. The summary drawn from this experience follows: During the sensitive stage the patient should be at perfect rest. No active treatment should be started until tenderness has entirely disappeared. All beginning deformities should be corrected as soon as they appear. An accurate muscle examination of the entire body should be made before starting any treatment. Sitting and walking should be prohibited for two or three months at least, and then allowed only when the patient can be kept in a normal position. Braces should be applied, (1) to prevent deformity; (2) to allow locomotion. Fatigue must be constantly guarded against. Massage and muscle training is the best method for re-establishing power.

New York Medical Journal.

November 27, 1920, cxii, 22.

1. The Theory of Pneuma in Aristotle. Jonathan Wright.
2. Standardized Röntgen Ray in the Treatment of Skin Diseases. Howard Fox.
3. Physical Diagnosis Versus the *X*-ray in Disease of the Lungs. George William Norris.
4. Röntgenotherapy. J. Thomson Stevens.
5. Foods and Races. J. S. Lankford.
6. Sterility. Sex Stimulation and the Endocrines. Thomas W. Edgar.
7. Christian Science and Sex. Theodore Schroeder.
8. Underlying Factors in Good Posture. C. Ward Crampton.
9. Cardiac Manifestations in Influenza. Charles Greene Cumston.

2. Standardized Röntgen Ray in the Treatment of Skin Diseases.—Howard Fox considers the standardization of the roentgen ray one of the greatest advances in dermatological therapeutics. His conclusions from a review of its uses are as follows: (1) The roentgen ray is probably the most useful therapeutic agent for the treatment of skin diseases. (2) Its versatility is shown by the great variety of conditions in which it can be used, including inflammatory diseases, those depending on epilation, pruritus and hyperidrosis, lymphatic disease and cancer. (3) It is only by means of accurate standardization that its full value can be realized and its dangers eliminated. (4) Standardized treatment requires the use of a Coolidge tube and interrupterless transformer. The quantity of ray can then be measured by pastilles or by arithmetical computation. (5) The routine use of pastilles is unsatisfactory, as considerable experience is required and as they introduce the element of personal equation. (6) by means of the simple method of computation devised by Mackee and Remer, the treatment of skin diseases by the roentgen ray has been revolutionized and a great contribution made to dermatological therapeutics. (7) The most brilliant results in the writer's experience have been attained in eczema and in ringworm of the scalp, where the roentgen ray is certainly the method of choice. (8) It has also been of great value in acne, psoriasis, seborrhoic eczema, lichen planus and epithelioma. (9) In chronic sycosis, localized hyperidrosis and some cases of localized pruritus it is the only remedy (except radium) that can effect a permanent cure. (10) Leucemic conditions and mycosis fungoides cannot be even temporarily improved by anything except the roentgen ray (or radium).

Journal of the American Medical Association.

November 27, 1920, lxxv, 22.

1. Diverticula of the Small Intestine, Other Than Meckel's Diverticulum. James T. Case.
2. Actinomycosis Treated with Methylene Blue and Roentgen Ray. Viggo W. Jensen and C. W. Schery.
3. The Developmental Basis for Certain Vesical Diverticula. Ernest M. Watson.
4. Hemorrhoidectomy: A Composite Operation. E. G. Martin.
5. Gonorrhea of the Lower Genito-Urinary Tract in Women, with Special Reference to the Glands of Bartholin. William E. Stevens and Maurice Happner.
6. Ulcer of the Bladder (Hunner Type). H. A. Fowler.
7. Treatment of Leprosy with the Dean Derivatives of Chaulmoogra Oil: Apparent Cure in Seventy-eight cases. J. T. McDonald.
8. A Positive Wassermann Test in Non-Syphilitic Patients after Intravenous Therapy: Preliminary Report on a Study of Its Significance. Albert Strickler, Assisted by Henry G. Munson and David M. Sidlick
9. Nutritional Work in Public Schools: A Further Report of Work Done Under the Supervision of the Board of Education in the Public Schools of Chicago. Katherine B. Rich.

10. A Case of Retroperitoneal Cyst, Probably Originating in the Wolffian Body. Astley P. C. Ashhurst and Joseph H. McGuire.
11. Indol Test on the Spinal Fluid for Rapid Diagnosis of Influenzal Meningitis. T. M. Rivers.
12. Mucous Colitis. William H. Stauffer.

2. Actinomycosis Treated with Methylene Blue and Roentgen Ray.—Jensen and Schery, believing that methylene blue might prove to be a specific for *Actinomyces* in the human being as well as in the test tube, used this agent in a case, report of which is given. They found that the combined treatment, consisting of methylene blue and the roentgen ray, which is new in the literature, clears up the condition. Either roentgen ray or radium is probably sufficient as a curative agent.

5. Gonorrhea of the Lower Genito-Urinary Tract in Women.—Stevens and Heppner have made to date 3439 examinations and found chronic gonorrheal infection in 1496, or approximately 43.5 per cent. In the first 2375 cases the diagnosis of gonorrhea was based on the detection of the organism in the smears or the presence of a ++ or +++ positive complement fixation test, together with characteristic clinical findings. Many cases were doubtlessly overlooked even in those subjected to repeated examinations; for the difficulty of detection of gonococci in women, especially in chronic infections, is universally recognized, and the fallibility of the complement fixation test in its present form is likewise understood. In the last 1064 examinations positive clinical findings were usually considered sufficient evidence of gonorrhea in these patients. The correctness of this assumption was justified by the discovery of the gram-negative organisms in approximately 95 per cent. of these patients at some time during their stay in the hospital. The infection was located in the cervix in approximately 47 per cent., in the urethra in 32 per cent., and in one or both Bartholin glands in 23 per cent. of these cases. Smears from the vagina were never positive in the absence of infection of the cervix. In the presence of cervical infection the complement fixation test for gonorrhea was positive in approximately 59 per cent., in urethral infection in 23 per cent., in bartholinitis in 19 per cent. of these patients. In the last fifty patients examined, however, the complement fixation test was positive in every case regardless of the location of the infection. The same antigen was used in all. Because of the fact that, unlike acute gonorrhea, chronic infection of the genito-urinary tract in women is seldom productive of subjective symptoms, reliance must be placed entirely on objective symptoms for a diagnosis. Very few cases of acute gonorrhea were found in this series of examinations. From this study the writers draw the following conclusions: Gonorrhea in women occurs more frequently than is generally appreciated, and should be accorded more attention than it has heretofore received. The persistence of gonorrheal urethritis is usually due to glandular involvement or stricture at the meatus or within the canal. Strictures of the urethra, usually at the meatus, are common and should receive appropriate treatment. The ducts and glands of Bartholin are frequently infected by the gonococcus. Injections are of little value in the treatment of infected glands. Urethral glands must be destroyed and Bartholin glands excised. The entire Bartholin gland must be removed; otherwise, subsequent abscess formation is liable to occur. Neither absence of demonstrable gonococci nor occlusions or strictures of the ducts are contraindications to the removal of the glands of Bartholin.

11. Indol Test on the Spinal Fluid for Rapid Diagnosis of Influenzal Meningitis.—T. M. Rivers reports that eleven of twelve meningitic strains of *B. influenzae* studied were indol formers. An indol test on spinal fluids is a valuable aid in the rapid diagnosis of influenzal meningitis.

The Lancet.

November 6, 1920, cxcix, 19.

1. An Address on Renal Function: A Determination of Its Degree. J. B. Leathes.
2. An Address on Unity of Medicine. C. O. Hawthorne.
3. A Note on Our Present Conception of Psychological Repression. Henry Yellowlees.
4. Psychology and Medicine: A Plea for the Instruction of Medical Students in Psychology. J. W. Springthorpe.
5. A Case of Human Glanders. F. H. Jacob. With Pathological Reports by Hubert M. Turnbull, Joseph A. Arkwright, and Gertrude M. Dobrashian.
6. European Children in the Tropical Highlands. Murdoch McKinnon.
7. A Note on Vaccine Treatment in the 1918 Epidemic of Pneumonia. H. T. Gillett.

2. An Address on the Unity of Medicine.—C. O. Hawthorne, in this introductory to the post-graduate session of the Central London Hospital for Diseases of the Throat, Nose and Ear, says, with regard to "teamwork" in medicine—a phrase that he calls one of the idols of the hour—that it is true in so far as it implies that no one man can pretend to compass fullness of knowledge or of skill in all departments of medical work. Hence, for scientific investigation and research, the division of labor is advisable and even necessary. It is to be remembered, however, that the immediate business of practical medicine is neither the demonstration nor the verification of scientific truths, but the care and protection of the individual patient. For his part, he would cultivate a sense of acute sympathy for any sick man who was placed under the care of a "team" of experts. In the charge of a patient, whatever contributions may be obtained from other sources, there is required for purposes of safety one supreme command by which the final and governing word may be spoken and one individual judgment carrying full responsibility and demanding the natural corollary of full responsibility—unchallenged and unquestioned authority. In medical practice the study and treatment of local disturbances cannot, either on prudential or on scientific grounds, be justifiably divorced from the cultivation of a full diagnostic ambition. Making the application of his views on the subject to otolaryngology, Hawthorne says suppurative disease of the middle ear carries, as is admitted, the risk of intracranial complications which may in individual cases demand prompt and serious operative procedures. In some instances the evidence is plain beyond challenge; in others the evidence is so slight or doubtful that even an experienced judgment is compelled to hesitate. Suppose, in such a position, the ophthalmoscope is used for the first time and double optic neuritis is discovered. The fact surely has an alarming quality in reference to the issues which are at stake. But it is not conclusive if double optic neuritis is found in a certain proportion of cases of middle ear disease without other evidence of intracranial development, and if the neuritis in some such cases disappears apart from intracranial operation. Considering the bearing of such a conclusion in the case of middle-ear disease with balanced evidence of some intracranial extension and with the discovery of the existence of double optic neuritis, is it not evident, he asks, that in such circumstances it is an almost vital point to be able to say whether the optic neuritis is or is not a new fact? But no one can make this statement unless he has examined the fundus oculi at a date anterior to that on which any question of intracranial complication arose. Hence, though it may seem a hard doctrine, there is no escape from the conclusion that every patient who is under treatment for disease of the middle ear ought to be made the subject of ophthalmoscopic examination, just as the same practice applies to sufferers from anemia or chlorosis. And both these lesser exhortations, it is concluded, come under the sway of the general and commanding truth that completeness of examination is to be encouraged not only for the protection of the patient, but also for the entertainment, the education, and the mental comfort of the physician.

3. A Note on Our Present Conception of Psychological Repression.—Henry Yellowlees takes a "fling" at uninformed critics of psychoanalysis, disposes of the fancied parallel between the psychoanalytical consulting room and the confessional, considers the difficulties of psychoanalysis, gives an instance of repression, discusses repression and forgetfulness, primary and secondary mental systems, and intra-psychic conflict, then concludes, in part, as follows: Repression, as here discussed, is not to be regarded as in any way a pathological or abnormal process, but as one which is natural, universal, and, indeed, essential in training and education. The limits of the normal are only passed by the natural process going to abnormal lengths, or, more frequently and importantly, by the devices adopted by

repressed material to overcome or evade the repressing force. Such events occur in neurotic persons, and are the stuff of which their symptoms are made. The writer holds no brief for psychoanalysis, but he believes the critic should at least have read up, if not practised, the subject he is criticising. He also offers the suggestion that if the authorities on psychoanalysis could see their way to expounding the essentials of their subject with a little more simplicity and patience, much good would result and much criticism would be disarmed.

British Medical Journal.

November 6, 1920, ii, 3123.

1. The Principles of Internal Secretion. W. Langdon Brown.
2. Notes on Blackwater Fever. Alexander Goodall.
3. Resuscitation in Death under Anaesthesia. Welby Earle Fisher.
4. Head of Rye Grass in the Lung Removed from Pleura. R. Eccles Smith.
5. Intranasal Dacryocystostomy. H. Lawson Whale.
6. Diagnostic Importance of Slight Transitory Manifestations of Nervous Disease. Henry Head.
7. Migrainous Ophthalmoplegia. James Collier.
8. Significance of Minor Disturbances of Function. Gordon Holmes.
9. Organic and Functional Nervous Disorders. F. M. R. Walshe.
10. Nervous Exhaustion. Theodore Thompson.
11. Subjective Sensory Symptoms. Sir Frederick Mott.
12. Signs in the Early Stages of Common Nervous Diseases. Professor E. S. Reynolds.
13. Importance of Accurate Diagnosis. Tom Williams.

2. Notes on Blackwater Fever.—Alexander Goodall tabulates fourteen cases, in twelve of which malarial parasites were found. All the cases were treated with large doses of quinine and twelve recovered. It is contended that malaria is the essential cause of blackwater fever, and that exposure to cold may be an important factor in determining its onset.

3. Resuscitation in Death Under Anesthesia.—Welby Earle Fisher advocates resuscitation by means of cardiac massage, reminding the reader that beyond the period of half an hour no measure whatsoever will avail. He describes the methods of performing cardiac massage as follows:

Subdiaphragmatic Massage.—In this method an opening is made in the epigastrium to the left of the middle line, and large enough to admit a hand, which is passed, palm upwards, between the left lobe of the liver and the diaphragm. The fingers are pushed well backwards and upwards against the left cupola of the diaphragm, and a forced jabbing movement is made behind the ventricular region of the heart, so as to squeeze it effectively against counterpressure made by the other hand on the precordial region of the chest wall. The compressions are repeated at a rate of about forty a minute (a more rapid rate is not practicable), and are carried on until the heart-beat is re-established with regular rhythm and maximal power as reflected in the pulse. The abdominal wound is then sutured.

Transdiaphragmatic Massage.—This is a technique devised by Captain T. C. Bost. The abdomen is opened as before, and the further steps are only proceeded with if subdiaphragmatic massage fails. The costal attachment of the diaphragm is divided sufficiently to force an opening into the left pleural cavity, through which the right hand is insinuated, and the heart grasped and squeezed as it lies in its pericardial sac. Artificial respiration must be carried on throughout the operation.

Transpericardial Massage.—This very difficult method has not in practice met with gratifying results. A flap of precordial thoracic wall is raised, the pericardium opened, and the heart directly squeezed.

Supradiaphragmatic Massage.—This method affords ready access. A lower intercostal space on the left side is quickly opened by a lengthy incision, well retracted, and a hand is introduced into the left pleural cavity. The heart, enclosed in its pericardial sac, is grasped and squeezed. The writer has seen no mention of such an operation being designed to meet the occasion. With failure by subdiaphragmatic massage it arises as an alternative to the method designed by Captain Bost, who claims as an advantage of his plan that occurrence of pneumothorax is practically precluded by the close fit of the diaphragmatic opening to the wrist, and that artificial respiration can be efficiently carried on. The writer records the histories of six cases.

Indianapolis Medical Journal.

November, 1920, xxv, 11.

1. The Diagnosis and Treatment of Ectopic Pregnancy. E. E. Padgett.
2. Therapy of Certain Gastric Conditions. Frank W. Foxworthy.
3. Formulae and Things Therapeutic. Leo A. Dorn.
4. Anesthetic Notes. Arthur E. Guedel.

1. The Diagnosis and Treatment of Ectopic Pregnancy.—E. E. Padgett summarizes his views on this subject as follows: 1. Ectopic gestation is more commonly present that diagnosed. 2. The condition is always caused by some pathology in the generative system, which should be made out by examination and the condition corrected before the abdominal pregnancy occurs. 3. Many cases never come to operation because they never cause severe hemorrhage, terminating as a uterine abortion, a tubal abortion without serious hemorrhage, death of the fetus before rupture, or a rupture without serious hemorrhage unto the broad ligament. 4. The diagnosis is most often confused with an early uterine pregnancy and depends upon a careful study of history and early symptoms for its differentiation. 5. A woman in the child-bearing period who has always been regular, having failed to menstruate for one or more months, is probably pregnant, and a return of the menstruation usually means that she is going to rid herself of an abdominal pregnancy, regardless of where it is located. 6. These cases are all surgical. 7. The time to operate is before rupture has taken place. 8. Rupture into the free peritoneal cavity is the condition to be most feared, as it is always sooner or later followed by extreme bleeding and calls for early and rapid operation. 9. After such a rupture cases which show improvement in the pulse need not be termed emergency operations, but should be operated upon as soon as the general condition improves. 10. Intravenous salt solution or blood transfusion is good practice after the bleeding has stopped, and there is no objection to the use of medication which will help control the bleeding. 11. Very few women actually die from this condition.

Wiener klinische Wochenschrift.

October 7, 1920, xxxiii, 41.

Histology of the Gonads in Homosexual Men.—Steinach's article appeared originally in the *Archiv fuer Entwickelungsmechanik der Organismen.* Bd. 46, Heft 1, and is reviewed in the above journal by Kyrie. Steinach's name is much before the public in these days in connection with youthful regeneration by implantation of the gonads and commercial companies are said to have been organized to exploit this idea. This scientist, however, is primarily an embryologist who has produced hermaphrodites experimentally and who was the first to inspire the idea of testicular grafting as a cure for homosexuality. The original idea of the latter was that of a purely psychic alteration but Steinach has shown that the gonads of these men, although in most cases apparently fully developed, are histologically abnormal: certainly in all congenital cases, or in other words in true inversion. The field opened up is considerable, for homosexuality masked during life may be revealed at autopsy and after castration. It has always seemed singular that inverts even when they copulate with women are almost always sterile. A few supposed homosexuals like Wilde have begotten children and from this viewpoint Wilde was not a true invert but a pervert. The histological alterations found by Steinach are naturally those of degenerative or atrophic character as far as the seminiferous structures are concerned, while in the interstitial portion large cells resembling the lutein cells of the ovary may be seen. The earliest experiments in grafting normal testicular tissue into homosexual men, presumably after castration, inspired by Steinach, are said to have been completely successful in transforming inverts into sexually normal men, but in the present review there is no mention of these results.

Society Reports.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Forty-Fifth Annual Meeting, Held at Chicago, Illinois, October 26, 27, and 28, 1920.

THE PRESIDENT, DR. FRANK B. WYNN OF INDIANAPOLIS, IN THE CHAIR.

President's Address; Present Trends in Medical Practice.—Dr. FRANK B. WYNN of Indianapolis stated that specialism had led the way in modern progress; no less in commerce and manufacture than in science and art. Medical specialism had grown with phenomenal rapidity and the question was where would it end? Medical schools had been a potent factor in the spread of its teachings. Unfortunately medical students had come to look upon specialists as a group of the elect in medicine, whilst general medicine was viewed as the recourse of the mediocre and unambitious. Even the general practitioner had become obsessed with the feeling that he had lost the prestige and esteem of former days. Dwelling in the slough of despondency he was prone to yield to the temptation of rebating and fee-splitting—practices repulsive to the medical conscience. Disparity in the net incomes of specialists and general practitioners was more apparent than real. Specialists had a shorter earning period, spent extravagantly in keeping up appearances and gaining a reputation, and seldom ended their careers full-handed. General practitioners had a longer earning fastigium, more stable income, learned habits of frugality and lay by a comfortable sum for declining years. More serious than the economic phases of specialism in its trend toward materialism was the tendency to forget the body as a whole. Just as the piece-worker in a factory lost interest in the machine of which his part was a unit, so the medical specialist in his hot pursuit of cold facts in a limited field, lost ardor for the sentimental, moral and spiritual elements of man as a whole. He was prone to atrophy of the moral and spiritual sense of reverence for the human body and human life. From time immemorial the idealistic conception of medicine was that human life was a sacred thing—whether *in utero*, in the matured individual of amazing complexity and power, or the aged seer rich in achievement. With such a conception one should view wanton mutilation of the body in the name of surgery, as criminal. To those of thoughtful mind, it was disheartening to observe the insidious hardening of the medical conscience; to note the haste and lightness of thought with which major surgical attack was advised and undertaken. Very often short-cut methods were pursued. "We will open the abdomen and see" expressed the unscientific procedure followed. Turning from this critique of specialism it might be asked what was to be done to rescue the general practitioner from despondency, self-depreciation and inertia? How should he adapt himself to the changing conditions of the time and keep progress with specialism? First, he must be brought to realize that his job, rightly performed, was bigger than any specialty. Let medical colleges exalt the dignity of general practice, teaching the fundamentals and methods of general diagnosis to the degree of a fine art, leaving the specialties essentially for post-graduate work. The chief business of the medical college was to produce general practitioners—not specialists. There must come a more intimate mingling of those engaged in general practice which would beget enthusiasm, clinical alertness and scientific morale. General and special practitioners should cooperate to a larger degree—in the medical society; through cooperative medical libraries and medical review clubs. Thus would the scientific leaven mingling with that of good fellowship finally leaven the whole professional lump—promoting the traditional ideals of medicine and bringing us a little nearer the brotherhood of man.

Surgical Treatment of Peptic Ulcer.—Dr. CHARLES H, MAYO of Rochester, Minn., said that ulcer in both the stomach and duodenum was an accident which occurred but rarely, but in the aggregate affected thousands of persons. Many of those affected experienced but little trouble and in some the condition was not diagnosed. As a rule, the symptoms were definite and easily recognizable. An *x*-ray diagnosis might be made in 95 per cent. of the cases. Peptic ulcer was three times as common in males as in females and duodenal ulcer four times as common as gastric ulcer. From January 1, 1906, to January 1, 1920, 1,191 patients were operated on in the Clinic for gastric ulcer and 4,532 were operated on for duodenal ulcer, and in 203 instances ulcers were found in both regions. The condition might result from bacterial embolic infarction interfering with circulation or from chemical action causing local vessel spasm. The influence of changes in crystaloids, colloids, or through cell electrons might be an important factor. The chronicity was undoubtedly maintained by the chemistry of bacterial products. The ulcers were not traumatic; they commonly occurred in the circulatory areas nourished by terminal arterioles. Gastroenterostomy gave a high percentage of cure, but it should not be made without positive evidence of ulcer. Ulcer of the stomach might become malignant; ulcer of the duodenum did not. The operation preferred in the Clinic was excision or cautery destruction of ulcer of the stomach and destruction of all duodenal ulcers that caused hemorrhage. Gastrojejunal ulcers, while rare, might be avoided largely by the use of absorbable suture material. The operative mortality in the 4,532 cases of duodenal ulcer was 1.76 per cent. Sleeve resection was recommended in hour-glass contractions of the stomach from ulcer, with excision of the lower portion in the rare cases of recurrence, and in extensive ulceration and thickening of the pyloric region resection of the involved lower one-third of the stomach with anterior gastrojejunostomy, and end-to-side attachment was recommended.

Pernicious Anemia with Especial Reference to Treatment.—Dr. WILLARD C. STONER of Cleveland, Ohio, said that it was difficult to rationally treat disease, the cause of which was unknown. In the treatment of pernicious anemia his therapy was determined by symptoms present and not etiological indications. The cause of pernicious anemia was as much a mystery as it was in the days of Biermer or Addison. It was difficult to determine the value of treatment for the reason that the disease tended to remissions without treatment. An early diagnosis was not always easy to make and a final diagnosis could only be made after a period of observation. Early gastrointestinal and neuro-involvement had suggested an infective condition and foci of infection had been emphasized. There was no specific therapy. Accepted treatment consisted of (1) a rest cure with dietetic régime of high caloric feeding; (2) The use of arsenic in some form; (3) The eradication of foci of infection; (4) Transfusion; (5) Splenectomy. Rest and forced feeding were extremely valuable. Arsenic and dilute hydrochloric acid were good adjuncts. Intravenous arsenical therapy was preferable. Blood transfusion in the way of small repeated transfusions was important, but forced feeding and rest would often do better. Splenectomy as a therapeutic measure had been disappointing. Sooner or later all methods of treatment would fail. Nature was a good doctor and we were unable to absolutely measure the value of any particular management but experience taught us that rest and forced feeding had first consideration.

Tumors of the Bladder (Pathology).—Dr. A. S. WARTHIN of Ann Arbor, Mich., presented the pathological findings in a series of cases of tumors of the bladder representing the most common types of bladder neoplasms as found in the service of the University Hospital, Ann Arbor, Mich. These cases included papillary epitheliomas, malignant transformation of the malignant papillary epithelioma, primary medullary squamous cell carcinoma, secondary scirrhous carcinoma from primary of the prostate and a series of cases of congenital myxosarcomas of the bladder and prostate. From the bladder tumors examined in the Pathological Laboratory of the University of Michigan, he concluded that his experience was different from that given in the usual textbook article on bladder tumors. As regards the occurrence of the papillary epithelioma and the primary carcinoma of the bladder with reference to sex, the majority of these tumors had been found in the female, whereas the textbook articles stated that they occurred much more frequently in the

male. This type of neoplasm was the most frequent one found in the bladder. It was of slow growth but eventually tended to become malignant and to infiltrate the bladder wall. Only extremely rarely did it set up metastases and these were found in the pelvic lymph nodes. Every stage of transition was shown between the simple papillary fibro-epithelioma and papillary medullary squamous cell carcinoma. From the pathological standpoint, the prognosis in the cases of these neoplasms was good, and if they could be removed earlier and without too much injury to the bladder or ureters, the prognosis should be considered as very good. Next to the papillary epitheliomas and carcinomas developing from them were the primary myxofibromas and myxosarcomas, which in all cases had been found in young boys. These were extremely malignant and recurred very rapidly after operation and tended to produce generalized metastases. The prognosis was extremely grave. These cases increased in malignancy on repeated operation and he had seen a tumor originally showing the histological structure of a myxofibroma take on the structure of a myxosarcoma and finally that of a spindle cell sarcoma, which grew out of a laparotomy wound and infiltrated the bladder wall. Metastases in the blood spaces of the penis were extremely common with these, and priapism had been observed in a number of cases. The origin of these neoplasms was always from the trigonum. They sometimes contained striped muscle cells and occasionally cartilage. They were undoubtedly congenital teratoid growths and their origin to be referred to remains of the Wolffian body. He was also inclined to ascribe a congenital origin to the papillary epitheliomas. After these two varieties of neoplasm which the writer found most frequent in his experience were the secondary carcinomas invading the bladder from either the prostate or uterus. In several cases of the so-called Krukenburg tumor, metastases of the stomach cancer were found also throughout the bladder wall as in the ovaries.

Birth Rates and World Wars.—Dr. C. A. L. REED of Cincinnati stated that the underlying cause of the World War was the necessity for land and food by overpopulated countries. In certain features, and contrary to its declared purpose, the treaty of Versailles was a fatuous attempt to repeal the law of nature underlying racial existence. If, instead of stimulating reproduction in violation of the fundamental laws of morality, the afflicted nations of Europe had formulated instructions to their peoples how voluntarily and safely to regulate their birth rates and thus reduce their populations to a self-supporting basis and keep them there; if the Versailles plenipotentiaries had done this they would have given the world the only possible guarantee against war and would have immortalized themselves by an act of transcendant statesmanship. The influences left uncorrected at Versailles made another world war inevitable, league or no league. It would be as much larger and more murderous than the last one, as the populations fighting for "a place in the sun" would be larger than those engaged in the last conflict. It would come with a rapidity precisely relative to the excess of birth rates over death rates. The birth rate in the United States had been practically uninfluenced by the war. It was 22.3 per thousand of population. These figures were based upon official returns, personally secured, from the registrars of vital statistics in thirty States. These States embraced all of those contained in the vital statistics registration area of the United States for 1918, and, in addition, the States of Alabama, California, Colorado, Delaware, Louisiana, Mississippi, Missouri, New Jersey, South Carolina, and Wyoming. This large area, embracing the majority of the States, and the vast majority of the population, might be taken as an average for the whole country. This decline of less than one-third of one point showed the aggregate influence of the World War on reproduction in this country. Even this small decline was largely accounted for by the returns from the State of New York, in which alone there was a sharp fall from 24.2 in 1914 to 20.8 in 1919. This decline in New York was accounted for by the suspension of immigration, war service, and influenza, all of which conditions were especially acute in that State. If one discounted the statistical aggregate for the whole country by these facts from New York, he would discover that our national birth rate was rather higher since than before the war. The following were Dr. Reed's conclusions: "1. The rapid growth of population, everywhere more rapid than is conducive to world welfare, justifies the teaching of safe contraceptive methods, and this teaching is a natural function as it is a moral obligation of the medical profession. (2) Contraceptive methods that are not hazardous to either the individual or to society are not only justifiable but are demanded as safeguards against abortion and feticide, both of which ought to be punished by extreme penalty of the law. (3) Any statute that may interfere with the medical profession in the discharge of its duty in this or any other regard ought to be observed while it is on the statute books, but every possible effort should be made, not by the medical profession alone, but by society at large, to secure either the necessary amendment or enlightened judicial interpretation, or, in the absence of these, the repeal of such statute. (4) In the instance of persons applying for relief from infertility it is our professional duty, first, to disregard any sociologic views that we may entertain as applicable to the individual case; second, carefully to examine the case with reference to the active present cause; third, explain the situation frankly to the parties concerned; and, fourth, bring all the resources of the medical and surgical art to bear upon a restoration of the function."

Cooperation Among Physicians.—Dr. HENRY A. CHRISTIAN of Boston, Mass., said that one of the very fine things of the American Medical Association had been the work of the Council on Medical Education. It had been a constructive force in the improvement of medical schools, and by continuously bringing its work before the medical profession through the *Journal*, it had aroused a widespread interest which had been extremely helpful in bringing about improved conditions. Furthermore, it had coordinated a number of agencies working in this field. The work had been fine, and if there had been any mistakes, as seen from an individual viewpoint, they had been of minor import, and only such as would have been made by any group undertaking such a large work and, after all, they had been but few. Now their work was being extended to a collective study, constructive criticism, and standardizing improvement of hospitals, a work in which the American College of Surgeons was taking an active part. This study came nearer home to a large group of the profession than their investigation of medical schools, because a large proportion of the medical profession served on hospital staffs. If these two efforts succeeded in their aim, they would need the active support of the general medical profession and the value of these moves was deserving of our every cooperative effort to make them succeed. The members of the medical profession should keep in touch with what was being done and should willingly cooperate. The only danger from these efforts to standardize medical education and hospital practice lay in stereotyping methods with a resultant feeling that only along certain lines could progress be made. It was necessary to recognize that every opportunity must be afforded for a free initiative in the trying new methods. Rural practice was in a serious condition. In much of the country rural populations had inadequate medical service. Country practice of the present type failed any longer to attract recent graduates in medicine. Statistics showed not that there were too few physicians; but that they were too unevenly distributed; too few in the country, too many in the cities. Rural practice must be made more attractive. Local cooperation and the establishment of community medical centers would seem likely to improve these conditions. The rural community high school suggested the possibility of something similar for medicine; a well equipped community hospital, visiting nurses, visiting physicians, proper transportation from home to community hospital, community health work, herein lay a possibility of medical practice that would attract and hold the well-trained physicians by affording them excellent facilities to do their work in rural communities.

The Present Status of Preclinical Branches.—Dr. LOUIS B. WILSON of Rochester, Minn., stated that the

present status of laboratory branches constituted a serious menace to medicine. Without proper training in the fundamental branches, the medical graduate was permanently handicapped. There was scarcely a medical school in the United States which had a fully manned department in any of the fundamental branches. The principal causes of depletion of personnel of preclinical branches were as follows: (1) The head of a fundamental department in a medical school nearly always was and perhaps always ought to be a medical graduate. Thus, his preliminary scholastic training had required of him at least two years more than that required of the man with the degree of doctor of philosophy who was teaching in academic departments of the university. He was usually several years senior to the head of the academic department before he obtained his full professorship. Yet in those medical schools connected with universities there was a growing tendency to hold the head of the medical department on the same pay basis as that of the head of the academic department. (2) The present movement to pay full-time clinicians larger salaries than the men in the preclinical branches was a serious source of discontent. The remuneration of men in preclinical branches must be raised to that of men doing full-time work in clinical subjects. (3) The laboratory man on a whole-time basis had rapidly become a no-time clinical man. Whether this was in the best interests of medical teaching was a debatable question. Whatever one might think of the general proposition, certain it was that the laboratory men who had been cut off entirely from the clinical side of medicine had come to be regarded as financially unproductive, and had even been referred to as "parasites" on the clinical departments. Such an attitude was keenly resented by and red-blooded laboratory man and constituted a substantial reason in some instances to deter high grade men from going into laboratory branches for a life work. (4) During the war many laboratory men were placed in work quite different from that of their classrooms, and almost to a man they made good. Thus they came to realize that they could readily change from laboratory work into some work with less drudgery and more kudos. (5) Graduate students in fundamental branches had been getting fewer and fewer. At the same time there had been a tremendous increase in the number of undergraduate medical students. Many men who formerly were willing to stay in fundamental laboratory work because of the opportunities for research and for stimulating it in others were now leaving the laboratories because no time was left for their own research and because there were few high grade graduate students for them to direct in investigative work. The combined result of all these factors was already showing in the defective preparation of many medical graduates. Chemistry, anatomy, physiology, pathology, and bacteriology were probably not so well taught in most of the medical schools of the United States to-day as they were five years ago. The effect of this on the entire field of medicine was serious and must become more so. The following suggestions were offered: (1) Perhaps, at present, budgets sufficient to pay the head of each fundamental department a salary of $10,000, the associate professor $7,500, assistant professors $5,000, enough instructors $3,000 or $4,000, and teaching fellows $1,000 to $2,000 would meet the financial necessities. In most institutions this would mean an annual salary budget of $40,000 to $50,000 for each of the five fundamental branches. The Regents of the University of Minnesota had recently increased the stipends of Fellows (medical graduate students), majoring in fundamental branches to $900, $1,200 and $1,500 for the first, second, and third years respectively, while Fellows in clinical branches received only $600, $750, and $1,000 each year respectively. This, at least, was a start in the right direction. (2) The university hospital must provide increased opportunities for the laboratory men to come in contact with patients either for investigative or consultation work. The members of the association were urged to do four things: (1) Read the full report of the Committee of the Division of Medical Sciences of the National Research Council in the *Journal of the American Medical Association* for April 17, 1920. (2) Lend their active personal influence to secure the diversion of as large a proportion as possible of the funds of medical schools with which they might be connected to the support of the preclinical departments therein. (3) Make every effort possible to secure increased appropriations and private bequests for adequately financing preclinical departments. (4) Provide means even at personal sacrifices whereby their medical associates working in preclinical fields might be given a direct interest in the fields of clinical medicine.

Diagnosis and Treatment of Iritis.—Dr. ALBERT E. BULSON, Jr., of Fort Wayne, Ind., said that errors in the diagnosis and management of cases or iritis were quite common and due in a large measure to the superficial ophthalmological training which the average doctor and even some so-called specialists received. Attention was called to such cardinal symptoms as circumcorneal injection, pain, disturbance of vision, alteration in the color and appearance of the iris, contraction of the pupil, and adhesions, and the methods of differentiating this disease from uncomplicated conjunctivitis and acute congestive glaucoma. Hyperemia of the iris was one of the mildest disturbances, and was considered merely a symptom and not a disease, but should be recognized early and given attention by local applications of atropin which acted as a sedative and had a tendency to prevent actual inflammation of the iris. The essayist stated that he did not believe there was any such a thing as primary or idiopathic iritis, but that the disease was always secondary in that it was one of the manifestations of the action of a toxemia or an infection. He, therefore, urged that more attention be given to thorough general examination to determine the cause of the disease in order to intelligently prescribe treatment. Syphilis, which caused from 40 to 60 per cent. of the cases of iritis, should be diagnosed definitely by the Wassermann reaction, and corroborated by the clinical manifestations. Emphasis was placed upon the fact that gonorrhea accompanied syphilis so frequently that sometimes the iritis was due to a combination of the two types of toxemia, and treatment must be applied accordingly. For the purely syphilitic cases neosalvarsan intravenously and mercury by inunctions to the point of tolerance was urged. Locally, atropine solutions to the point of tolerance were advocated, providing the mild solutions did not dilate the pupil. Pure powdered atropine oftentimes could be used, and was indicated in some cases after determining the susceptibility of the patient. If gonorrhea was a complication, as determined by the complement fixation test, vaccine should prove beneficial. Most of the other types of iritis were considered as a manifestation of a general toxemia due to infection by streptococci and similar organisms located in the joints, about tooth sockets, in the tonsils, in the accessory nasal sinuses, in the genitourinary tract, or even in the gastrointestinal tract. The complement fixation test was of great value in showing the presence of the *Streptococcus viridans* which so often was a causative factor, but was of questionable value in determining the nature of other microorganisms. Many of the cases of recurrent iritis were due to a toxemia arising from infected processes in other portions of the body which must be removed before the eye trouble was controlled. Emphasizing the necessity for a painstaking and thorough general examination in order to prove up the etiologic factor, meant a process of elimination through the results secured from blood examinations, urinalyses, and complement fixation tests, any or all as might seem required, coupled with the deductions drawn from the clinical findings. The physician who confined himself too closely to the local treatment and neglected to take into consideration the systemic disturbances, was bound to fail in obtaining the best results. The laboratory technician was a necessary aid in determining the etiology.

Unusual Vasomotor Disorders.—Dr. WALTER L. BIERRING of Des Moines, Iowa, said that vasomotor phenomena observed in disease conditions continued to have an obscure pathological basis and were equally difficult to explain etiologically. Physiologists distinguished two varieties of vasomotor nerves; vasoconstrictors, and vasodilators, the latter having as yet acquired very little significance in human pathology.

At present, one was disposed to refer every abnormal constriction of vessels to excitation, and dilatation of the same to paralysis of the vasoconstrictors. An intimate relation evidently existed between vasomotor phenomena and the autonomic (sympathetic) nervous system. The blood supply of all parts was controlled by the vasomotor mechanism which regulated the amount of varying the caliber of arteries. The adaptability of the vascular system was wonderfully complete, and was worked out through the reflex activity of the nervous system exerted partly on the vasomotor fibers and partly upon the regulatory nerves of the heart. The center of control was influenced by various stimuli, central (cerebral), visceral and external. In health vasomotor reactions were not subject to great variations. The existence of an unknown and ill-defined instability of the vasomotor mechanism found expression in the abnormal states referred to as vasomotor disorders or trophoneuroses. The signs of imperfect vascular coordination were frequently associated with metabolic perversions as represented by gout, diabetes, and the different forms of arthritis. They were furthermore closely related to such conditions as migraine, urticaria, asthma, and hay fever. Inasmuch as signs of vasomotor instability very often did not permit of classifying as a definite vasomotor disorder, it seemed difficult to group them under one heading that would be sufficiently expressive of this condition. The term vasomotor ataxia was proposed by Solomon Solis-Cohen in 1885, which had subsequently been amplified to autonomic ataxia. Vasomotor ataxia was to represent a condition of the sympathetic nervous system through which, as a result of hereditary or debilitating influences it failed to carry on adequately its visceral and especially its cardiovascular functions. The vasomotor circulatory aberrations could be provoked under the incidence of various exciting causes, which might be constrictive, dilative, or a mixture of the two, and produced local, diffuse or general disturbances. In a similar way various types of secretory and viscero-motor disorders could be produced. As chief exciting influences might be mentioned, heat, cold, emotional influences as worry and shocki and toxic agents of endogenous or exogenous nature. The symptoms of this unclassified group were widespread, those pertaining to the peripheral circulation being readily observed. The changes in the skin were indicated by a peculiar cutaneous marbling, angio-neurotic congestion and edema, varices, which might be equally manifested on the different mucosae as the conjunctivae, lips, nares, larynx, cardia, pylorus, gall-bladder, and appendix. The subjective phenomena were usually paroxysmal, recurrent, or painful, appearing in the upper respiratory tract as paroxysms of hay fever and asthma; on the skin as urticaria, eczema, purpura and angioneurotic swellings. Painful spasms suggesting renal colic and appendicitis were encountered. Hematemesis might be a feature. Palpitation, tachycardia, leg cramps and variations in blood pressure were definite manifestations. The finger nails presented varying changes in color—pink, red, blue and leaden or mottled. The whole gamut of Graves' disease could be represented, as well as certain phenomena of Raynaud's disease, and thus symbolized the different conditions definitely classed as vasomotor disorders. A sensitiveness to drug reactions, anaphylactic phenomena and vasomotor paresis, in the different acute infectious diseases could properly be regarded as expressions of an unstable vasomotor mechanism. To illustrate the extent to which vasomotor phenomena might predominate in the clinical picture, the author related the histories of three cases.

Surgical Aspects of Pernicious Anemia.—Dr. W. D. GATCH of Indianapolis said that attempts to cure pernicious anemia by surgical methods had been made along three different lines: (1) Since it was generally supposed that a toxin was a factor in the causation of pernicious anemia, repeated attempts to cure the condition had been made by the removal of possible foci of infection or toxemia in the teeth, tonsils, gall-bladder, appendix, etc. (2) Since the spleen played a definite part in the causation of splenic anemia, as proved by the cure of this disease by splenectomy, this operation had been tried repeatedly as a means of treating pernicious anemia. (3) Since by the transfusion of blood any anemia could be removed, this procedure had come to be the standard treatment for all grave anemias. All three of these methods had frequently been combined in the treatment. That pernicious anemia was caused wholly by foci of chronic infection seemed to the writer highly improbable. Infection, acute or chronic, could, of course, cause a grave anemia; could even produce a blood picture in some respects like that seen in the pernicious type. But the anemia promptly cleared up on the removal of the infection, and the other clinical features of pernicious anemia were not present. Again pernicious anemia was a rather rare disease, while chronic infection was very common. Furthermore, cases of pernicious anemia did not invariably, even at autopsy, show foci of sepsis. In 20 cases of this disease treated at the Robert W. Long Hospital, 8 showed no evidence of such foci. One at autopsy showed gallstones and chronic cholecystitis, 9 had oral sepsis of greater or less degree—bad in three or four cases, one had had acute rheumatic fever, and one had chronic gonorrhea, tertiary syphilis, and had been subject to sore throat. It was generally admitted that splenectomy might produce a considerable improvement in the patient's condition, but it was likewise true that the improvement was only temporary. Splenectomy in pernicious anemia did not appear to be based on sound reasoning, and there seemed to be no foundation for the belief that splenectomy would cure pernicious anemia. Considering the confusion which so often attended the early diagnosis it seemed probable that obscure cases of hemolytic icterus and splenic anemia had been accidentally included in the pernicious anemia group. Removal of the spleen in such cases had given the impression that splenectomy cured pernicious anemia. In his experience in the cases in which the results were most favorable the symptoms were less characteristic of pernicious anemia. In the transfusion of blood one undoubtedly had a means of producing a great, though temporary, improvement in the patient's condition. But we should not expect too much of transfusion. It was commonly stated that blood from a donor belonging to Group IV could be used to transfuse a member of any other blood group. This was based upon the fact, established by experience, that serious results would not occur provided the cells of the donor were not agglutinated by the serum of the recipient. But it failed to consider that the serum of the donor might have a hemolytic action on the recipients' corpuscles. In pernicious anemia he believed that this action might partly, at least, prevent the good effects of the transfusion. For this reason he had always used donors belonging to the same blood group as the recipient. There was considerable literature on the subject of chills following blood transfusions. In over a hundred transfusions in which donor and recipient were of the same group, he had observed but one chill. Perhaps the occurrence of chills was to be in part explained by the hemolysis of the recipient's blood by the donor's serum. This idea was supported by the demonstration by Brown, of the Rockefeller Institute, that the chills in malaria were due to the hematin set free by the malarial parasites. The author's experience with a modification of the Kimpton-Brown method of transfusing whole blood had been so satisfactory that he had no hesitation in recommending it. His experience at the Long Hospital had been that the best results were obtained by transfusing enough blood to raise the hemoglobin reading to 70 per cent. or 80 per cent., 600 c.c. to 800 c.c. being given each time. After transfusions of the necessary amounts several patients who entered the hospital bedridden and lethargic had gone out and for periods of several weeks attended to their ordinary business. But none of the results had been lasting. The following were the speaker's conclusions: "(1) Pernicious anemia by present methods of treatment is an incurable disease. (2) Splenectomy may produce a temporary improvement in this disease, but in view of its dangers should not be done without careful consideration of all the factors involved. (3) The transfusion of whole blood from a donor belonging to the same blood group in large quantity, will produce great, though temporary, improvement in the patient's condition, but will not relieve all his symptoms."

Recent Advances in the Treatment of Epilepsy.—Dr. WILLIAM C. VAN NUYS of New Castle, Ind., said that in spite of the many theories, speculations and carefully studied symptomatology, one must agree with Coriat that "we are dealing with a disorder of unknown nature, periodic in type, although the exact origin of periodicity is not known, and manifesting itself sometimes as a motor disturbance, sometimes as a sensory reaction and sometimes as an interruption of consciousness." There was not even unanimity of opinion as to what convulsive phenomena should be included under the general terms, epilepsy. In the examination of a large series of cases, no two persons could agree on the idiopathic and smptomatic classifications. Inevitably, the drift was toward one of two conclusions, namely, that the differences were superficial and all convulsive phenomena had a common origin, or that there were many causes of convulsions that all epilepsies were symptomatic. L. Pierce Clark, after a study of a number of hemiplegic epileptics, found that they had about the same heredity and personality makeup as idiopathic epileptics. There was a grea diversity of opinion in regard to the relationship of convulsions in infancy and childhood to epilepsy in later life, but this might be said with certainty: Many epileptics had had convulsions in early life at the onset of acute febrile diseases, or during attacks of acute indigestion. When a child had reacted to any stress by having a convulsion, one was in possession of definite information in regard to that child. One knew that it was possible for that individual to have a convulsion. One could not say that such an infant or child would develop epilepsy, but one should be on their guard against it. Was it possible that from birth certain character traits were manifested by the individual who was later to become epileptic? This was important not only from the standpoint of establishing predisposition in epilepsy, for if it be shown to be true, treatment could be instituted against a threatened epilepsy and possibly frank manifestations of the disease could be prevented. Dr. L. Pierce Clark believed that certain peculiar character traits antedated the appearance of seizures and most frequently dated from birth. The peculiar character traits were supersensitiveness, egotism, emotional poverty, lack of power of adaptation. Many such individuals were self-assertive, shallow in their affections, indifferent to the rights of others. Dr. Clark referred to such individuals as "potential epileptics." It was not contended that all individuals who possessed this combination of traits, even in marked degree, would become epileptic, but that such a makeup was good soil for the development of frank epilepsy. Treatment must be based on understanding of the psychic and somatic makeup of the epileptic and recognition of the fact that he was a misfit in the home, the community and even in special institutions for his care. There must be, also, a clear conception of the object of treatment. Was the aim a cessation of seizures only? Obviously an individual with the characteristics enumerated above would be a misfit in the home and community even without epileptic seizures. The goal must be to so benefit the individual that he might be able to earn a living and react in a reasonably proper manner to the environment of home and community. This might be possible, in some cases, without an entire cessation of seizures. The epileptic should be acquainted with his character defects and encouraged to remedy them. Of equal importance was a life without physical or mental strain. As the individual had become epileptic in his present environment, a change was usually desirable. In many instances this would mean residence in a colony or special institution for epileptics. Few physicians in private practice had the time or inclination to give to these cases the minute attention to details necessary to secure results, and few patients were able to bear the financial burden of such attention. It should be taken for granted that before treatment was instituted the patient should undergo a most searching examination in regard to his family history, mode of living, habits, and reaction to his environment, in an effort to give proper recognition to the various factors that had led to his undoing. Co-operation of the patient must be secured and his relations with the physician must be friendly and confidential. The physical examination must be no less carefully made, including the routine laboratory tests. Paresis, dementia precox, multiple sclerosis, and syringomyelia could usually be excluded, although these cases were frequently committed to institutions for epileptics with a diagnosis of epilepsy. He had never seen a cessation of seizures following relief of eye strain or removal of diseased tonsils alone, but he firmly believed that careful attention to the teeth and proper medical surgical treatment of diseased and abnormal conditions of the eye, ear, nose, and throat had exerted a good influence in the treatment of many cases of epilepsy. Such examinations should be made as a routine and in the treatment of conditions disclosed by such examinations the patient should be given the benefit of the doubt. It was doubtful whether the prohibition of certain articles of diet of two decades ago was productive of real good in the treatment of epilepsy. The epileptic should eat slowly and sparingly. Alcohol was not for him. It might be said that bromides in certain cases, in correct dosage for those individual cases, would reduce the number of seizures or even cause a cessation of seizures for long periods. In many cases they did not have this effect. There could be no doubt that the careless, indiscriminate use of bromides had done great harm in epilepsy. Of late he had used luminal and luminal sodium rather extensively at the Indiana Village for Epileptics. At the present time about 200 patients were receiving this treatment, some having taken the drug daily for eight months. The dosage used was 1½ grains of luminal or 2 grains of luminal sodium at bed time each night.

The Prognosis of Dementia Precox.—Dr. EGBERT W. FELL of Cincinnati, O., said there was no doubt that the dementia precox group would eventually be split up and possibly there would be left in it only those cases that did not recover, but at present such a separation was not practical, for the reason that it was not possible during the course of the disease. Even when considered in this way, dementia precox was not a hopeful condition, but it was the belief of the writer that an absolutely pessimistic attitude was not justified. As the matter now stood the problem was to try to decide in an individual case showing the precox reaction whether or not there was likely to be a recovery. It was usually possible, though by no means always, fairly early in the course to say whether the hebephrenic, the catatonic, or the paranoid features would predominate. This being determined, he knew that the catatonics had the best chance of clearing, the hebephrenics the next, and the paranoids the least. In a given case he was inclined to feel more hopeful if the onset had been abrupt than if it had started insidiously. Unfortunately, it was impossible to tell from the intensity of the symptoms presented which case of hebephrenia or of catatonia would recover and which would go on to dementia. Two cases might have very similar clinical features, one deteriorate and the other make a partial or complete recovery. Many of the prison psychoses showed the precox type of reaction and subsided completely with a removal of the exciting cause, to reappear, perhaps, when that cause or one equally great was again met. Without entering into a discussion of the essential nature of dementia precox it seemed apparent that this type of reaction occurred only in persons of a particular makeup or personality which rendered them incapable of making a practical adjustment of their difficulties. This "shut-in" type of personality or tendency to avoid the realities of life, seemed to condition the development of the precox reaction and to preclude a manic reaction. This trait, while differing in degree in victims of dementia precox, could be shown almost invariably to have been present. The second variable factor in the development of the psychosis was the difficulty met with, or the exciting cause. In some the taint or predisposition amove mentioned, the physical as well as the mental stigmata were so pronounced as to indicate that he was only endowed with sufficient energy to carry him a short distance; that at about the age of puberty he had reached his limit, and began to go backward. In the majority, though, an additional definite stress was necessary. This might be a purely psychic shock, a psychic shock with accompanying physical hardships, a traumatism, or an infection. Just how these agencies worked did not concern us especially at the present

time. It might be by a direct effect on the nervous tissue, by the formation of endogenous or exogenous toxins, or only secondarily affecting the brain cells through the endocrine glands; but of this much one could be reasonably sure, there must first be the necessary groundwork and then an exciting cause. A precox episode coming on without apparent adequate cause in one who had the underlying personality strongly marked, was not so likely to make an adjustment as was one in an individual who developed the same type of reaction only when subjected to some great stress such as war, childbirth, or influenza. These observations had a practical importance in the prognosis of dementia precox in calling attention to the fact that psychoses of the dementia precox type did recover more often than one would be inclined to think when the diagnosis of dementia precox was made. Patients showing the precox type of reaction did at times recover. Examples of such were seen following influenza, during the puerperium, and in the dementia precox seen in the war. Calling the case that recovered by some other name merely because they did make an adjustment was of no help in prognosis, since there was nothing in the symptoms presented to show which would and which would not recover. A consideration of the makeup of the individual and of the exciting stress, would be of help in giving a prognosis. The less he was predisposed by personality and the greater the exciting stress, the more likely was an adjustment to take place, provided the stress was removed and proper treatment instituted.

The Primary Anemias; Pathological Consideration.—Dr. VIRGIL H. MOON of Indianapolis said that the term "primary anemias" had been applied to that group of anemias for which no cause had been shown, and which had been thought by some to originate primarily in the blood as the term implied. Commonly grouped under this heading were chlorosis, hemolytic icterus, splenic anemia, or Banti's disease, pernicious anemia, and aplastic anemia. These conditions were sharply different and had but two points of similarity in common, to wit: impoverishment of blood and unknown etiology. It was evident then that the only justification for the term "primary anemia" as here applied lay in the fact that the etiology was unknown. No one held the opinion that the cause of any two of these was identical, and should the cause of any one of them be demonstrated that one would immediately be taken out of this group. The term "primary anemia" was unfortunate and its use should be discouraged. The pathological changes associated with pernicious anemia might be considered in two groups. In the first would be considered those changes due directly to the anemia. These changes were essentially due to the decreased oxygen carrying capacity of the blood. Decreased oxidation resulted in accumulation of the fats and carbohydrates brought in as food. Not only were the normal reservoirs of fat about the body not depleted, but the fat which was brought to the liver, heart, and kidney cells accumulated, producing marked fatty infiltration of the cells of those organs. It should be noted at this point that some authors ascribed these fatty changes to cellular degeneration produced by the unknown poison which was assumed to cause the anemia. The decreased oxygen-carrying capacity of the blood was made evident physiologically in the shortness of breath on exertion which was a prominent feature clinically in this condition. The digestion in most cases was not seriously impaired, and the body was surprisingly well nourished. This fact invited the explanation that the blood plasma was not greatly impoverished, and hence that the nourishing power of the blood was not greatly impaired. In this particular then there was a very definite difference from the cachectic anemias in which there was impoverishment of both plasma and corpuscles, and in which therefore both the nourishing and the oxygen-carrying function of the blood were greatly impaired. The second group of changes consisted of those not referable to the anemia itself, but which were ascribed to the action of the toxic agent which produced the anemia. The body, as a whole, was not emaciated, and at times there was an excess of adipose tissue. The skeletal muscles were bright red, but the organs of the body were much paler than normally and usually showed a yellowish or brownish pigmentation. Frequently there were hemorrhages in the serous surfaces and effusions into the serous cavities. Brownish patches resulting from hemorrhages were found often on the dorsal surface of the tongue. Frequently also there were ulcers about the base of the tongue which Hunter regarded as characteristic of pernicious anemia, and believed to be the portals of entry for the bacteria which he assumed produced the anemia. The heart was often moderately enlarged, and there was moderate widening of the mitral ring. The heart musculature was characterized by marked fatty changes which gave it a speckled or striped appearance grossly. Pigmentation was usually present, and there might be small epicardial or endocardial hemorrhages. The liver was enlarged and distinctly yellow in color. There was marked fatty infiltration in the central zone of the liver lobules. Blood destruction was evidenced by the presence of quantities of iron-containing pigment deposited here. The same occurred also in the kidney cortex, the lymph nodes and spleen. The spleen was usually small, showing a form of atrophy characterized by severe cellular poverty. This was in contrast to the hyperplasia and marked regenerative activity present in the bone marrow. The phagocytes of the spleen contained masses of brown pigment derived from the destruction of hemoglobin. They also contained numerous red cells in varying stages of disintegration. Most marked changes occurred in the cord. These consisted of focal areas of degeneration of the nerve fibers, especially in the posterior columns, but frequently scattered among the other tracts. These produced irregular ascending degeneration accompanied by sensory disturbances, sometimes ataxic phenomena resembling tabes very closely. Such changes were not explicable as due to anemia alone. The tissues suggested the action of some powerful poison evidenced in the blood by hemolysis, evidenced in the cord by systemic or by patchy degeneration, and evidenced in the cells of the parenchymatous organs by marked degeneration. That the blood was not the primary seat of the injury was shown by the fact that in some cases the spinal cord showed earlier and more marked changes than did the blood.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held Nov. 4, 1920.

THE PRESIDENT, DR. GEORGE DAVID STEWART, IN THE CHAIR.

THE program of the evening was arranged by Dr. William Hallock Park of the Bureau of Laboratories, Department of Health.

The Bacteriology of the Acute Respiratory Infections, Not Including the Pneumonias.—Dr. ANNA W. WILLIAMS made this presentation which consisted of a report of some of the results of an investigation carried out in conjunction with the Metropolitan Life Insurance Company concerning the causes of common colds and of pandemic influenza. Among the difficulties of conducting such a bacteriological investigation were: (1) the selection of suitable media; (2) the finding of an area of infection where one would be able to obtain sufficient material at the right stages of the disease. This investigation was started before the last wave of influenza with an attempt to get the pre-disease bacterial curve in a group of individuals, but the wave of influenza came and they then decided to search for a dominant strain among the groups of bacteria that others had laimed were implicated in the cause of the pandemic. In their study of this part of the work they had employed four media—vitamine, oleate, blood drop, and blood pour. Each of these was especially good for different types of microorganisms. The microorganisms found were divided into four groups: (1) Gram positive cocci; (2) Gram negative cocci; (3) influenza bacilli, and (4) other bacteria. Dr. Williams exhibited a chart which showed the incidence of the different groups of organisms taken from the nasopharynx and grown on these different media. The chart showed also the bacterial curve in normal individuals and in a number of abnormal cases; and the comparison between a normal case and a typical case of influenza. In the normal cases each presented a different picture from

the others. One kind of microorganisms predominated though it differed in kind in different individuals. On the whole different kinds of Gram-positive cocci predominated but Gram-negative cocci were also frequent and comparatively abundant. Influenza bacilli were very infrequent, and other microorganisms were in abundance irregularly. In *acute rhinitis* where most of the cultures were taken very early in the disease, the picture did not differ much as a whole from the normals, neither did the first cases of *pharyngitis* though actually in both these groups, individual cases seemed to be due, judging from the majority, to one type of organism different in different individuals, but in the cases examined nearer the time of the epidemic, the picture was more like that of the "flu" cases. In the "flu" cases which gave a common chart on the average, there was a marked jump in the influenza bacilli and in a special colony type of the Gram-positive cocci (minute green). There was a drop in the Gram-negative cocci, and there was a great increase in the number of *minute delicate* colonies, grouped mostly with "others" on vitamine media. In hunting for a dominant strain, ten or more colonies in any one cases that seemed alike were fished out and subjected to further study. During the pandemic they had concentrated on the influenza bacilli, but they found practically no strain which they considered gave strong enough evidence to warrant the conclusion that it was the cause of the pandemic, and they were forced to the conclusion that the influenza bacillus had nothing to do with the pandemic primarily. The other type of organisms predominating in influenza, those producing small colonies on blood agar with a halo of green, had been studied during last winter's wave of influenza in the same way as were the influenza bacillus fishings during the pandemic, and the evidence so far showed no predominating organism among them. Pneumococci and hemolytic streptococci while not predominating in these cases were also studied in the same way with similar results. Thus this work so far seemed to rule out as the primary cause of influenza the hemolytic streptococci, the pneumococci and other "green producing streptococci," the Gram negative cocci group and the influenza bacillus, while in common colds different members of these groups might be the primary cause. This left open the question of the etiological relationships to influenza of certain delicately growing organisms not showing a majority incidence by their methods, of anaerobic organisms, and of filtrable organisms. It also helped explain why their vaccines had not had a more specific effect.

Report of the Prophylactic Vaccination of 1536 Persons Against Acute Respiratory Diseases, 1919-1920.—Dr. ANNA I. VON SHOLLY and Dr. WILLIAM H. PARK contributed this paper which was read by Dr. Von Sholly. They stated that the reason for the investigation upon which this report was based was an attempt to clear up, if possible, the status of a vaccine made of mixed organisms which predominated in respiratory diseases, as a prophylactic agent in epidemic "grippe" and acute respiratory diseases in general. Briefly, their aim was to inoculate prophylactically a group of people well in advance of any anticipated recurrence of epidemic grippe, so that whatever immunity might be stimulated by the method would be already established before exposure to the disease. Moreover, they wished to learn what effect a vaccine made of the predominant organisms of the acute respiratory diseases would have in inhibiting or modifying these diseases. They aimed to have for comparison an uninoculated control group as similar as possible to the group inoculated. The work presented was done between September 30, 1919, and April 3, 1920, among the general employees of the Metropolitan Life Insurance Company's home Office, New York City, under the direction of the Research Laboratory of the New York City Health Department, co-operating with the officers of the Metropolitan Life Insurance Company. The groups under observation consisted of men and women, all volunteers, of varying ages. In all, there were 1,536 people who were inoculated, of whom 1,293 received three inoculations, 95 two inoculations, and 148 only one inoculation. As a control group 3,020 persons of similar ages and both sexes of the same company were under continuous observation. A comparison of 1,500 histories taken at random showed similarity between the inoculated and uninoculated groups. The very careful method of following up these groups was described. The inoculations were given at weekly intervals during the end of September, 1919, and the first three weeks of October, 1919. Two vaccines were used. The larger group of people, numbering 1,412, were given Vaccine L, which was a saline suspension sterilized by heat, containing 1,000 million per c.c. each of the *B. influenzæ, Streptococcus hemolyticus,* and *Streptococcus viridans;* 2,000 millions each of pneumococcus, type I and type II, and 1,000 million pneumococcus, type III, per c.c. The smaller group, numbering 124, were given Vaccine R, a vaccine similar in composition to that given by Rosenow of the Mayo Clinic. A careful record of reactions to the vaccines was kept, partly for general scientific knowledge and partly for the purpose of finding out the practicability of group vaccination for a commercial company from the point of view of loss of services following and due to the inoculations. The injections were given subcutaneously in the deltoid region. The first dose was ½ c.c., and the second and third were one c.c. each. Detailed figures in regard to the local and general reactions showed that the largest number of reactions, as was to be anticipated, followed the second injection and that the severe reactions were comparatively few. There were no really alarming reactions. That some persons should take advantage of the inoculations to remain at home would not be at all surprising, but giving everybody the benefit of the doubt and counting all absences immediately following vaccination as due to it, there were, in all, 87 persons who were absent from work anywhere from a half day to twenty-four days. The total days' absence of this group was 181½ days, or 2 days and 42 minutes for each one. The average absence per person for the total inoculated group, 1,536 persons, taking the working day as eight hours, was about 56 minutes. Comparing these percentages with the absences due to respiratory diseases during the six months' observation period, it was found that the uninoculated lost 8,172 days, or an average of 2.2 days per person during the same interval. If the average of the inoculated persons' absence due to respiratory disease were added to the average absence credited to the inoculations, there was still a gain of a good half working day per person in favor of the inoculated. It was fair to assume that if the custom of annual vaccinations were established absences due to inoculation would diminish. A tabulation was made to learn if there was any demonstrable relationship between past respiratory diseases, such as pneumonia, bronchitis, grippe, etc., and the character and severity of the reactions from the inoculations. No special susceptibility to vaccines could be established for these diseases. In studying the respiratory affections occurring in these groups during this six months' period, there were 1,297 completed records of inoculated persons under continuous observation during the above period, and 3,020 similar records of the uninoculated. Among the inoculated, 19.4 per cent. gave a history of no respiratory affections during this time. Among the non-inoculated, 37.7 per cent. gave a similar history. Detailed records of the incidence of upper and lower respiratory affections were analyzed from which it seemed fair to conclude that the kind of vaccine used, in the manner and dosage used by the authors, had very little specific influence either in preventing or causing respiratory disease other than pneumonia. The difference in pneumonia, however, was marked between the two groups. The inoculated showed one case against 11 cases among the non-inoculated. Although it might be an accidental situation, it would seem fair to make some claims for the efficacy of a typed pneumo-streptococcus vaccine for pneumonia. The one case of pneumonia which occurred in the inoculated group was in a girl who had had only one injection of the vaccine. She suffered from influenza and bronchopneumonia more than five months after vaccination. Lister of South Africa did not claim much immunity for his pneumococcus vaccine for more than four to six months. After the investigation was closed, two more cases of pneumonia were reported among the inoculated. Both occurred about seven months after the vaccination.

One of the most important phases of the investigation was the completion of the vaccinations about three months before the brief flare-up of grippe in January, 1920. A comparison of the inoculated and uninoculated groups showed very little difference in their respective degrees of immunity to pandemic grippe. Most of the grippe cases of 1920 were comparatively mild. The inoculated averaged 7.2 days absence per person, and the non-inoculated averaged 9.2 days per person. This difference could be only to a slight degree accounted for by the fact that the pneumonias occurred more frequently among the uninoculated. In concluding, the writers expressed the opinion that contrary opinions might be drawn depending upon what part of the report one laid the more stress. If we compared the incidence of the respiratory affections among the inoculated and the uninoculated, excluding pneumonia, and the severity of these affections, we might assert that the vaccines were of little or no appreciable value. If, on the other hand, we focused our attention on the figures that showed a somewhat higher susceptibility to respiratory diseases among the vaccinated in their past histories, a larger group absence for respiratory disease among the non-vaccinated, and a longer absence per person for attacks of grippe in the non-inoculated group, we might conclude that the vaccines had a beneficial influence. On the whole, balancing both sides, the evidence did not make a strong case in favor of the vaccines given by them as a prophylactic agent against acute respiratory diseases, pneumonia alone excepted. Their work tended to confirm the conclusions of Lister and Cecil and Austin on the typed pneumococcus vaccine for pneumonia. It pointed to the importance of further research along this line.

Influenza Meningitis.—Dr. JOSEPHINE B. NEAL read this paper in which she stated that although a fairly large number of cases of influenza meningitis had been reported, the disease was far from common, ranking fourth in their experience, in the types of purulent meningitis. Charts were exhibited showing the incidence of the different forms of purulent meningitis among the cases of meningeal involvements studied by the meningitis division during the past ten years and also showing the cases collected and reported by various workers. In their series of 32 cases the diagnosis was made by finding in the spinal fluid the Gram negative hemoglobinophilic bacillus, described by Pfeiffer. In smears from the spinal fluid these bacilli showed a high degree of plenomorphism, a fact observed by several other workers. An interesting point was brought out by Dr. Povisky of the Research Laboratory, who found that four out of seven strains from cases of influenza meningitis belonged to the same type by agglutination, whereas the strains isolated from the respiratory tract during the epidemic of influenza so-called, and studied by her and her co-workers, showed only a slight tendency to fall into groups. It was only by the bacteriological study of the spinal fluid that the diagnosis of influenzal meningitis could be made during life, and there was nothing in the history or clinical picture of the case, or in other characteristics of the spinal fluid to distinguish it from other forms of purulent meningitis. Indeed, from the clinical standpoint it was especially liable to escape diagnosis, since so large a proportion of the cases were in infants, in whom the diagnosis of meningitis was difficult to make. It was evidently a disease of young children, 30 of their 32 cases being under five years of age. They were able to locate a probable primary focus in only 8 instances, six being pneumonia, one clinical influenza, and one a cold and cough. It was certain that meningitis due to the meningococcus developed not infrequently during or immediately following pneumonia, and lumbar puncture was all too often delayed because the physician felt he was dealing with a meningism or with a meningitis secondary to pneumonia, probably due to the pneumococcus or streptococcus. There seemed to be a tendency for the cases to develop in the fall and early winter. It was of particular interest to note that in the fall of 1918 when the epidemic of influenza was raging in New York City they saw only one case of meningitis due to the Pfeiffer bacillus. This seemed good evidence against the Pfeiffer bacillus being the causative factor of this epidemic. The course of the disease varied greatly—from two or three days to a month or more. It was usually well over a week. A study of 12 cases in which recovery took place showed that in 8 instances lumbar puncture alone was used. In one instance electrargol was given intravenously for a week; in two cases anti-influenzal serum was used, and in one vaccine intraspinally. They had used the Wollstein anti-influenzal serum in five cases, in three of which only one or two injections were given, and in two the injections were repeated about ten times in one and fifteen in the other. These last two cases showed temporary improvement clinically and the organisms decreased greatly in number and became largely intracellular, but death finally resulted. This serum should certainly be used when available. Dr. Neal related the history of one case of influenzal meningitis which recovered under a combination stock and autogenous of anti-influenzal serum and vaccines. In several cases of meningitis not due to the meningococcus a vaccine was used intraspinally hoping that its gradual absorption into the blood stream would give whatever beneficial effects resulted from the vaccine given intravenously without the degree of shock usually following that method of administration. One case of staphylococcus meningitis recovered and there was temporary improvement in three others, following intraspinal treatment. The reaction from this treatment had never been very severe and there had apparently been no harmful results, though in some cases Dr. Neal said she had worked up to a dose as large as five billion diluted in about 10 c.c. of saline solution. The vaccines used were either stock vaccines of the same strain as the organism present or autogenous vaccines when such could be prepared. Vaccines had also been used intravenously to a limited extent in treating meningitis, in which they caused considerable shock. Recoveries from purulent meningitis not due to the meningococcus were few. Most of them had occurred after lumbar puncture alone. In view of this fact, Dr. Neal said she wished to make it clear that she did not claim that intraspinal vaccine treatment cured these two cases of staphylococcus and influenzal meningitis which she had described or that the intravenous administration of vaccine cured two cases of blocked meningitis to which she referred. However, recovery did follow its use. In the absence of any more encouraging form of treatment, it seemed worth while trying intraspinal or intravenous administration of vaccines as the condition indicated in addition to an homologous serum, if such were available in cases of purulent meningitis not due to the meningococcus, and in blocked forms of epidemic meningitis.

Dr. HENRY KOPLIK expressed admiration for Dr. Neal's paper on influenzal meningitis. He said he had regarded this form of meningitis as very fatal. He had tried to make an early diagnosis of this type of meningitis and to treat it with injections of Dr. Wollstein's serum, but in all cases so treated had not been successful. Whether this was due to the fact that he did not get the cases early enough he could not say. Repeated injections of the serum were of no avail. However, cases were reported, particularly from Germany, in which recovery occurred following repeated lumbar puncture before the advent of Wollstein's serum. With some strains of the influenza bacillus children recovered if repeated lumbar punctures were made. He had had one case before Dr. Wollstein's serum was brought out which recovered with repeated lumbar punctures. That case was very carefully investigated in the hospital laboratory. These forms of influenza meningitis were virulent as were those of pneumococcus meningitis. This was shown by the fact that of the 158 cases reported in the paper only 12 recovered. These statistics were exceedingly useful and very instructive.

Dr. RUSSELL L. CECIL said he was particularly interested in the paper of Dr. Von Sholly and Dr. Park in view of the work he had done in the army with pneumococcus vaccine as a prophylactic against pneumonia. As to the common colds, the conclusions of Dr. Von Sholly and Dr. Park corroborated those of other observers who had had experience with the stock vaccines. The general consensus of opinion was that shotgun vaccines offered no protection against common colds. It was possible, however, that autogenous vaccine

might be of benefit in individual cases, where the patient was sensitive to some particular organism. Dr. Cecil said he had seen several instances of this kind in children who gave pure cultures of the streptococcus or pneumococcus and in whom autogenous vaccines had prevented future attacks. It was gratifying to learn of the favorable experience of the authors with the vaccine againt pneumonia. In his work he had had encouraging results with a triple vaccine containing pneumococci of types I, II and III. He was sorry Dr. Von Sholly had not told them something about the types of pneumonia developing among the vaccinated, for possibly the types of pneumonia that developed were those not included in the vaccine. The experience with influenza described in the paper corresponded with his work at Camp Wheeler, where they found that pneumococcus vaccine had no effect on the incidence of influenza. They did think, however, that these vaccines had had some effect in decreasing the death rate from pneumonia. Though the incidence of pneumonia was just as high, they thought that the mortality rate was somewhat lowered.

Dr. WOLFF FREUDENTHAL said that Dr. Williams and Dr. Von Sholly had told them a great deal about the organisms found in common colds. If they had only told him what a common cold was he would be a great deal happier. Acute rhinitis had to be differentiated into several classes. One class was decidedly infectious, and another was due to exposure. In the first class one might find some serum or vaccine which would give favorable results, but such treatment in the other class would give 100 per cent. of disappointing results. Then there were different forms of rhinitis which were not of the acute variety; for instance, certain atrophic conditions in which crusts were formed and these might at times give the appearance of a "common cold" by causing an irritation. Here again in this class of cases one could expect no help from vaccines.

Dr. EDWARD S. MCSWEENY spoke briefly of a work similar to that described by Dr. Von Sholly which was being carried on by the New York Telephone Company working in conjunction with the Health Department. While he did not have detailed statistics with him, he stated that the number of cases treated was about 1,500, and something over 1,000 of these received the full series of inoculations. In that group, one pneumonia developed. The incidence of pneumonia in the group, therefore, was something less than one per thousand, while among the non-inoculated controls, 5.5 per thousand occurred, which was quite in keeping with the results reported this evening. These figures were not open to question, but the figures in connection with colds presented quite a different situation. He had made the attempt to get figures on colds, but had abandoned it, because of the apparent hopelessness of determining when people had colds. One had to depend to a great extent on the statements of the patients, and the patient was open to so much self-suggestion, that any figures on the result of vaccines in the prevention of colds were open to question. However, about two-thirds of those inoculated claimed an improvement as to the number and severity of their colds over their previous experience. Whether they really were improved or not he could not say, but he would say that with the use of vaccines in a large series of cases one had a chance of about two to one of having a well satisfied patient.

The Results of the Use of Toxin-Antitoxin in Immunization Against Diphtheria During a Period of Six Years.—Drs. W. H. PARK, A. ZINGHER, and M. C. SCHROEDER presented this subject.

Dr. PARK explained that the subject of immunization against diphtheria was placed on the program because the Health Department was making an active drive to popularize this method of preventing diphtheria, and also because tests had been completed at the end of five years in some of the institutions in which immunization had been consistently carried on. The work of the Health Department in this line was being carried on under the direction of a committee which was appointed by Dr. Copeland. This was composed of Doctors Harris, Baker, and Park. Drs. Zingher and Schroder acting for the laboratory were the consultants to the Division of Child Hygiene and Preventable Diseases, and had the immediate direction of the work. The necessity for using active immunization became apparent when it was discovered several years ago that the gains made through antitoxin had come to a standstill. Through the use of antitoxin in immunization and treatment, the deaths had been decreased eighty per cent., but the cases only twenty-five per cent. This was true not only in New York but throughout the United States. Immunization with antitoxin was absolutely efficient for a brief space of time but ceased to give immunity after from two to four weeks. The Schick test became a very valuable aid in the use of the diphtheria vaccine, for when carefully carried out, it showed whether children had or did not have antitoxin. The vaccine could then be given to those in whom antitoxin was absent. Their investigations had shown that active immunization was successful at the end of three months in about 70 per cent. of those individuals giving a positive Schick test. At the end of a year active immunization was successful in about 92 per cent of those giving a positive Schick. Active immunization was particularly applicable to infants above six months and to children in the public schools, orphan asylums and other institutions. They had records of the children for from four to five years in some ten institutions. In two institutions it was found that at the end of a year from 92 to 98 per cent. of the non-immune became immune through the use of the toxin antitoxin mixtures. Subsequent tests made over a period of five years showed that instead of this immunity lessening, it had continued in all and it was justifiable to hope that it would hold for an indefinite period. It was probably true that not only did the toxin-antitoxin stimulate the production of antitoxin but that the cells once stimulated went on producing antitoxin. *The reliability of a negative Schick Test:*—Of 310 children in one home who were originally negative to the Schick test 94 had remained under observation and had been tested yearly. Of these five had become positive at some time. This might be explained on the ground that the children had been confused or because of some slight error in making the outfits a weaker toxin might have been used in making these tests. Whatever the cause they had to assume that with very careful workers there would be an annual change in the Schick reaction in 2 per cent. of the cases. The question might be raised whether we could trust a negative Schick reaction as proof of natural immunity. In their combined experience they had no record of an individual giving a negative Schick reaction contracting undoubted clinical diphtheria. A few such cases had been reported, but in most of these at least he felt quite sure the children did not have diphtheria. Certainly if diphtheria did sometimes occur it was simply a local condition. An interesting fact in connection with the production of active immunity was that the younger the child the less likely was it to suffer annoyance from the vaccination because of the proteins. The reaction when it occurred was not due to the neutralized toxins but to the injections of the peptone and bacillus protoplasm. It was found that in some 2,000 babies of three days of age, there resulted no harm from the injections but unfortunately at that early age there was no immunity produced. It was found that from the age of three months on infants could be immunized with success. From the age of three to eighteen months babies lost the mother's immunity. The earlier the child was immunized after reaching the age of six months, the greater would be the protection of that child. At the present time they were aiming to immunize the children in the schools, not only for the purpose of preventing deaths and diseases among them from diphtheria, but to increase and disseminate knowledge on this subject through the schools so that it would reach the homes and younger children could be protected. Dr. Park believed that when physicians were fully accustomed to the idea of active immunity against diphtheria they would lend their hearty cooperation to plans for the immunization of all children susceptible to diphtheria. Unless private physicians would undertake to do the injections themselves there was little hope of obtaining a marked diminution in diphtheria.

Between the ages of six months and two years the toxin-antitoxin was frequently given without having made a previous Schick test. There were two reasons for this. Children frequently kept their mother's antitoxin up to the end of the second year. In these a negative Schick did not give any security that a permanent natural immunity had developed. The other reason was the very slight reaction following the injection in infants.

Dr. A. ZINGHER, in speaking of the technique and reactions of the Schick test, said that three points were absolutely essential if the test was to be reliable: (1) A standard toxin dilution of proper strength. (2) Accurate technique in the injection by means of a good syringe and a suitable fine needle. (3) An accurate interpretation of the results. Schick test outfits were now being made by a number of manufacturers, but in using these commercial preparations one had to be very careful that he was getting a toxin of proper strength. The outfits for making the Schick test furnished by the Research Laboratory had given practically uniform results clinically, and the animal tests showed full potency of the toxin, hence they felt convinced that it was possible to manufacture outfits for the Schick test on a large scale without sacrificing accuracy. The technique was easily acquired but it was important that it should be carried out in a proper way. One should use a fine platinum or iridium needle and a 1 c.c. Record syringe. The fluid should be injected intradermically, giving 0.2 c.c. of the toxin. It was also important that the test be properly interpreted. If the child had antitoxin the reaction would be negative, that was the skin at the site of the injection would remain normal. A positive reaction was indicated by redness appearing within twenty-four to forty-eight hours after the injection, and a distinct reaction in from twenty-four to forty-eight hours. The reaction reached its height on the fourth day. Children under five years of age gave a very distinct positive or negative reaction, but older children and adults might give a pseudo reaction, which represented a local anaphylactic response of the tissue cells to the protein substance of the autolyzed diphtheria bacilli which was present in the toxin used for the test. This pseudo reaction reached its height within twenty-four hours and disappeared sooner than the true reaction, usually on the third or fourth day, leaving a poorly defined area of brownish pigmentation. In order to control the pseudo reaction the toxin might he heated to 75° C. for ten minutes for the purpose of destroying the soluble protein. A combined pseudo and true reaction represented a lack of immunity to diphtheria. In adults 30 to 40 per cent. gave a pseudo reaction, while only 10 to 15 per cent. gave a true positive reaction. The observations of the Health Department had shown that the Schick test and active immunization had been of immense value in controlling epidemic of diphtheria in institutions. Most striking have been the results noted at the Willard Parker Hospital, where more than 2,200 scarlet fever patients giving a negative Schick reaction on entering the institution, and no prophylactic injection of an antitoxin was given these patients, as they were considered immune to diphtheria. They were carefully observed and not one developed undoubted clinical diphtheria, even though they were subsequently exposed to diphtheria developing among some of the Schick positive patients; indeed, many of these had become temporary carriers of virulent diphtheria bacilli during their stay in the hospital.

Dr. M. C. SCHROEDER described the methods which she was employing in introducing the Schick test and toxin antitoxin immunization into the public schools. Having first gained permission to visit the schools for this purpose she took with her what she called the prize packages. These were two envelopes containing all the forms used in doing the Schick test in the infant health stations and institutions. These were given to the principal and assistant principal. For the teachers there were several different types of circulars. One of these was a plea to physicians; a second described what the Schick test was; a third described what immunization by toxin antitoxin meant to the children. Stress was laid on the following facts: First, the need of the work, the number of cases of diphtheria occurring in New York and the number of deaths from diphtheria; next, showing how they could be decreased. Then there were some figures on the incidence of diphtheria throughout the entire country and a brief history of the discovery of the diphtheria bacillus and the methods of making antitoxin and toxin antitoxin. The facts that no harm could result from the test and how much it protected against diphtheria were emphasized. As a rule they found the principals and teachers very willing to lend their cooperation. A short talk on the subject was given by the principal to the teachers and children in Assembly, and the teachers translated this into simpler language for the children in their class rooms. The children took home information to the mothers and fathers. Lectures on the subject were arranged for before the mothers' clubs, teachers' meetings and parents' associations. Finally, when the ground was prepared they asked how many circulars would be wanted, and these were printed in English, Yiddish, and Italian in order that those children might not suffer whose parents could not read English. The children then took home cards to be signed giving permission for the Schick test, for no child was given the test without a signed permit from its parents. On the day of the test the teacher was asked to collect the consents and to send them down to the test room. They tried to have a room with two doors so that the children could enter by one and leave by the other. The cards were called for and stamped with the current day on which the test was made. A specially sterilized needle was used for each child. The cards were kept until the day of reading, when the children again came in line and the reactions were read by a technician. The children showing a negative Schick reaction were turned back, and those showing a positive reaction were sent to an assistant technician and an immunizing dose of toxin antitoxin administered. The injection was given on the outside of the arm above the elbow. Formerly the site of the injection was swabbed with alcohol when that substance was plentiful. Now they were using soap and water and applying iodine. A second application of iodine was a part of the routine. They always had at hand aromatic spirit of ammonia, because if one child felt faint immediately a half dozen followed suit. They had very few swollen arms, and none that amounted to much. As the parents were learning the value of the Schick test and immunization they were bringing younger children so that she felt that there would be very little trouble in having the active toxin-antitoxin immunity test introduced into the schools as routine procedure.

Books Received.

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THE ORGANIC EFFECTS OF REPEATED BODILY ROTATION. By COLEMAN R. GRIFFITH. 125 pages with illustrations. Reprinted from *Journal of Experimental Psychology.*

A TEXT-BOOK OF HISTOLOGY. By FREDERICK R. BAILEY, M.D. 733 pages with illustrations. Published by William Wood & Company, New York.

A PRACTICAL MEDICAL DICTIONARY. By THOMAS LATHROP STEDMAN, M.D. 1144 pages with illustrations. Published by William Wood & Company, New York.

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PHARMACOLOGY. By DOUGLAS COW, M.D. 132 pages with 15 illustrations. Published by J. & A. Churchill, London.

Miscellany.

X-ray Finger Printing.—If the sulci in the finger tips are filled with some opaque substance of high atomic weight such as bismuth subcarbonate, the radiograph of the finger will show the whole pattern as distinctly as an ordinary finger print. If the same opaque substance is used to fill the groove about the nail this outline is superadded and the phalanges are, of course, strongly shown—a fact which suggests blunting the pattern of the finger ridges to some extent, although Béclère, who devised the method, assures us that this difficulty is not present in practice. The technique of obtaining the radiograms is given in detail. The method is not intended to displace ordinary Bertillon finger printing, but supplements the latter in several respects, such, for example, as in the drowned, when the Bertillon method falls short. There are other conditions, presumably in connection with occupations which tend to wear away the digital ridges—such as incessant handling of moving picture film—in which the added information of the ungual groove might have a decisive value. The radiograms are magnified and this, too, gives some advantage, although finger prints are magnified with the lens and may be reproduced in enlarged fashion. Stereoscopic radiography is still another resource of the new method which serves to bring out details, and by using a Coolidge tube a beautiful definition of the finger grooves is obtained. The article by Béclère, in the *Journal de Radiologie et d'Electrologie,* is abstracted in *La Presse Médicale* for August 28, 1920, xxviii, 61.

The Midwives and Woman Practitioners of Medicine in Ancient and Medieval Rome.—Raulin, who recently wrote an article on the earliest known medical practitioners of ancient Italy (abstracted at the time in the MEDICAL RECORD) has published a second article with the above title in the *Gazette hebdomadaire des sciences médicales de Bordeaux* for September 5, 1920, xli, 36. Midwifery is a very ancient profession, originally monopolized by women, and midwives even abound in mythology, various deities presiding over the individual steps in delivery. The scissors for cutting the cord were attributed to divine origin. Juno, or rather Hera, Ilythia, was the Greek goddess of childbirth and numerous sanctuaries were built in Greece for the cult which was introduced into Italy even before the arrival of the Etruscans. The name of the goddess was changed to Lucina, who, under this or other names, had her sanctuaries and feasts in Italy. Many women followed the cult and from these was evolved in time the Corporation of Midwives. It was but a step further to obstetrics as a whole and gynecology, and thence to general medicine. Our women physicians of to-day were therefore anticipated by many centuries. But many of these Roman women, it is to be feared, practised abortion, sorcery, fortune telling, and other devious vocations and in general were ignorant, audacious, and unscrupulous. They persisted from early times through the Republic and into the Empire and to the original personnel many female slaves or ex-slaves seem to have been added. Some bore the title *iatromea,* equivalent to midwife; others that of *medica* or woman physician. The names of many of them have come down to us through epitaphs. At the downfall of the Empire the female physicians went out of business but the midwives continued to flourish. Trotula de Ruggiere was famous in the eleventh century as the author of a treatise on childbirth. After her there was Rebecca Guarana, whose medical writings have perished; and in 1321 Françoise de Romana was licensed to practise surgery. Others received degrees from the School of Salernum (*matronæ salernitanæ*) down to the later years of the eighteenth century.

American Settlement House in Paris Slums.—In 1917 the American Red Cross established a model settlement house, the Nineteenth Ward Social Center, in the heart of the Paris slums, where for years the average child mortality has been between 30 and 40 per cent. Of 1,127 nursing infants treated at the Red Cross foundation during a period of ten months, only 39 died, whereas, under ordinary circumstances, 394 of these children would have succumbed. The total mortality among the children cared for by the institution has been 3 per cent., as against 40 per cent. for the other children of the same district. This settlement house has been adopted by the French as a model for the future organization of all medico-social service in France. This is said to be the first time that France has seen a practical demonstration of American medico-social methods. Between the months of July, 1919, and May, 1920, the Social Center of the Nineteenth Ward provided 462 medical clinics for its charges. These clinics were attended by 9,016 mothers and children. The institution's social workers and nurses made 16,160 home visits and inspections during this period.

Monument to Lannelongue.—This well-known French surgeon died in 1911 and the movement to honor his memory was interrupted by the Great War. The sculptor, Carles, who had been intrusted with the work, died and only last July was the monument erected in Castera-Verduzan, birthplace of the subject. The memorial is in the form of a bust on a marble column, in turn placed on a broad base, upon which is a female figure which symbolizes science. The site is the public square of the little town. Lannelongue, who was a Gascon and son of a physician, gave up a career in mathematics to study medicine in Paris, where he lived in the Quartier Latin on slender means, having as chum one Georges Clemenceau, later to be celebrated as France's grand old man. He drifted from medicine into surgery and became a pioneer in the surgery of children. His other great claim on posterity is his application of the new science of bacteriology to surgery in the days when scepticism was rife. He seemed always the first to test any new advance in medicine and had Koch's serum, the *x*-ray machine, surgical laboratory service, and similar novelties at his disposal at the earliest moment. He traveled extensively, attended numerous international congresses and combated alcoholism, race suicide, tuberculosis and other social evils in whole-souled fashion while serving as Senator.—*Le Bulletin Médical.*

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Original Articles.

RUMMO-FERRANINI GENITO-DYSTROPHIC GERODERMA (SENILISM), LEAN TYPE,

DUE TO TARDY HEREDITARY SYPHILITIS.

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AND

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AMADEO L. M.—Spaniard, 37 years, single, day laborer, coming from Pihué, G. S. Railway, enters Ward 4 of Clinical Hospital, Buenos Aires, on February 18, 1919.

Hereditary Antecedents.—Mother died at 62 years; cause unknown; father living, family of two; one died of typhoid fever. Mother had no miscarriage.

Present Illness. The onset of his present illness cannot be well defined, and he says that his frequent colds as well as his loss of weight and comparative disinclination or incapacity for work began with convalescence from the pulmonary affection he had at 21. His general weakness has become more marked during the last two years.

Present Condition. Individual of medium stature, with bones and muscles well developed; normal adipose panicle; skin white with many achromic scars scattered about the limbs and trunk. Two of them are much larger than the rest: one, egg-shaped, about 6 centimeters in its greatest diameter, situated in the right trochanteric region, and the other, circular in form and of greater size, situated over the sacrum. Both are due to scars left by the typhoid which he had. On the left leg there is a pigmented cheloid cicatrix. There is a very plain and persistent Sergent's line.

The pilose system is poorly developed. With the exception of the scalp, where there is a fair growth, the pubic region, where it is but little, and the armpits, where it is barely outlined, the legs where there is a hair or two, the rest of the body and the face are completely bare.

Head—Large brachycephalic skull, with outer occipital protuberance highly developed and posterior fontanel depressed. Scalp healthy, light chestnut hair, scanty and dry, with slight alopecia on the temples. Forehead, with veins visible; eyebrows thin, especially at the outer end. A symmetrical countenance with high cheek bones and xerodermia, well preserved mobility and sensibility. Beardless. (See Fig. 1.)

Eyes—Normal outwardly. Mobility of the eye and eyelid normal. Slightly irregular pupils, eccentric, and apparently alike. React well to light and adjustment. Lack of conjunctival and corneal reflex.

Back of the Eye.—Papillæ with well-defined edges, without anything special.

Nose and External Ear.—Well proportioned.

Nose.—Fleshy.

Mouth.—Thick lips; teeth in a state of neglect; some badly set; microdontism in upper left incisor. The molars show the grinding surface quite smooth.

Tongue—Pink, moist, without tremor. In the upper part of the tonsil there is a slight papilloma of the size of a chick-pea, whitish in color.

Slightly ogival palate, with mobile soft palate.

Neck.—Cylindrical, long, without venous ingurgitation. Well-defined struma, soft on each side, micropolyadenopathy is manifest. Arterial throbbing.

Vertebral column.—Curved like a long-drawnout italic S; painless to pressure and percussion, with well-preserved movement.

Thorax—Asymmetrical; more arched in the left hemithorax, and more roomy (Fig. 4), with good expulsion of the breath; normal rhythm and frequency.

Lungs.—Measurement of the area of the apex, by Krönig's method, gives for the right vertex 7½ centimeters, and for the left, 8 centimeters. The base of each is on a line with the eleventh dorsal vertebra, mobile and free. Vocal resonance is exaggerated in the upper two-thirds. On percussion, sonority of both lungs rather excessive. On auscultation, vesicular murmur with prolonged expiration; some râles are present, and a good many sibilant râles throughout the lungs.

Heart.—The apex cannot be made out by inspection

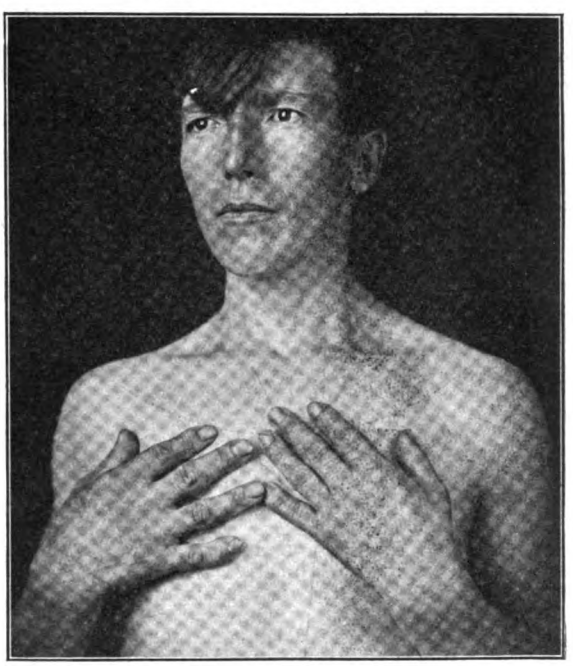

FIG. 1.—Patient Amadeo L. M.; showing the high cheek bones, thin eyebrows and large hands.

or palpation. Clear tones at tricuspid and pulmonary orifices, increased second sound at the aortic orifice. Pulse rhythmical, even, of normal tension and frequency. With Pachon: Maximum = 11; minimum = 6.

Peripheal Vessels.—Nothing in particular.

Abdomen.—Flat, with well-constituted walls; painless to palpation. The descending colon is palpable.

Liver.—The lower edge is not palpable; on percussion the upper edge is outlined in the fifth intercostal space. D. V., 14 centimeters on the mamillary line.

Spleen.—Palpable and somewhat enlarged.

Genital organs.—Penis, infantile. Testicles atrophic, painless, even to great pressure. Left testicle more atrophic than the right one. The head of the right epididymis shows slight induration. Sphincters normal.

Bony Structure.—Tibiæ, ulnæ, and claviculæ are rough.

Extremities.—Highly developed, large hands and feet. Muscular strength well preserved, tonismus, trophismus, taxis and praxis normal. Tendon reflexes well preserved, as also the cutaneous reflexes. No pathological reflexes. Standing and walking are well performed.

Blood examination (February 20, 1919).

Wassermann Test: Negative.

Red globules (per millimeter²)	4,520,000
White blood cells (per millimeter²)	10,000
Globular relativity (per millimeter²)	1 × 452
Hemoglobin	85%
Globular value	0.95%
Leucocyte Formula.	
Neutrophile polynuclear	68%
Eosinophile polynuclear	0.66%
Mononuclear	3.33%
Lymphocytes	26%
Transition forms	2%

Biopsy of one testicle. Professor Arce carried out this examination after local anesthesia with cocaine; the fragment extracted (1 cubic centimeter approximately in volume) magnified, is seen with an outer part (belonging to visceral albuminous and serous membrane) greatly enlarged, resembling lard and hard to cut; on its internal surface, it gave rise to a series of ramifications of thick connective tissue forming radiate partitions, filled with connective tissue of a later nature and small adipose balls. The wound in the testicle hardly bled.

FIG. 2.—Testicular tissue showing sclerosis, obliterated ducts and absence of interstitial cells.

Microscopical Examination.—A large amount of sclerotic tissue is observed surrounding the seminiferous ducts, grossly altered in the form of marked atrophy, intense and diffuse, and the small arteries, the walls of which appear enlarged. Interstitial cells are not to be seen. (See Fig. 2.)

Radiography of the skull (see Fig. 7).—The sella turcica is seen to be enlarged and the posterior clinoidal apophyses are turned backward.

Radiography of the Hands and Epiphysis of the Forearm (see Figs. 8 and 9). The cartilages of growth appear to be welded with slight osteoporosis in distal epiphyses of ulna and radius.

Radiography of the Pelvis.—Shows the latter to be of normal shape and size. The voice is masculine in tone.

No particulars of interest are to be deduced from the hereditary and family antecedents furnished by the patient.

In the personal record we find measles at 12 years of age, which evolved without any complications, and therefore have no importance. At 17, sickened with acute typhoid fever, keeping his bed for three months. This prolonged decubitus is of great significance in the case of *endocrinopathy*, and according to modern ideas, in accordance with endocrinological research, suprarenal insufficiency performs a very important part in the determination of the decubitus.

At the age of twenty-one the patient had an ailment characterized by temperature, cough with difficulty in expectorating which required a great effort, the sputum being blood stained. This suggests a pneumonic process to us, which, as happens in every case, takes on singular importance on account of the predisposition to tuberculosis which it fosters, and the remote action determined on the glands of internal secretion.

Some time after this he had copious epistaxes, which weakened him and has had continual colds and cough up to now, growing very thin and losing 13 kilograms in weight, with lessening of the capacity and inclination for work, all of which points to tuberculosis. Besides, he is a great smoker, which is a cause of bronchitis; this, however, may also be explained by secondary or tertiary syphilitic infection located in the bronchial tubes, so often observed, the supposition being strengthened by the coincidence of its disappearing by treatment with iodide of potassium.

Since he was thirteen he has practised masturbation, the debilitating effects of which on the psyche and nervous system in general, predisposition to diseases of the respiratory tube, heart, and digestive organs, are well known. This favors the ingrafting of tuberculosis, which, together with previous antecedents in a weak constitution and one suffering from bronchitis, lead to the idea and suspicion of a probable bacillosis, as the synthesis of the anamnesis.

To recapitulate the results of the somatic examination we find: depression of the posterior fontanel, slight alopecia on the temples, venous network on the forehead, eyebrows thinning toward the end, irregular and eccentric pupils, aniso and microdontism, ogival palate, microadenopathy, splenic tumor, cardiohypertrophy (contributing causes to which are: Hereditary syphilitic infection, smoking habit, and onanism), aortitis and rugose bones. These indicate that our patient is branded with very numerous stigmata of hereditary syphilis, some of which are original stigmata, and not of active hereditary infection, all confirming the synthesis of a dystrophic hereditary infection (syphilitic). Furthermore, we have a series of manifestations on the side of the respiratory organs: the thorax, seen on inspection to be asymmetric, with greater arching of the left hemi-thorax; chronic bronchial catarrh and emphysema, the origin of which may be attributed to the triple action at work: in this case tobacco, hereditary infection, and tuberculosis. We must not fail to remember the frequent presence of acute and chronic bronchopathies in secondary and tertiary infection, which affords an excellent soil for the bacillus of tuberculosis—the frequent existence of which is proven by the efficacy of iodide of potassium in chronic bronchitis; in the present instance, treatment by mercury and iodide sufficed to banish the bronchial phenomena.

But the most interesting group of symptoms which induces us to present the case is instanced by a condition of pluriglandular dysendocrinea.

This is how we might decompose this complex of manifestations: A slight hypothyreosis represented by soft and well-developed thyroid enlargement, thinning of the hair in the region of the temples, as well as in the tip of the eyebrows, and dental dystrophy related surely with disorders of onteo-

genesis, of hereditary syphilitic origin. A slight hypo-epinephria, marked by: pigmentary cicatrices (which can be produced by means of the caustic test), the positivity of Sergent's line, arterial hypotension, and the recorded data about easy fatigue, muscular asthenia, etc.

Another group of symptoms points to a very pronounced dyspituitarismus, namely, large face (compared with the skull), facial angle very pronounced, occipital prognathism, cervicadorsal typhosis, large hands and feet, massive, rapid, precocious growth prior to puberty, and enlargement of the sella turcica as shown by radiography. Thus grouped, these elements are typical of acromegalic hyperpituitarism. There remains still another aggregate of symptoms which we are about to analyse: Scanty growth of hair on the pubis, complete lack in the axillæ, on the trunk, face, lips, and chin, and only a few scattered hairs on the legs.

The face is singular in appearance: beardless, parchmentlike, xerodermic in a very intense degree, thick-lipped mouth, ogival palate, and teeth of the description already given.

As to the genitals, we find a small hypoplastic penis, with atrophic testicles and epididymis; the testicles painless to pressure and almost completely ederosed; to which may be added imperfect erection and problematic ejaculation.

These elements all go to show typically a state of hypogenitalism, and a clinically well-defined form of the same—Eunuchoidism.

We mention eunuchoidism for the reason that in the present case there exists a condition *sine qua non* of the same, namely, the precocious, prepuberal syndrome; were it not so, the essential condition would be lacking, *i. e.* the production thereof before the end of the crisis of puberty, characterized by the anomalous skeletal development present in the patient. Were this lacking, even with genital disturbances, there would be no question of eunuchoidism.

The cause of enunchoidism resides in hypogenesia of the sexual glands, which may be congenital, either through hypoplasia or through inflammatory fetal lesions of the same, or acquired at an early age in consequence of inflammation or traumatism. At other times, it runs in a family, or has a transitory character. In post-mortem examinations testicular lesions are revealed, extending to the seminiferous ducts, besides varied interstitial lesions.

Three principal types of eunuchoidism have been classified:

A.—Eunuchoid feminism, which is distinguished by feminism or infantilism, with a round face, feminine distribution of fat which gives to the individuals rounded outlines; hair on the pubis with feminine symmetry, lines of the skeleton of the same character; fine, delicate skin, long hands, and lower limbs very long in comparison with the body.

B.—Rummo and Ferranini's genitodystrophic xerodermia[1], a syndrome described by these authors in 1897, typified by senilism of the face and skin, with modifications of the skeleton and cutaneous disturbances which we shall proceed to detail. It has been studied and described later by Ferranini[10], Greco[11], Rummo[12], Callari[13], Bertolotti[14], Widal et Digne[15], Biedl[16], and others.

The term xeroderma was used previously by Sonques and Charat in referring to a xeromorphism presented by a girl whose skin, consequent on an eruption, took on a senile aspect; but in her case there was no genital disturbance. The denomination was altered later by Ciauri[2], a pupil of Rummo's, in favor of "senilism," which is indisputably preferable.

The appearance of the skin in these persons is characteristic; it becomes wrinkled on the face like an orange peel, to which it is aptly compared, reminding one of elderly wax or an old parchment; if we add to this the absence of a beard—facies glabra—with scarcely a downy hair, Rummo's classic expression: *sono giovani e sembrano vecchi; sono vecchi e sembrano giovani*;[3] a combination which they display from an early age, making it impossible to state their age, thus keeping "the secret of youth, the charm of which they never possessed."

The skin on the rest of the body turns rugose, loose, very elastic and of a yellowish tint; it lacks hair almost entirely in the armpits, on the chest, lower extremities, etc., and at the most a slight down covers the parts enumerated; there may be a few thin and rudimentary hairs on the pubis and where they are many, they are distributed in a feminine fashion, that is to say, demarcated above by a horizontal line.

The hair of the head is generally harsh, dry and lustreless, prematurely gray, and, more or less, thin. The eyebrows keep their vigor or thin out at the tips. The hairs in the nostrils are reduced in number. The skull, ordinarily dolichocephalous, shows a prominent occiput and the other bony protuberances are marked. The bones of the face form two exaggerated prominences: malar and mandibular.

The lower lip is thick and prominent; the teeth are poorly formed and worse set; the palate is ogival and with a projection, noted by Sterling in the center of the arch.

The sella turcica is seen radiographically to be enlarged, which indicates an alteration of the hypophysis associated with this syndrome, a point upon which not all authors are in agreement. Oscar de Souza and Aloysio de Castro[9] favor the opposite, that is to say, the sella turcica of normal size and, consequently, the physiological functioning of the hypophysis in these patients. Pende, on the other hand, maintained the increase in the sella turcica and the early hyperpituitarism, as a result of hyperplasia or adenoma of the hypophysis, a reason in accord with the achromegalism of such patients, with the rapid and precocious growth of the limbs noted in them, before puberty, and the arrested growth at the time of pubescence, contrary to what happens in the case of purely genital insufficiency. Besides, this lesion would explain the frequency of insipid diabetes, a syndrome so often associated with lesions of the region of the hypophysis.

Xerosis or xerodermia is accompanied by cervicodorsal xiphosis, the upper and lower limbs being disproportionately long in comparison with the trunk, with large and massive hands and feet (foot like a sucker and hand like a frog), the fingers being susceptible of hyperextension, and slight valgism of the ruces being coexistent.

The pelvis keeps the proportions and conformation normal in the man, or undergoes a slight widening which may give it a feminine type.

The bones become brittle, which is in contradiction with the apparent robustness of these individuals; hence the frequent occurrence of fractures in these cases.

There is a slight process of rarefaction of the epiphysis, linked possibly with an excessive loss of calcium salts, through the emunctories. The somatic development is rapid and precocious, but is arrested at the age of 17 to 20 years, the stature being medium or below normal. The subject may get stout or remain thin (lean type). The penis and testicles remain infantile; in some cases of tardiness, the testicles are of small size, or exceptionally they remain immodified; their consistency is usually modified and not infrequently a hardening is noticeable. The genesial function may be abolished absolutely—*impotencia coeundi et generandi*—with absence or erotic ideas. In other though rare cases, erections and ejaculations may occur, but insufficiently and rarely. Intelligence may continue to be normal.

Generally speaking, this is a spontaneous congenital syndrome which does not affect the health. Cases have been known of hereditary transmission.

Ciauri relates a case with severe testicular sclerotic atrophy and partial persistency of the interstitial cells. Polyuria and inspid diabetes may exist concomitantly. Falta[6] has pointed out the presence of mononucleosis in the blood formula. In a word, each and every one of the symptoms that constitute the case are to be found faithfully repeated in the present case. Hence, we diagnose xerosis, genito dystrophic xerosis, or Gerodermia Rummo and Ferranini.

Ciauri (*loc. cit.*) gives its pathogeny as follows: Three endocrine glands are out of function—the genital, causing the special morphological changes; the hypophysis, inducing gigantic scerosis through hypertrophy of the anterior lobe or hypoactivity of the posterior lobe; and the alterations attributable to the thyroid, represented by the xerodermic, cutaneous changes and those of nutrition. Therefore it is these manifestations—clinical, hypophysiary, and thyroid, which give the particular stamp which distinguishes these cases from other eunuchoid conditions.

We shall insist on this particular, recalling that there were symptoms of hyperpituitarism in our patient; but it is likewise necessary to acknowledge that the abnormal length of limb compared with the trunk, the great genital deficiency, and the lack of secondary sexual characteristics constitute the two groups of fundamental symptoms of xerosis, and are directly due to hypogenitalism, which occupies the first place in the picture of the disease. The Rummo-Ferranini syndrome is therefore a pluriglandular one, the genital gland predominating.

C. Falta's tardy eunuchoids remain to be mentioned, being those which appear after normal general and sexual development, or say the marriageable age, which show regressive symptoms. The typical want of proportion in the growth of the skeleton, found in eunuchs and eunuchoids, is not shown in these cases. They, according to Falta, would be cases of congenital meiopragia, with an added infectious or traumatic etiology (as happens with those who ride a great deal, like the tribes of "mujérados" in New Mexico, giving rise to atrophy of the testicles with retrogression of sexual characteristics—secondary ones—psychic feminism and gynecomastia. The evolution of the disease is slow, complicated and serious, so much so as to endanger the life of the sufferers, in whom supervene symptoms indicating hypothyroidism and hypoadrenia, (the latter probably a sequel to an infection such as tuberculosis, rheumatism, syphilis, mumps, etc.) which later assume the character of pluriglandular dysendoerinism.

In the present case, we think the etiopathogeny indisputable, and do not hesitate to refer the process to an infection of which the patient bears the stigma in full force—and which is hereditary syphilitic infection.

True it is that he had typhoid fever when seventeen years of age, and, therefore, we wonder if that may have been a contributing cause; but seeing the age of the patient at the time we cannot take into consideration such a possibility; besides the syndrome presented in the Rummo-Ferranini case is congenital and premature, with prepuberal, rapid development.

We wish to emphasize the fact that syphilitic and hereditary-syphilitic infections are a very frequent cause of endocrinopathy, provoked, in most cases, by an attack of any kind of infectious disease, and thereafter the mobilization of latent infectosyphilitic processes which affect the organs variously.

There is only one case in literature with hereditary syphilitic antecedents, namely, one published by Fragola[8], the child of parents who were both syphilitic, the falsetto voice, lack of spermatic secretion, child mentality, etc., being present together with genitodystrophic xerosis. The author attributes it to a pluriglandular endocrinopathy, with deficiency of testicle, hypophysis, thyroid and suprarenal glands.

The syndrome is very unusual in women. Paolo Bueri[7] reports the case of a girl who, at fourteen, had the face of an elderly person, did not menstruate; she had a large clitoris and infantile uterus, and was without any pilose growth in the pubic region. The voice was nasal, almost masculine in tone. The right lobe was not felt in the thyroid, while the left one and the isthmus were palpable.

Our prognosis of the bronchial process was optimistic, and in effect it was cured. On the other hand, in view of the mature years of the patient—37—our prognosis of the syndrome—genitodystrophic xerosis—was very pessimistic indeed.

If, in these cases, the diagnosis could be made at an early stage and a treatment prescribed equally early, the prognosis would be favorable, and we should prevent their reaching the stage of irreducible sclerosis of the testicle as in the present case.

We gave the patient 40 injections of 0.02 centigrams each, alternately, of bicyanide and biiodide of mercury; and besides, we administered through the stomach, iodide of potassium in doses of from 2 to 4 grammes daily for eight months, without any retrocession of the testicular sclerosis.

Furthermore, opotherapy was prescribed with Denys-Dessy's extractum testis. Still persists absolute impotency. It was expected that a testicular graft might be carried out, but the opportunity did not offer. Complementary pluriglandular opotherapy is now being tried.

We believe that the claims advanced by Rummo at the Congress of Rome in 1914 was justified, demanding that the paternity of the syndrome be ascribed to him, and besides, that the classification should not be withdrawn as was suggested by some. (Chauvet[9].)

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THE QUESTION OF THYMIC EPILEPSY;

WITH REPORT OF A DEMONSTRATIVE CASE.

By WILLIAM BROWNING, M.D.,

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Is there such a thing as thymic epilepsy? The suggestion of such a form has been made on theoretical grounds, somewhat analogous to the blank spaces in tables of the chemical elements. As yet, however, little appears to have been accomplished either in establishing the existence of this form or in developing a clinical picture for its recognition. The main attempt in this direction will be cited at the end of this paper. It is consequently important to make a definite start; and single cases are of signal value for this purpose. It is now possible to recognize the thymic element in these cases—by means of the *x*-ray in some, of careful percussion in most, and of a history or evidence of thymic effects in all —far better than in the past.

A word may be said as to what is meant by thymic epilepsy. Of course in practice most cases of epilepsy represent a combination of factors. But now and then at least we ought to encounter relatively pure forms, if lymphothymatism ever plays a rôle. In those of pure type there are certain demonstrative elements, such as (1) the presence of thymism; (2) the absence of other recognizable cause, as heredity, degeneracy, morbidities not of thymic origin, etc.; (3) peculiarities in the course of the epilepsy itself. For clinical purposes we can consider such a diagnostic triad as sufficient. When, in addition, cases of the kind multiply, the proof becomes positive.

It may be well to recall the fact that a number of sub-forms of epilepsy have been differentiated, as summarized by Dercum and others. These include the primary or idiopathic, Jacksonian, the secondary group (as the post-hemiplegic of Dunham)[1], nocturnal, possibly a reflex, senile, traumatic, toxic, cardiac, uncinate, luetic, larvated, endocrine, etc., these at times overlapping. It is as a member of the last, or endocrine group, that the thymic form finds its place of interest.

The patient was a man of 25 years when seen April 28, 1920, with Dr. George Manulkin of Brooklyn, who has kindly given important particulars. He was born in Russia, coming to America 8 years ago. Is unmarried, and the first of 7 living children, one older having died at two years of age. Parents alive and without blemish. He began to walk before he was a year old. Bronchopneumonia at one year of age and "very often" for some time after. Such attacks (bronchitis and bronchopneumonia in the young) are so commonly associated with endocrine abnormalities at this period, whether as cause or effect, as to indicate the early origin of his condition.

He had "spasms" when a baby of two years, and a second time two years later—quite the rule in thymic rickets. The patient says that nocturnal eneuresis persisted, "I think once a week," until 9 years old. This also has a bearing, as late continuance of this habit is specially common in subjects of thymism.[2] The patient says he had three kinds of typhus (typhoid?) at 16 years of age in Russia. And while still there a doctor gave local treatment for relief of nasal block. This last condition also fits in with the picture of lymphatism.

He attended night school after coming here, and speaks English well. Is a clothing cutter by occupation. Appetite regularly good. Maximum weight 145 lbs. Bowels regular. But little fermentation (gas). No dizziness, tinnitus, headache, nor much sweating. Sleeps soundly 9 hours. Is restless, snores, and sometimes talks in sleep, but knows of no dreams.

Sighing and deep respiration often. Has times of dyspnea. "I can't run," but "I can walk fast" and far. Sometimes for a whole week his breathing shows "six beats weak" and then one strong. Has palpitation after climbing stairs. These things also, in a young man of good physique and not a nicotinist or other habitué, are suggestive.

The first seizure of his present trouble was at a theater in the fall of 1916. On coming to, he found himself on a fire-exit balcony, and thought it had been only a faint. He was then free until October, 1919, when sitting and talking in the early evening he "fainted" and fell from the chair. A recurrence took place on April 14, 1920, about 6 P. M., when he fell while standing and talking on the street. Of minor seizures nothing is known. He is convulsed and unconscious in all attacks, each in the early evening. The convulsions, as described by others, are general and severe. The doctor states that there are punctate subcutaneous hemorrhages in the face after a seizure. There was also some nasal hemorrhage in the last two attacks, and even a little bleeding from the mouth once or twice. He does "not feel good in the stomach" when he gets the seizures. Has trouble in getting his breath, and "heart beats fast" after one.

The patient is a vigorous healthy-looking man with no suggestion of mental impairment. Weight 142 lbs. Height 65 inches. Pulse 72. Systolic pressure 127 mm. Cardiac sounds all clear. Pupils equal, normal, react well to light and accommodation. Cephalic index 84.

FIG. 1

Percussion shows high dense dullness in the thymic area (Fig. 1); this extends a little farher up on the left than on the right, as is the rule in thymomegaly. Somewhat depressed lower sternum, but prominent manubrium. The skin capillaries, in this region at least and on the hands, show great reaction to pressure, practically tache cérébrale. This reaction can still be evoked (September 9); and as it occurs in similar cases it may be due to the general condition of status lymphaticus.

No marked tremor of hands. Nails short and flat. Teeth short, well kept. Tonsils small. Tongue slightly coated. Many large cervical glands. Nostrils not blocked. Mouth not gaping.

Various slight marks of early rachitis—clubbing at wrists, knees 3.5 cm. apart, sternum, faint cross-marking of lower incisors, etc.

For the *x*-ray picture of the thymus, Fig. 2, taken at this time, the writer is specially indebted to Dr. John G. Williams. The patient then had a series of five *x*-ray treatments, first a set of three and a month later two more.

Seen again August 7. No seizure of any kind since. The thymic dullness on percussion has entirely subsided. Pulse 70, varying oft a trifle in rhythm. Looks plump, ruddy, and bright. Cervical glands are all notably smaller, but still palpable (shrunk to normal a month later).

That this was a case of thymism is proven by the history, the presence of a persistent thymus, and by other clinical findings. That it was also a case of epilepsy is sufficiently clear. There might still be a question whether it was thymic epilepsy, or only epilepsy in a thymic subject.

The effect of treatment is not always decisive here. It takes too long to be sure of the outcome; we cannot control all thymic sequels with certainty; the habit element in convulsions cannot be discounted, and mere novelty of treatment may act for a time. So far, however, the result in the above case is satisfactory (no recurrence now in nearly seven months).

The type of epilepsy in this case is somewhat distinctive. The character of each seizure right from its onset rules out Jacksonian and most secondary forms. The age, appearance, and history of the patient exclude various other forms. No trace of mental defect or loss, ruling out primary degenerative types. The onset at 21 was later than is general in the idiopathic, though this form is only recognizable by the absence of other assignable cause. Venereal denied; and no evidence of lues.

The fact that the seizures were only at long intervals distinguishes this widely from thyroid, or better hypothyroid epilepsy. The latter occurs in the earlier years of childhood, shows frequent seizures, lasts for considerable but yet limited periods, and then is usually cured or may subside.[3] Though the clinical type therefore may not be absolutely exclusive in this case it is sufficiently so to be available in differentiation.

And in this case no other cause was found. Hence the triad of reasons, above formulated as warranting the diagnosis, can be fairly considered as met, so far as one case goes. The writer has occasionally seen cases of like character, and therefore with the greater confidence puts forth the above case as representative of a type that deserves general recognition. The ear-marks of thymism (thymolymphatism) are often sufficient to warrant a presumptive diagnosis, even without the confirmatory *x-ray*.

Whether the epilepsy in such a case is a direct result of the thymolymphatism, or is due to secondary conditions, is not material to the general question of its thymic origin. The epilepsy can be conveniently figured as a net result of direct and correlated thymic influences.

There are three lines, it has been thought, along which such influences may act. One of these can be termed the biochemic (short for biological-chemical). The "lymphotoxemia" of Warthin, "thymotoxic serum" (Ogata), and "sensitization of the tissues" with resulting convulsions as "anaphylactic phenomena" (Symmers 1917) can be regarded

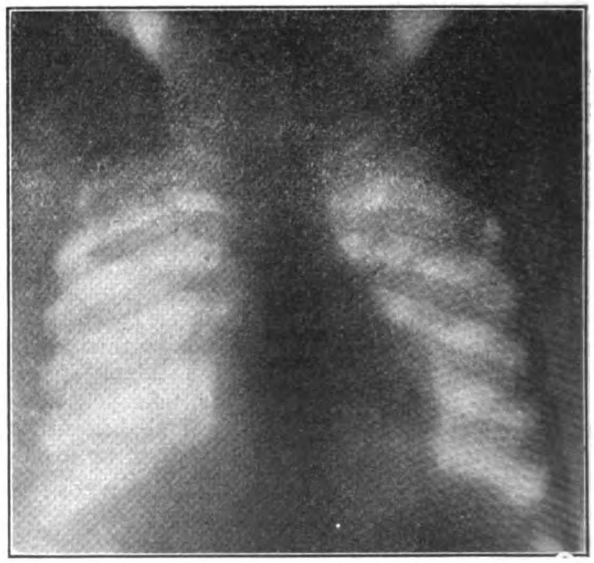

FIG. 2

as suggestions of this order. The second is the mechanistic view. In this sense the circulatory and especially respiratory peculiarities of this case, in harmony with known effects of thymism, indicate one way in which the morbific influence is exerted.

A third way is by reflex action. That various neuroses and other pathological conditions are at times a result of thymism is not strange, as the same holds true for such causes as syphilis, tuberculosis, and alcoholism.

The management of this type of epilepsy offers problems of special interest and promise. Reduction or removal of the persistent gland (*x*-ray, radium, thymectomy), though of primary importance, is not all. Activities that tend to expand the upper chest are advisable. The circulation may need some care. A slight stimulus to the thyroid function is required in some. These sufferers ought not to follow an office, subway, or factory life or other occupation where bad air is unavoidable. Other special indications are to be noted in individual cases.

Where all these indications can be met and early treatment instituted, there is prospect of better results that in most forms of epilepsy with which we are familiar. While the proportion of epileptics in whom the thymic element is the chief cause may not be large, the total number of such cases must be considerable. Both theoretical and practical interests call for a better understanding of this type.

Little help, however, is to be gained by attempting to collate the literature of the subject, for the most part mere opinions. But this report cannot be closed without mention of the well-known work of Dr. J. P. Ohlmacher. This was published in several papers.[4] He described four or possibly five cases, including the autopsy findings, all of long standing. His sweeping views have not been everywhere corroborated. He has a basis of fact, though not of a kind to be accepted fully as proof. Palmer of Australia (1914), the late Dr. Karpas of New York, and others have made confirmatory observations.

Before Ohlmacher's material can be advisedly discussed now, we need a standard type or types as criterion. Clinically his cases differed from the one detailed in this paper. The nucleus of fact can best be established by the accumulation of selected cases that have not reached the degenerative state frequent in the institutional class.

As there may be other types of epilepsy in which lymphatism is a factor, it may be well to preempt for this form the designation "Thymic Epilepsy, Type A."

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54 LEFFERTS PLACE.

Chorea of Syphilitic Origin.—Cassoute and Giraud report three cases of chorea in children in which there was a lymphocytosis of the spinal fluid and positive Wassermann. The patients were rapidly cured by neosalvarsan, although in two of the cases the chorea appeared to be chronic. In one case the Wassermann became negative with surprising quickness.—*La Presse Médicale.*

DIATHERMY AN AID IN EMPYEMA.*

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PROBABLY never before had practitioners met so many cases of hemolytic streptococcus empyema as occurred in certain army camps in the winter of 1917-1918, of empyema that followed the various chest wounds of the World War and, more especially, its accompanying pandemic of influenza.

Many of these cases began as a *Streptococcus hæmolyticus* pleuritis, a very different condition from the pleural sac inflammation usually seen in practice.

The former, as a rule, never had any previous infection, either of pneumonia or influenza or trauma; it *began* as an empyema. The empyema that was a *Streptococcus hæmolyticus* infection of the pleural cavity presented all the difficulties of treatment that this organism usually shows, plus the problem of combating any intrathoracic disease. Its mortality equalled or even surpassed that seen in influenza, but the cases were limited to army camps and were not noted generally in the civilian population.

It naturally follows that such an exceptional clinical opportunity should have led to research work the results of which give promise of much better technic in treatment of this previously intractable disease or sequel. One need but briefly refer to betterment of the Estlander rib resection, to the use of Dakin-Carrel irrigation, to Carl Eggers' routine decortication for restored lung expansion, to cite the main stages of the modernized operative procedure.

Cases of empyema uncomplicated by osteomyelitis are as a rule successfully treated by complete decortication. Unfortunately this complication is rather common, due not alone to the fact that a rib resection has been performed, but, in particular, because the rib was infected along with the primary process. Captain William S. Long† has records of a number of such patients, one being the case about to be described. There occur, however, certain instances of empyema where even most persevering, faithful attention to approved surgical technic fails to induce closure of the diseased chest cavity, where the infective process refuses to yield although repeated change is made in chemical agents intended to check the purulent secretion. Such disappointing results are not infrequent experiences with surgeons having large clinical facilities everywhere. It was under such circumstances, beginning in December last, that a number of cases at Hoff General Hospital were referred by the Surgical Section to the Section on Physiotherapy for possible betterment through application of one or more of its physical treatment measures.

The conditions faced in such a case were those dependent on an active infective process with abundant purulent output. These occurred within what was practically a closed cavity, the walls of which, through respiration, were in continual action. Two therapeutic indications were therefore presented, the first being to induce intense phagocytosis for removal

*Read at Atlantic City, Sept. 16, 1920, at the thirtieth Annual Meeting of the American Electrotherapeutic Association.

†Personal communication.

of infective material, and the other markedly to increase the arterial blood supply locally for improved nutrition of involved structures, having in mind early closure of the pleural space by enforced growth of granulation tissue.

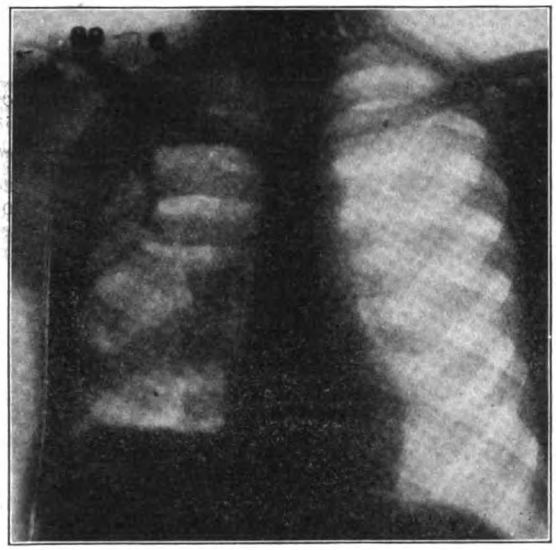

FIG. 1.—C. C. M., Nov. 2, 1919—Just before diathermy treatment began.

Until December, 1919, none of the physical measures proposed had proved successful to bring about such necessary changes—radiant light and heat, the most promising agent, being apparently too slow in action or else penetrating the chest walls insufficiently. Some more exact modality, influencing circulation directly through the chest organs, was especially demanded; so, based on its recognized mechanical action, attention was directed to diathermy, the peculiar current derived from a high frequency apparatus constructed just for this purpose.

It would be timely, in this connection, to recall the convincing experiments on egg albumen and raw beef first performed by Nagelschmidt[1] to show that diathermy acts from within and not otherwise. When fresh egg albumen is dropped on a transparent glass dish and this current passed through, a metal electrode being placed at either end, coagulation is seen to start outward from where the lines of current meet and cross; these lines are direct and not curved or irregular. The broad surfaces of the electrodes must be facing and opposite each other as, otherwise, the diathermic action is more superficial, moving mostly between the nearest edges of the metal plates instead of their largest areas. Another pertinent fact shown was that the site of most intense action could be directly controlled by the *sizes* of the electrodes, the lines of greatest heat crossing nearer the smaller electrode. The latter result could be all the better demonstrated on raw beef, whether the current is sent with or against the grain of meat. The important clinical bearing of this exact localization is readily apparent.

It was based on these facts that the use of diathermy for empyema was originated at Hoff General Hospital by Captain C. M. Sampson, chief of the Physiotherapy Service, the writer being associated with him at this time. It was the original intention to describe with some detail a series of the cases treated in this way, so as to show results on the different complications delaying a cure. The first patient so treated, however, presented such a variety of these difficulties obstructing repair that it was decided that a full account of how each of these was overcome in this case would practically cover all phases of the subject and so fully answer the object of this study.

Corporal C. C. M., white, 27 years old when enlisting, an automobile mechanic, parents living and well, no other children, had scarlatina when a child; no history of chronic disease. When taken with acute pleurisy in France, March 15, 1918, he was at once brought to a French hospital. On April 1 an operation was done on the upper posterior right chest, a tube being inserted for drainage after closure of the wound; the latter had firmly united by April 30. The wound having reopened August 18 and there being free purulent discharge, an eight-inch rib resection with decapsulation was done the following day; beside the usual incision a low-down counter-incision became necessary; the tubes were removed August 30, drainage continuing. By December 6, because of osteomyelitis of the eighth rib, a radical resection and decortification was done. This was repeated in January, 1919, but a thick purulent flow continued.

Physical examination on September 3 showed his normal weight of 130 pounds to be down to 123 pounds, although the general condition remained good; extensive scarring on the back was noted along with slightly enlarged glands in both axillæ; pulse, 140 and regular; heart slightly enlarged downward, quite rapid but with no adventitious sounds. Uranalysis at this and all other times, always negative. Blood test showed erythrocytes, 4,300,000; leucocytes, 28,000; hemoglobin, 80 per cent.; differential count, small mononuclears, 16 per cent.; large mononuclears, 15 per cent.; transitionals, 1 per cent.; polymorphonuclears, 68 per cent., of which eosinophiles were 2 per cent., neutrophiles, 65 per cent., and basophiles, 1 per cent. On September 6 roentgenograms showed section (osteoplastic flap attempted) of the 4th, 5th, 6th, 7th, 8th, and 9th ribs at the right costodiaphragmatic angle. The mid-half of the right chest is a large area of increased density probably due to thickened pleura. Again, on November 2, as seen in the illustration, the *x*-ray findings in addition showed evidence of infection of the sectioned

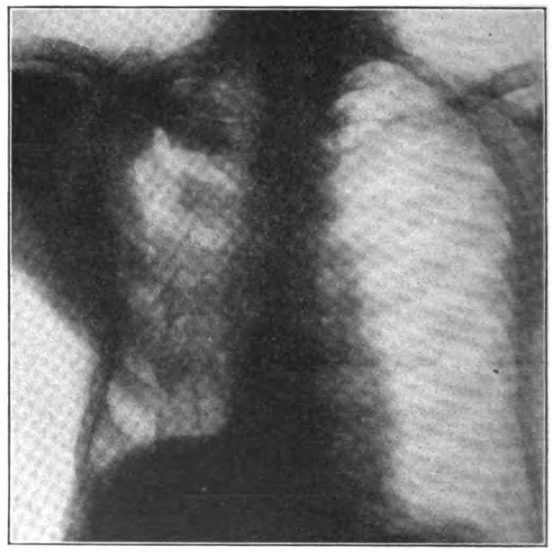

FIG. 2.—C. C. M., June, 1920. Note favorable change in symptoms.

ribs close to the angles. The right chest was flattened in the anteroposterior diameter. Three days later the 3d, 4th, 5th, 6th, and 7th ribs were resected. The pathology report mentioned a long scar extending from the 3d to the 9th rib posteriorly on the right side, the course of which was marked by five sinuses in which

necrotic bone could be probed. The incision included the scar and the sinuses. The ribs were sectioned about two inches from the angle made at a previous operation, and a portion of the fifth rib resected. Lung expanded freely, but ribs were necrotic and the anterior portions overlapped the posterior fragments; there were also bridges between the anterior portions. Rib ends were necrotic. All scar and necrotic material was removed and the entire wound closed. It became possible by December 28 for the first time to apply diathermy. It was given daily to the involved region. The one electrode, of Crookes' metal, 22 gauge, shaped like an elongated "O," was placed directly over the inflamed region, including the incision scars and the discharging aperture. The other, much larger, electrode was held over the anterolateral surface of the left chest. The electrodes were to be shifted downward in the course of treatment so as to take in areas treated by the Dakin tubes. Starting at 300 m. a. for 40 minutes, the current was in a few days increased to 650 m. a. for 60 minutes. It became possible finally to use 2,000 m. a. in such cases. When using small electrodes, it might be stated here, it is a safe rule never to pass above 700 m. a. unless actual tissue destruction is intended, an end never desired in medical cases.

By January 30, 1920, the course of the case had progressed so favorably as to encourage the addition of the ultraviolet ray treatment for systemic effect. This had in view the excellent results obtained in treating chest cases, especially tuberculosis, with outdoor sun therapy. Captain Long, in referring the cases of empyema, believed it should be equally beneficial in them, also. Each day the quartz lamp was applied, at a distance of 24 inches for three minutes, to each body region, the chest, arms and legs, front and back, being rayed in succession. Areas where diathermy was applied were avoided so as not to interfere with its continuing action. By acting on surface capillaries the blood stream would be directly influenced and an undoubted "tonic" effect obtained. Patients who had this general ultraviolet treatment showed subjectively and objectively a better morale. The appetite increased and a casual observer would never imagine that they were suffering from a serious infection limiting, sometimes by one-half, their lung capacity. The use of Dakin's solution showed this benefit, also, but patients remarked voluntarily that they "felt better" following ultraviolet therapy.

By March 29 the three upper of the five original discharging apertures, on each side of the main vertical line of incision, had closed; the main opening also became much smaller. The discharge had changed from a thick purulent to a thin serous consistence. Increased development of the soft structures of the chest, shoulder, and arm on the affected side was noted so that motion and strength in general showed a distinct gain. Reference to the second illustration, a roentgenogram taken in June, 1920, shows disappearance of osteomyelitis, and of the shadow from lymph deposit on either the pulmonary or costal pleura, while the entire post-operative cavity has finally been obliterated. Almost complete correction of the chest deformity is also apparent. Further progress was uneventful, so that by July the entire wound had closed, only slight moisture on the dressing at the former site of the lower aperture being occasionally found; all evidence of rib involvement was gone; chest expansion was free so that the right-sided concavity had disappeared; respiration, so far as physical exploration proved, was normal in both lungs. The patient's general condition correspondingly improved so that he could ultimately be discharged from the hospital and army service.

Here had indeed been a most unpromising condition: the patient debilitated from repeated major operations, long continued suppuration, and a lowered morale from prolonged hospitalization. Osteomyelitis existed in both fragments of each of the sectioned ribs, in the posterior ends almost to the vertebral articulations; until this complication ceased, the reinfection of the pleural space must be continuous. Every other surgical and non-surgical procedure had been exhausted when, finally, diathermy was employed. Such, however, was the encouragement given the surgeons that a series of chronic cases of empyema, with various complications, was sent to the Physiotherapy Section for application of the new method, and with uniformly satisfactory results. Diathermy is, therefore, now a recognized addition to the treatment of empyema at this institution.

In a study of the literature there is found a growing tendency to use diathermy, among other electrical modalities, in affections of the chest. Nagelschmidt[2] states that "in a case of acute pleurisy under my care an application of diathermy was followed by immediate relief of the acute pain due to breathing and coughing, and the pleurisy disappeared in a few days. Chronic dry pleurisy also improves rapidly under influence of diathermy and is finally absorbed." Kowarschick[3] claims that "Diathermy is generally indicated in the treatment of pleurisy, both of the serous and fibrinous varieties. Guided by the subjective symptoms, its thermo-penetration appears to cause a more rapid absorption of the exudate; the localized pains as well as the tendency to cough are much improved." Saberton[4] says: "I have had experience in one or two cases of tuberculosis of the lungs in which diathermic applications have appeared to hasten absorption of the fluid. This is a result that our knowledge of the action of diathermy would lead us to expect."

None of these leaders in physiotherapy, however, suggest the use of diathermy in the serious class of cases above referred to. The extent to which this method has been employed is as yet too limited to formulate definite conclusions; the success unmistakably achieved, however, warrants a further study of the use, on a wide scale, of diathermy in empyema, especially if of hæmolytic streptococcus origin, with or without osteomyelitis.

The writer wishes here to acknowledge the co-operation and suggestions given in the preparation of this paper by Captain William S. Long, Chief of the Operation Room, Hoff General Hospital, and to express his deep appreciation of this assistance.

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71 WEST NINETY-FOURTH STREET.

A CASE OF LEONTIASIS OSSEA.

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I REPORT this case because it is one of an uncommon disease. Virchow has termed the condition "Leontiasis Ossea" (Lion's face); Ziegler prefers to call it "Partial Gigantism"; Starr calls it "Megalocephaly." It is a disease which affects the bones of the skull as well as the face. Its etiology

is quite obscure. Williams autopsied one case of "Leontiasis Ossea" and found the intracranial cavity almost normal and the brain and pituitary body were normal; parts of the skull were nearly 3 in. thick. Schwartz considered its cause possibly due

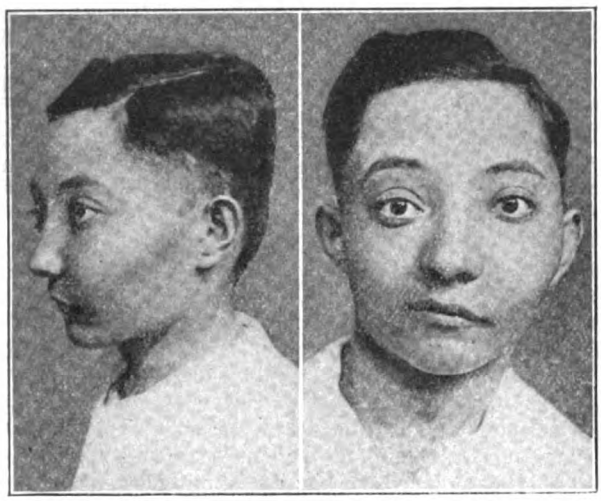


FIG. 1.—Leontiasis ossea.

to nerve lesions near the base of the brain and that syphilis might be a factor in its causation. The disease begins in youth in otherwise apparently healthy persons and lasts many years.

The enlargement of the bones must be either (*a*) simple hypertrophy, (*b*) new growth, or (*c*) chronic osteitis. The appearance negatives the first two and accepting the last view, there is some difference in opinion as to the cause.

The majority of cases recorded had a history of an injury, and in my case, the malady seems to be quite clearly connected with an injury. Bland Sutton thinks that rickets is the fundamental cause; the scoliosis and pelvis might be regarded as static

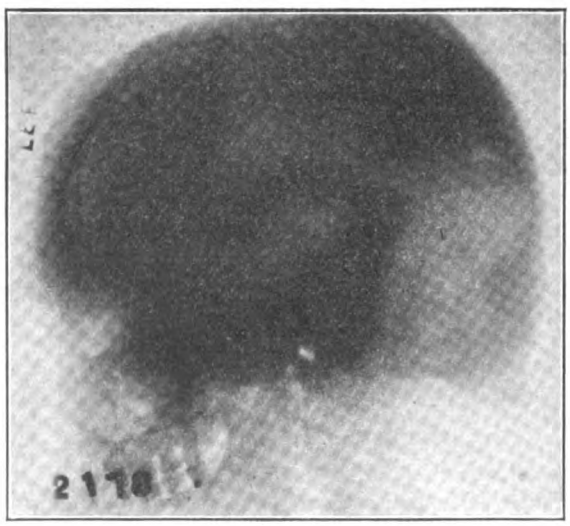


FIG. 2.—Lateral view of the skull and face. Note the obliteration of the ethmoidal labyrinth.

in origin and due to the weight of the head. Against the theory of rickets there is no tendency in the pelvis or in any of the long bones of the lower limbs towards buttress formation, which is so common in rickets (Stark).

The possibility of the osteitis being syphilitic must be considered and is impossible to negative. Paget's disease, which the thickening of the skull at first suggested, does not occur in children, does not affect the bones of the face, and generally is well marked in some of the long bones. It chiefly belongs to the senile periods of life; it may occur in either sex, but is more frequent in men; it often happens to those of a gouty family history.

Acromegaly affects the bones of the feet as well as the face bones and not so much the cranium. In acromegaly the lips and tongue and other soft parts are thickened. There is nothing suggestive of cretinism or achondroplasia.

The records of the cases autopsied showed a uniform thickening of the skull and all the bones of the face. On section, bones of the skull were much softer than normal. There were areas of much compact tissue and in other parts great areas of rarefaction. The skiagraphs in my case also show areas of condensation throughout the entire vault with areas of rarefaction, and areas of osteoporosity as noted throughout the skull. The pituitary is normal. The least affected portion of the skull is the occipital bone. The thyroid in some cases showed organic changes. The pituitary in all cases was normal.

History.—Herman W., aged 24, born in 1896, admitted to the Post-Graduate Hospital for nasal hemorrhage and difficulty with nasal breathing. Father and mother are dead. Father died from malarial fever at 40; mother died of rheumatism of the heart at 32; one sister died in infancy. Father and mother were not blood relations. Mother has had two children, this being the eldest. She has had no miscarriages; labor tedious in both, otherwise normal. No evidence of syphillis in parents or other children. No other member of the family of either side similarly affected. No tuberculosis or insanity.

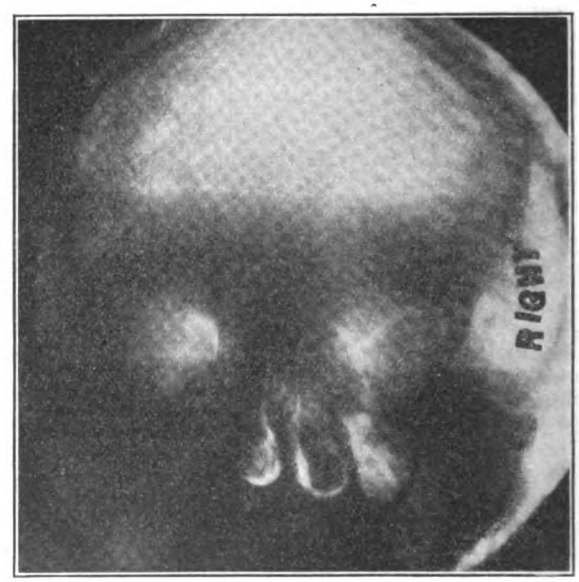


FIG. 3.—Skiagraph showing anteroposterior view. Note the clear airway on the left side of the nose after radical septum operation and chiselling away part of the floor of the nose.

As a baby there was nothing abnormal noticed; when at the age of five years, as a result of his father having died and his mother being in poor health, he was placed in an orphan asylum. During a stay of six months at the institution he was on several occasions beaten over the head with a club, the last time severely,

which caused considerable swelling on the left forehead and face. About the seventh year, hats worn by children of 10 or 12 years of age were the only ones which fitted him. As a child he was mentally as other children, and has never been in this respect deficient. At the ages of 6, 9, and 13 years he had diphtheria, and only in the last attack was he treated with antitoxin.

At the age of eight years the swelling of the left side of the head and face become so noticeable, he was examined by several physicians.

In 1912 he was again examined, as the swelling of the head and face was progressing with great strides. A diagnosis was now made of multiple osteoma. At this time a swelling of the right upper lateral spine was noticed (lateral curvature), with a prominence of the left ilium. He has never suffered from pain or headache, and has been dizzy only on one occasion, some seven years ago. Hearing in the left ear is somewhat impaired. Wassermann negative.

In 1919 a fracture of the right femur caused him to be confined for three months. The right leg is shorter than the left. The recorded measurements of the head and jaw are: (1) Bitemporal, 36.5 cm. (2) From most prominent part of occipital bone to the glabella, 41.2 cm. (3) Circumference, 66.5 cm. (4) Right angle of jaw to chin symphysis, 11.8 cm. (5) Left angle of jaw to chin symphysis, 13.5 cm. The left side of the face shows a huge osseous hypertrophy involving the frontal bone and the upper and lower jaws. There is an enormous enlargement of the left upper alveolar process. This gives the patient an asymmetrical, distorted appearance. (See Fig. 1.)

The measurements of the thickness of the skull as taken from the skiagraphs are: (*a*) Frontal bone at the site of the frontal eminence, 4 cm. (*b*) Through the roof of the orbit, 2.5 cm. (*c*) Vault varies in thickness from 2 to 2¼ cm. (*d*) Occipital protuberance, 4.5 cm. (*e*) Occipital bone at the junction of the parietal bone, 8 mm. (*f*) The pituitary measures 8 mm. by 8 mm.

The anteroposterior view of the skiagraph (Fig. 2) shows a complete obliteration of the frontal ethmoid and left maxillary sinus, by dense opaque bone with an encroachment upon the orbit of the bony structure making up the same. The right maxillary sinus is clear.

On April 10, 1920, a radical septum operation was performed by me, in which part of the floor of the nose was removed, for the purpose of giving him a better airway. The result is shown in Fig. 3. This patient has been treated on syphilitic lines without any results.

24 East Forty-eighth Street.

DERMOID CYST OF THE MEDIASTINUM WITH TRANSMITTED PULSATION*.

By H. E. HALE, M.D.,

NEW YORK.

In the *American Journal of the Medical Sciences* for August, 1916, Hertzle[1] reports a case of mediastinal dermoid and reviews with bibliography, seventy-two found in literature. For some reason he omitted a case reported by R. Belin.[2] Belin twice operated on his patient. His incisions were in the right anterior chest below and outside of the nipple. The patient made a complete recovery after the second operation. Since the time covered by Hertzle's report, I have been able to find only two cases reported. These were reported by Körner.[3]

The years of early adult life are the ones when dermoid cysts and teratomata are most likely to make themselves known. They are about equally as common in men as in women.

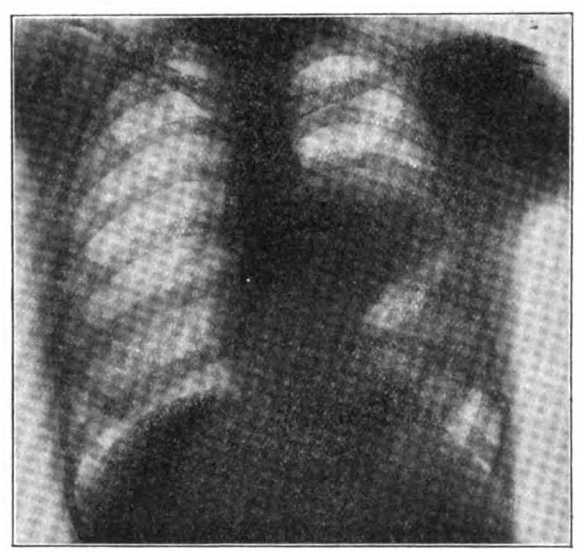
The usual symptoms are due to pressure or irritation, especially of nerves. There may be a cough. Dysphagia is uncommon. Clubbing of the fingers is very rare and when present may be the result of a coexisting pulmonary tuberculosis.

Not only the proximity of essential structures, but the actual attachment to them most often determines what surgery can do in each instance. With this in mind it is of interest to note that Hertzle in the cases he has analyzed finds that 7 were connected with bronchus; 12 were adherent to the pericardium or pleura; 9 were attached to or protruded into the lung; 11 were attached to the diaphragm; 4 were attached to the large vesels; 1 was attached to the chest wall; 11 extended into the lobe of a lung.

Case of Daisy C.,* age 21, admitted June, 1919.—The possibly relevant points in the previous history are: uncomplicated influenza 8 months ago; pleurisy 8 weeks ago; cough for 3 weeks, twice with blood-streaked sputum.

The patient is well nourished, but is distressed, and complains of great left thoracic pain. Severe pain was her chief complaint.

In the left 2d, 3d, and 4th interspaces, extending from the margin of the sternum to the mid-clavicular



line, there is distinct pulsation seen and felt. It is synchronous with the heart beat. There was neither thrill nor murmur present. There was dullness, not flatness, and distant bronchial breathing with muffled spoken voice over the pulsating area and also just below the posterior pulmonary apex. There were a few moist râles heard at the left base, front and back.

Fluoroscopy "revealed a pulsating mass, apparently entirely independent of the heart shadow. Its base was at the hilus of the lung." The left dome of the diaphragm was markedly raised by "adhesions" which blended with the pericardial shadow. There is pulsation of the diaphragm synchronous with the heart beat apparently caused by the "adhesions." The original diagnosis was encapsulated pulsating empyema with its origin apparently from the hilus of the lung or the mediastinum. The radiologist reports simply, "wedge-shaped area of diminished illumination of upper and middle lobes of the left pulmonary field." Diagnosis: Interlobar abscess.

The patient was in our ward for a number of weeks. I examined her frequently, studied the picture on the fluoroscopic screen and the radiograph, as well as twice aspirating her of a thin bloody sterile fluid.

My interpretation of the condition differs from the one given with regard to the left base. The very unusual outline and the pulsation of the diaphragm I believe to be due to post-pericardial extension of the upper mass

*From the Tuberculosis Wards in Bellevue Hospital.

downward to the diaphragm and thence between the lung and the diaphragm toward the costophrenic sinus. The wall of the interlobar portion is very thick and tough. It required much effort to push a needle through it 8 c.m. before its cavity was entered.

There was considerable pressure exerted on the heart, as is shown by the bulging into the right hemithorax of the upper part of the heart shadow, as well as by the pulsation of the mass, which must, by necessity, be a transmitted pulsation.

Aspirations always gave relief, if a fair amount of fluid was removed. Seventy c.c. was the most I ever drew off at one time. The patient's greatest relief came when the sack drained through the trachea. This occurred several times in small amounts and once in considerable quantity, after which pulsation ceased and she greatly improved and left the hospital. The surgeons consulted did not advise an operation. No tubercle bacilli were ever found.

The subsequent history is as follows:

About the first of November, 1919, she went into Mt. Sinai Hospital. At this time there was no pulsation of the mass. Dr. Lilienthal opened the chest by lateral thoracotomy. He found the mass to be a dermoid cyst. It was too adherent to vital structures to permit of removal, so he evacuated it and sutured it to the chest wall. The patient made a god recovery. She was out of bed on the fifth or sixth day.

I last saw her about the middle of March, 1920. She looked well and said she felt well. Her only inconvenience was a sinus which discharged a small amount of serous fluid.

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64 West Fiftieth Street.

A CASE OF CHRONIC (RESIDUAL) ENCEPHALITIS LETHARGICA, SIMULATING THE PARALYSIS AGITANS TYPE, IN A BOY OF 16 YEARS.*

By JOSHUA H. LEINER, M.D.,

NEW YORK.

ADJUNCT ATTENDING NEUROLOGIST LEBANON HOSPITAL; CHIEF OF NEUROLOGICAL CLINIC LEBANON HOSPITAL.

Patient J. B. is sixteen years old and born in Russia. Family and previous history entirely negative. He was a bright and cheerful lad, interested in affairs corresponding to his age, was never "left back" in school, and behaved well at home. In December, 1919, he was sick in bed for five weeks with what his family physician said was pneumonia. Close questioning points, however, to an influenza-like infection. He states he was well for two months following this. In the early part of April, 1920, his folks noticed that while talking he would suddenly close his eyes and fall asleep, or he would sit and stare into space. About this time he began to complain of stiff arms and hands, and that they would assume awkward positions. A history of diplopia was elicited that was present only when writing. On July 16, 1920, he was admitted to Lebanon Hospital in the neurological service of Dr. William Leszynsky. A status taken by me this date showed the following: Patient was well nourished, skeletal frame normal, female pubic hair distribution, and scanty hair in the axilla. Skin reaction showed a marked and lasting Sergent's white line. His face depicted no emotional play, his speech was of a monotone character. Standing he presented a semi-stooped appearance, head and shoulders forward, arms adducted at the shoulders, forearms flexed, hands pronated, and the fingers of the right hand, which were tremulous, assumed a cone-shaped appearance. Walking showed that he moved "en masse." Susoccipital tenderness was present. Rigidity of the neck and extremities at this time was more apparent than real.

Eyes: In asking him to close his eyes he showed a coarse tremor, or rather a flickering movement of his eyelids, before they closed entirely. Pupils were unequally dilated, the right more than the left. Both reacted sluggishly to light and in convergence. The right reacted more sluggishly to light. The fundi were negative. Facial innervation revealed left-sided weakness, which disappeared when smiling.

Upper Extremity: Gross motor power is good. Tremor of digits of right hand is present, and is not characteristic of Parkinson's disease.

Reflexes: Radials were diminished bilaterally. Biceps and triceps normal in response. Abdominals, the right less than the left.

Lower Extremity: Gross muscular power intact. The right knee and ankle jerks less marked than the left. Plantar response was normal. No clonus. Superficial and deep sensibility was preserved.

Mentality: He showed no disorder of perception. He was fully orientated. Memory was good, and the content and process of thought disclosed nothing abnormal. Emotionally, he showed some instability. The slightest incident evoked smiles or laughter.

Laboratory Findings: Blood-pressure 100 systolic; 50 diastolic. Blood examination: Hb. 92 per cent. Red blood cells, 5,700,000; white blood cells, 9,200; polys., 68 per cent.; lymphocytes, 32 per cent. Urine examination negative. Blood and spinal fluid showed a negative Wassermann. His spinal fluid came out under pressure. One cell was found to the c.mm.

The temperature was 100° when he entered the service. This lasted ten days. He left the hospital with a normal temperature.

Three months later I again had the opportunity of seeing him, this time on the Neurological Service of Mt. Sinai Hospital, outpatient division.

Judging from some of the progressive symptoms he now showed, one must believe in a subacute or chronic stage, as viewed by Dr. Abrahamson.* In facies, attitude, and gait the symptoms resembled those of the Parkinson type.

Eyes: His eyelids showed a myotonic-like phenomenon, in that when he was asked to open them, it required a number of attempts, and visibly some effort to open them. The pupils were equally dilated, and re-

*Presented before the Neurological Section, New York Academy of Medicine, October 12, 1920.

*The Chronicity in Lethargic Encephalitis, Arch. Neurol. and Psych., October 1920, Vol. 4, p. 428.

acted sluggishly to light and in convergence. A right Moebius was present. When asked to look laterally in a horizontal plane, the phenomenon of a cogwheel movement became apparent. This was inconstant. The fundi were negative. A left facial paresis was apparent, which disappeared on emotional display.

His tongue protruded in the median line, and some thinning was present on the left side. Fibrillation was apparent, together with an occasional myoclonic jerk.

Rigidity was shown in the neck, more marked on the left half of the body. His left upper extremity was held in a Parkinsonian attitude, and there was tremor of the left digits, facial muscles, eyelids, etc.

Reflexes: Knee and ankle jerks were present. Abdominal and cremasteric reflexes were normal. Plantar response was normal. Vibratory sense was diminished on the right side. A marked Sergent's white line was elicited. Blood pressure, 100/50.

The patient fell asleep when left alone. He still showed his mental instability, and in addition slight changes in character and habits. He was not as careful in dress; was shiftless, smoked excessively, and played with children much younger than himself.

This patient therefore presents a chronic progressive condition, affecting the central nervous system, mind and endocrinous system to a lesser degree. The central nervous system shows an involvement of the mesencephalon and basal ganglia. The paleokinetic projection system with its anisotropic disc and muscle plate, and to a lesser degree the static system with its sarcoplastic connection were involved, as shown by posture, rigidity, tonus, and myotonic manifestations.

His emotional instability can most likely be attributed to a perverted or a diminished function of the thalamus. It is interesting to recall at this time the vibratory diminution on the right half of his body. Whether the sleeping phenomena can be attributed to the same organ is still a mooted question.

His change in behavior and slight mental change point to perhaps a toxic involvement of his higher frontocortical cells. His endocrinous system involvement is shown by his low blood pressure, tachycardia, and the marked Sergent's white line. These phenomena point to adrenal implication.

The question arises, is this a residual state, or is there still going on a slow smouldering toxic condition which gives this picture of subacute or chronic process? His condition has progressively grown worse during the past three months.

355 East 149th Street.

A PRELIMINARY REPORT ON LABORATORY EXPERIMENTS TO DETERMINE THE VALUE OF CERTAIN AGENTS IN CONNECTION WITH SURGICAL OPERATIONS.

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NEW YORK,

AND

E. S. TIBBETS, M.D.,

CUMBERLAND, MD.

THE laboratory experiments briefly detailed herewith were undertaken to determine the value: (1) of warmed oxygenated ether vapor during the operation; (2) of the preoperative administration of sodium bicarbonate; (3) of the combination of these two agents. These experiments were conducted under the supervision of Dr. George Barclay Wallace of the Pharmacological Department of the University and Bellevue Medical College. Between fifteen and twenty experiments were made to determine the comparative value, with regard to

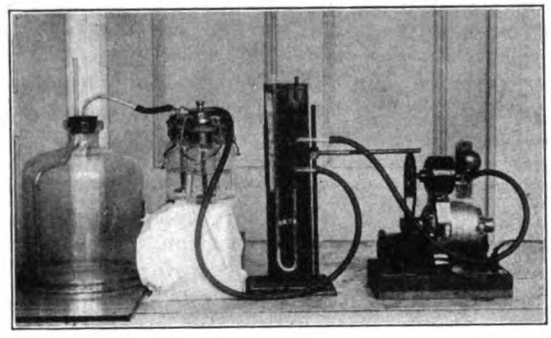

Fig. 1.—Showing (1) the glass bell-jar with stopper through which passes a thermometer, the anesthetic tube, and the escape tube; (2) the anesthetic container; (3) a mercurial manometer, and (4) an electric motor.

immediate safety of life, of warmed oxygenated ether vapor (98° to 100° Fahrenheit) as compared with air-ether vapor at room temperature.

The animal was placed under a glass bell jar (see Figs. 1 and 2), in the rubber stopper of which was a short tube leading from the anesthetic. A glass overflow tube passed through the same stopper and extended to within half an inch of the base upon which the bell-jar rested. The air or oxygen was forced at a fixed pressure of 32 mm. Hg. through a bottle containing ether and then on into the bell-jar containing the animal, the apparatus being so arranged that the percentage of ether in the mixture passing to the bell jar was constant. An additional arrangement allowed any desired temperature of the mixture. The time was reckoned from the commencement of the administration

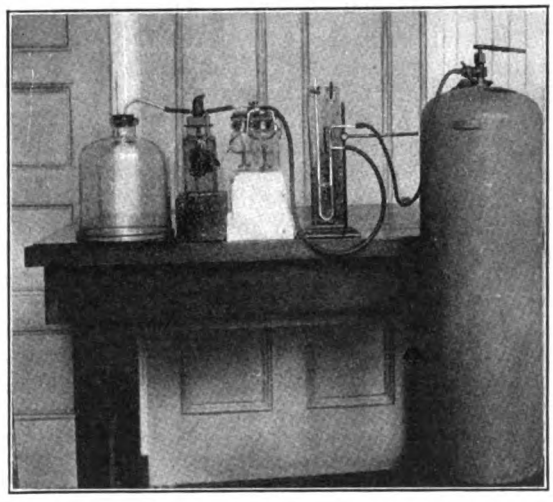

Fig. 2.—Same apparatus as that shown in Fig. 1, except that the heater is placed in circuit between the ether container and the bell-jar; and the oxygen tank takes the place of the electric motor.

of the ether vapors to the stoppage of respiration. The animal was then resuscitated and allowed to run at large for twenty-four to forty-eight hours. After this it was again anesthetized, but in the opposite way (*i.e.* if the first anesthetic was air-ether,

the second was warmed oxygen-ether or vice versa).*

The final results were as follows: Taking an average time for the stoppage of respiration after the anesthesia was started, 72 per cent. of the experiments in which this time was lengthened was with animals given the warmed oxygen-ether mixture; and 28 per cent. with those given the air-ether mixture. In other words, the former was more than two and a half times as safe as the latter. Only one animal failed to respond to resuscitation; this was an air-ether experiment. Two of the warmed oxygenated-ether animals were breathing regularly at the end of twenty-two minutes, requiring no efforts at resuscitation. The percentages just mentioned do not, therefore, and cannot, express the very great advantage as regards life derived from warmed oxygenated ether as against air-ether at room temperature.

These experiments corroborate to a certain extent the experiments made by one of us (J. T. G.) during 1904-1905 in order to determine the value of oxygen, and also of warming anesthetics to about blood temperature (90° to 100° F.) and comparing these results with those obtained from anesthetics administered with air and also at room temperature (65° to 72° F.). While these experiments were crude as compared with the later ones, which were done under proper laboratory conditions, yet they were comparable to each other in their final results.

From the experiments with oxygen as compared with air, and with vapor heated to the temperature of the blood (98° to 100° F.) as compared with room temperature vapors, it was determined that both oxygen and warmth increased the value of all anesthetics—rendering their administration safer without decreasing their anesthetic value.

At the suggestion of Dr. George Barclay Wallace, another series of experiments was conducted to determine the value of sodium bicarbonate in preventing acidosis during anesthesia. This was done in the following manner: Eight pregnant guinea pigs were placed successively under the glass bell-jar, as described in the previous experiments. Four were given a hypodermic of 5 cc. of a 3 per cent. solution of sodium bicarbonate; in addition they were fed 5 cc. of this agent in milk, mornings and afternoons. In the middle of each day the animals were anesthetized for 25 minutes, this procedure being repeated for six successive days. On the sixth day, and while the pigs were under the anesthetic, 2 cc. of blood was withdrawn from the animals' hearts and the same amount of physiological salt solution was injected. This blood was placed in the ice chest and allowed to remain overnight (each specimen in a separate tube). The following day the clot which had formed was removed and the serum was tested for acidosis by the Van Slyke method.

Normal blood shows a 55 to 75 percentage of alkalinity. The experiments showed that when no sodium bicarbonate was given the alkaline loss was approximately the same for each anesthetic (34 with air ether; 35 and 28 with warmed oxygenated ether).

When the preliminary sodium bicarbonate was given, the pigs receiving the warmed oxygenated ether showed a much higher blood alkalinity (.88 and 1.38) than those receiving the air-ether mixture (.54 and .68).

Obviously, the preliminary administration of sodium bicarbonate is of even more importance than the choice between the air and warmed oxygenated ether vapor, so far as acidosis is concerned.

The immediate risk to life is less with warmed oxygenated ether vapors.

40 East Forty-first Street.

*This work, which was begun during the summer of 1917, was discontinued on account of the war.

SOME HISTORY, A THREAT AND ITS FULFILMENT.

By JOHN J. A. O'REILLY, M.D.,

Brooklyn, N. Y.

Chairman, N. Y. State Association of the Medical and Allied Professions; Lecturer in Legal Medicine at the Brooklyn Law School of St. Lawrence University; Assistant to the Department of Nervous and Mental Diseases at the Kings County (N. Y.) Hospital; Member of the New York Bar.

"If you refuse to make operative the Compulsory Health Insurance Bill, if passed, your License to Practice Medicine will be taken from you under the Police Power of the State."

These words, my dearly beloved brethren, are taken from the sayings of the Senator from the Sixth District (Kings) at a meeting of the Eleventh Assembly District Chapter of the Professional Guild of Kings County, held on Oct. 31, 1919, and form the text for our discourse upon the Compulsory Health Insurance and Socialization of Medicine scheme for the political control of the laboring man and the degradation of the medical profession with the Medical Practice (Reregistration) Act as a legislative club to beat the practitioners of medicine into submission or innocuousness.

You note the ministerial type of address? Well, that is for the purpose of introducing you to the new atmosphere which is being developed around Compulsory Health Insurance, State Medicine, the National Socialization of Medicine, and the Medical Practice (Reregistration) Acts so that the smell of un-Americanism which exudes from the officer body of the instigator and propagandist in chief, the American Association for Labor Legislation, may be masked by the odor of mock sanctity which is exhaled by some church organizations which are permitting themselves to be used as propaganda centers by calling conferences in the name of religion and packing them in the interests of the propagandists, and holding them in the home of a moneyed foundation in East 22d Street, New York City, the altruism of which is somewhat tarnished by the fact that the miscalled "welfare" legislation exploited by these Arrogant Associations for Lucrative Legislation (A. A. L. L.) would convert the administrative departments of the State of New York into employment agencies for the schools of philanthropy, sociology, and psychology, maintained by these foundations, whose protégés and graduates have an "urge" to satisfy the "something for nothing lads" at the expense of the goat—the tax-paying public of this and other States.

Before the Senate Committee, at the 1920 hearing on the Davenport Compulsory Health Insurance Bill, the executive secretary of the American Association

for Labor Legislation (A. A. L. L.) declared that he would inaugurate a campaign of education as an antidote to the "poison" which Senator Davenport said "had changed the public mind from an attitude of receptivity for this 'wise' social experiment to one of bitter antagonism." I knew then and I know now that the proponents *dare not go to the people with the facts* any more than the executive secretary dared meet the issues before the Flushing (L. I.) Taxpayers' Association, or Senator Davenport dared meet the issue of cost before the Kings County Young Republican Club. They dared not go and they have not gone to the people with the facts. Senator Davenport's professorial formula before the Kings County Young Republican Club that "the cost would be distributed in increased efficiency and good will" is not argument; it is an insult to the intelligence of the average citizen who *knows* that the employers' cost will be added to his overhead and appear as increased cost of living to be paid by the ultimate consumer, that "dear working person," for the food he must eat and the things he must drink and the raiment with which he must be clothed.

A campaign of education is the one thing the uplifters will not inaugurate because it would be fatal; it simply is not done. Here is the way *they* play the game:

In December, 1919, they staged a "conference" of the proponents and opponents of Compulsory Health Insurance at the Hotel Astor under the auspices of the Sub-Committee on Industrial Relations of the National Republican Club; the conference was presided over by a member of the committee, R. J. Caldwell, a manufacturer of Danielson, Conn., who was *also* a member of the executive committee of the A. A. L. L., and later its president; the proponents were the American Association for Labor Legislation septette, Samuel McCune Lindsay, the then president; John B. Andrews, executive secretary; John A. Lapp, Alexander Lambert, M.D.; Louis Harris, M.D.; Sigismund S. Goldwater, M.D.; and Harold Chamberlain.

The idea was to get the conferees to agree upon a compromise by indorsing the *principle* of Compulsory Health Insurance while damning the Davenport Bill with faint praise, *but*, committing the opponents to the support of *some kind* of a bill and seducing them from the attitude that the "Compulsory Health Insuranse plan is as incapable of constructive amendment as is a rotten egg. . . ." With such a compromise the pro-Socialism group in the National Republican Club could spike the guns of the anti-Socialism group and put across a favorable recommendation of the "welfare" program; the plan aborted because the opponents, of which I was one, would not accept in compromise what they could not subscribe to in justice; it is history that at a subsequent stormy meeting of the National Republican Club they refused to pull the A. A. L. L. chestnuts out of the fire. Senator Davenport introduced his (1920) bill "for educational purposes only"; shortly before the pro forma hearing on that bill the Senator telegraphed a State society leader that the bill would not come out of committee and intimated that the opponents might save themselves the trouble and expense of going to Albany to attend the hearing. This was politics, but it slipped a cog because we knew, as well as Senator Davenport, that he could not drag that bill out of committee with a pair of forceps; the results of the 1919 Assembly elections, in the districts where Compulsory Health Insurance was an issue, indicated public resentment of this waste of the money and man power of the State. When that pro forma hearing was held there was the usual (and expected) line-up of the proponents,—the A. A. L. L., the Women's Trade Union League, the New York Federation of Labor, and the Y. W. C. A., *and* the opponents, who had been advised to disregard telegrams of assurance in the light of the broken promise of March 19, 1919, that Senator Davenport would not permit the bill to come out of his committee "until and unless the sacred relation of the doctor and his patient was safeguarded"; history has it that the (1919) bill *did* come out and that Senator Davenport led the insurgents who made its passage in the Senate possible: The 1920 opposition did not take the form of 500 medical men from all parts of the State presenting dignified and elegantly phrased resolutions of protest, as in 1919, but of a small group of men and women who represented the organized opposition of the medical, dental, and pharmaceutical professions who had *gone to the people with the facts* and could "point with pride" to the fact that the people "viewed with alarm" this hysterical legislation and had "spoken their minds" with definiteness at the polls in November, and the leaders knew it was not politics but civics they were up against.

History tells more—13 out of 13 bad public health bills went to the scrap heap this year.

Then the propagandists re-formed their lines; taking a leaf from the book of "Aunty Anderson" they got busy with the church organizations and the pulpit of a church in Flatbush was given over to the discussion of the boon which welfare legislation, including Compulsory Health Insurance, would be to the "dear people." A little later the Research Department of the Commission on the Church and Social Service of the Federal Council of the Churches of Christ in America (some mouthful) held some *conferences*. I attended the first and found there one other anti, Dr. Delphy, and lined up in favor of this "wise social experiment" was the A. A. L. L. quintet—John B. Andrews, John A. Lapp, Harold Chamberlain, Louis Harris, M.D., and Professor Devine, then of Columbia and later the editor of the *Survey*. The meeting was held, not in a church or a meeting house as would befit a church organization, but in the home of the Sage Foundation, and a questionnaire was distributed:

1. What is the extent of sickness now *unprovided* for by private means?
2. What experience with Health Insurance is looked upon as a demonstration of *success?*
3. *Why* are so many physicians opposed?
4. What effect would Compulsory Health Insurance have upon *commercial insurance?*
5. What are the *most* disputed points in the Davenport Health Insurance Bill?
6. *Is there* any alternative proposal?
7. Who are the beneficiaries?
8. Should small tradesmen as well as industrial workers, *etc.*, be included in the benefits?
9. What would the measure cost the State?

10. Should *industry* carry the whole burden?
(*Italics* are mine.)

Familiar, isn't it?

Then, to show how broad and liberal is the spirit of these ultra-altruists, the Roman Catholic Church was brought into the limelight as indorsing Compulsory Health Insurance, *although* the official pronunciamento of the Bishops' Council (Reconstruction Pamphlet No. 1, January, 1919) expressly says (page 18): "Any insurance scheme, or any administrative method, that tends to separate the workers into a distinct and dependent class, that offends against their domestic privacy and independence, or that threatens individual self-reliance and self-respect, should not be tolerated."

But the A. A. L. L. had another quiver to its bow: When it began to dawn upon these people that there were minds in the State which were capable of recognizing *inverted economy*, they looked about for an alternative proposal (item 6, Questionnaire, *supra*) which would accomplish the same result in berths for those psychanalysts, sociologists, philanthropists, etc., etc., and they evolved *State Medicine.*

The compulsory health insurance propaganda of 24 cents per week per employer and employee as premium; the free choice of (panel) physician; the supervision of medical care and compensation by the County and State Medical Societies (under Sec. 12, God save the mark!); the trifling cost of State supervision (a beggarly $22.32 per average man) or $90,000,000 for 4,000,000 persons as an *annual deficit;* the boon of "extension of benefits" (which would penalize a laboring man for striking to better his condition.) . . . All these things had been measured at their full value by the people of the State and promptly and effectually repudiated and rejected. . . . Therefore, they grasped the *group medicine* which decent, self-respecting, devoted doctors have developed for the advancement of science and the betterment of their fellow man, and they began playing it up as *State medicine* and they advanced the specious propaganda that: "To get the boys back to the farm we must have a hospital and a health center in every agricultural district and we must centralize the agencies of healing."

This looked mighty good to them and they expected the people would rejoice and be glad to try "this wise social experiment" and be willing, a little later, to stand for the national socialization of medicine with a secretary in the cabinet and political control of all the agencies of healing, down to the horse which draws the ambulance.

They know and you know and I know that a measure confined to the agricultural sections would yield no appreciable results in jobs for the graduates of their schools of philanthropy, sociology, and psychology, so they slipped in a few clauses which would extend the "benign" influence of this "forward looking advance agent of the Brotherhood of Man" to the cities of the first class *where the pickings are.*

Experience has been a good teacher; when we analyzed that bill (Sage-Machold, Senate bill 1533) we found the framework of one of the most gigantic political machines the State has ever contemplated; beginning with a State Superintendent of Health, taking his appointment from a partisan Governor and running down through health officers, medical boards, doctors, dentists, druggists, nurses, etc., all taking their appointments from and through boards of selectmen, boards of supervisors and boards of estimate; all feeding at the public crib with the sick citizen as the victim of demoralized agencies of healing sure of their checks at the end of the month provided they "deserved well of their party." Apart from this plan for destroying the morale of the profession of medicine stands the scheme for securing the control of existing hospitals, laboratories, etc., or building others, with all the attendant opportunities for graft and saddling upon an already overburdened public the tremendous waste of the money power of the State.

The decent doctor knows the value of group medicine conducted and controlled by medical scientists; he knows that all over this State are hospitals and laboratories equipped for advanced scientific diagnosis which would enable a doctor to acquire a greater grasp of his patient's case, the patient to reap the benefit of early and complete analysis, and the State to share in the advantage of the rapid restoration of the sick to health and usefulness; doctors feel that these advantages should be brought within the reach of the moderately paid workman because they know that the poor and the rich have these advantages anyway; they want it to be possible for a doctor to send his patient to any such institution and to secure what analysis he wants and the patient needs without being *penalized* by coming under the care of a *panelized* doctor to whom, under the circumstances, he can not be other than a "case." The medical profession can and should work out this problem and they are amplifying these opportunities every day: The death rate in the United States (14.2), which is the envy of every civilized nation, is speaking evidence of this constructiveness. They know, deep down in their souls, that to make this function of medicine a pawn in the game of politics under a Sage-Machold State Medicine Bill (Senate Bill 1533) with the sick citizens *cattleized* and the professional philanthropists, sociologists, psychanalysts, and false doctrinaires subsidized, means rotten medicine, and they have the courage of their conviction to go to the people with the facts and to say that they can not and will not help to make such a wasteful and vicious policy operative. *Then comes the threat* and the attempt at fulfilment thereof.*

All through this vicious abuse of the intellects which God gave those university, magazine, parlor, and gutter agencies of unrest, they recognized that the medical professions constituted a force for order which was in sympathy with the principles, traditions, and institutions of this nation and opposed to the doctrines of the "worshippers at the shrine of something else than Americanism" whose high

*Lest some wise one attempt an anti-climax by telling you that there was a State Medicine Bill and a Medical Practice (Reregistration) Bill in the 1919 Legislature, let me tell you that it antedates even that; it goes back to the 1901 (Paris) Congress of the Labor Internationale, designed, inspired, financed, and controlled by the Imperial German Government for spreading the propaganda of *Kultur* for the purpose of breaking down the social, physical, and economic forces behind the lines in the countries which it was intended, later, to subjugate.

priests these professorial agitators are; the refusal of the devoted and conscientious men and women of medicine to help make operative such destructive measures and policies was an "insurmountable obstacle" which must be met by the "irresistible force" of coercion to beat them into submission or render them innocuous by driving them without the pale. To make it a misdemeanor for any doctor to treat any patient save as part of this political machine would be so raw that even the fossilized, ultra-ethical, and sacrosanct among the practitioners would wake up; besides, it would bruise the toes of the false medical leaders upon whom they counted to play the County, State, and National Medical Society politics in their interest; something subtle and seductive of the "poetic" doctor was the high card; something that would appeal to his jealousy of the high standards of his profession and the scope of service to his kind—so the "mountain labored and brought forth this *"gnat"*:—

"The annual reregistration of doctors will enable you to secure a *medical census* and locate the illegal and unlawful practitioners and insure their punishment by transferring the prosecution of such cases from the district attorneys of counties to the Attorney General of the State."

Great stuff, that! We need a medical census just as much as a cat needs two tails; the State is spending a lot of money, through the Secretary of State, the board of regents, the health department, the attorney general's office, etc., etc., to make and keep proper records of licensees and vital statistics and the Secretary of State's office collates and checks them all up, while the county clerks and the local health departments lend a hand. If all these agencies have "fallen down on their job," the United States Government has just completed a Census which they may use to bring the information up to date.*

Just press your "common sense button" and estimate the sincerity of these propagandists and their dupes in the light of the fact that that same Medical Practice (Reregistration) Act, if passed, would have let down the bars to unbridled exercise of birth control by that rotten type of doctor who places money before honor and waxes rich on the practice of feticide and infanticide and the teaching of contraception, and whose only real check is Sec. 170-d of the Public Health Law, which provides for the revocation of his license if he violates the provisions of Sec. 1142 of the penal law, except in the exercise of good faith, of which his medical peers, and not a lay jury, shall be the judge. The Kenyon Bill (Assembly Bill 840), Medical Practice Reregistration Act, eliminated that Sec. 170-d to make place for the annual reregistration of the doctors of this State subject to the discretion of the licensing board (an administrative department), and without the right of appeal to the judicial branch of the government upon the merits of the case, leaving a doctor a mandamus proceeding as his only recourse, with the absolute certainty of that writ of mandamus being denied under the ruling decision on the scope of the *police power of the State* (Dr. Dent vs. State of West Virginia, 129 U. S. Reports, page 114, year 1889). If you have any doubt whatever of the sureness of my foundation for this message to you in warning of the real purpose of the Kenyon Bill (Medical Practice—Reregistration Act) ask some lawyer friend or patient to read the bill and the decision in the case of Dr. Dent in the light of the threat with which I open my story and in consideration of the fact that on Oct. 31, 1919, and now there was not and is not a single New York statute under which that threat could be made good.

Read and have him read Sec. 169 of that Kenyon Bill in consideration of the fact that there are probably not five doctors, *graduated prior to* 1895, who have not completed their registration during the past twenty-five years or whose registration contains a defect which requires remedying *at this time* through the resurrection and revivification of an enabling clause necessary in 1896 but entitled to remain dead in 1920.

Then read and have your lawyer friend read the whole bill and see if he can find a single if, and, but, or provided, upon which he could predicate a clear right to a decision in your favor on such a mandamus proceeding in the light of the decision in the case of Dr. Dent, which would be a *sine qua non* for the exercise of equity in your behalf if reregistration were denied you. . . . Ask your lawyer friend what effect the equitable maxim—"He who will not when he may may not when he will"—would have upon your mandamus proceeding when it was shown that you and your brothers in the profession of medicine were guilty of laches in disregarding such warnings as this and, instead of fighting this vicious legislation with all the power of your personal influence among your people, the voting public, contented yourself with "Why, Doctor, they couldn't pass such a bill; it would be unconstitutional." A lot of Americans said that about prohibition and rolled over and went to sleep again; when they awoke they found it was the law and the courts were powerless to change or modify the conditions.

The theory that this bill would corral the illegal and unlawful practitioners and charlatans by transferring the prosecution from the district attorneys of counties to the attorney general of the State is

*Assemblyman Kenyon, the introducer of the Medical Practice Reregistration Bill, quoted the State Medical Society as indorsing his bill. Despite the fact that it was killed through the influence of the rank and file; despite the fact that it would, if passed, make the unbridled exercise of birth control lawful and moral and the State Society its sponsor, through the elimination of Section 170-d of the Public Health Law at the behest of the birth controllists, nevertheless, the council of the New York State Medical Society on May 22, 1920, "directed the chairman of the Committee on Legislation to introduce the Medical Registration Bill at the next session." The rank and file must decide whether this is to be taken as rank ignorance of the capacity for coercion which this bill contains, or rank, insolent disregard of the wishes of the practitioners, or the rights of the people to have their agencies of healing safeguarded rather than subordinated. Said a state leader to me: "If you attempt to defeat the Medical Practice Reregistration Bill you will be crucified." Even so; it must be defeated in 1921 or the ruling decision on the police power of the state—Dr. Dent *vs.* State of West Virginia, United States Supreme Court Reports 129, at page 114 (year 1889)—will be made applicable to the Laws of the State of New York as it is not now and cannot be under already existing laws, the threat of October 31, with which this article opens, to the contrary notwithstanding.

neither warranted by the facts nor necessary under the law.

If you can find me a single district attorney in New York State who chooses the violations of the Practice of Medicine Act as the channel which to manifest his infidelity to his oath of office, I will show you existing law and precedent for the attorney general of this State superseding that district attorney by a special deputy attorney general empowered to act in any case in any county in which the State, as such, is a party in interest; and if the State be not a "party in interest" in maintaining the integrity of the agencies of healing, then the people of this State would like to know it.

Have your lawyer friend read that bill in the light of the status of Section 169, with its amendment, as new law which provides for the indorsement without further examination of the diploma of a doctor graduating *prior* to 1895 and search the provisions of that bill for reregistration of a diploma without further examination if the applicant graduated *after* 1895 and the reregistering body saw fit to exercise its discretion against one, for example, who was unwilling to "help make operative" a compulsory health insurance law, or a State medicine law, or a birth control law, or a national socialization of medicine law.

The propagandists have an "urge" to safeguard and purify the practice of medicine and rid it of charlatans, have they? Then why in the name of common sense and civic decency do they exploit a drugless therapy bill (Carroll), Senate Bill 582, which would legalize every form of charlatanism known and to be known. Read it—here is Section 1, Article 1:

"The practice of drugless therapy, which is a system, method of science of healing disease without the use of drugs or medicines of any kind, using massotherapy, mechanotherapy, electrotherapy, hydrotherapy, naturopathy, chiropractic, napropathy, neuropathy, dietetics (food science), suggestive therapeutics, magnetic healing, vibrotherapy, zonetherapy, *or any other drugless methods that hereafter become known or in use.*"

Need I say more to awaken you to a realization of the fact that by virtue of your training and education and experience you are one of the best qualified teachers in society, and by virtue of the intimacy and sanctity of your relation with your patient you are one of the most forceful teachers of society, and that it is your solemn duty to your order, your family, and your State to use those faculties by going to your people, the voting public, *with these facts*, in their homes and on the street, in public halls and in the lay press, by exhortation and in debate, and putting it up to them to say by their votes whether they want their agencies of healing made part of a political machine through compulsory health insurance, State medicine, the national socialization of medicine; whether they are willing to have their agencies of healing forced *into* service as panelized, impersonal practitioners or forced *out of* the practice of their profession through a Medical Practice (Reregistration) Act: Go to the people with the facts! An informed American people never went wrong and never will.

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GALVANO-PALPATION.

A METHOD OF DETECTING THE PRESENCE OF INTERNAL DISEASES BY MEANS OF THE GALVANIC CURRENT.

BY MAX KAHANE, M.D.,
VIENNA.

GALVANO-PALPATION is a method of testing the sensory and vasomotor nerves of the skin. It consists in the application, for short intervals frequently repeated, of a needle-like anode electrode, as sharply pointed as possible, to the part of the skin that is to be examined, while the indifferent electrode (the cathode) is applied to some other part of the body, *e.g.*, the palm of the hand.

The mode of procedure is as follows: The patient holds the large cathode electrode in one hand, the very sharp-pointed anode electrode in the other, and then the slightest possible current is turned on. Abnormal reactions are registered and established only if the very weakest current is employed; if a stronger current is employed it will not accomplish our purpose, because it is diverted toward the organ to be examined. For the examination of the cerebral nerves, to see if a neuritis is present, *e.g.*, the trigeminus, the vagus, the accessorius, and for the examination of the cervical portion of the gangliated cord, and of the thyroid body, one should employ not more than 0.5 milliampères; for the nerve roots and the peripheral nerves, about 1.0 milliampères; for the thoracic organs, 1 to 1.5 milliampères; and for the abdominal organs, 2.0 to 2.5 milliampères. The desired current having been turned on, the physician takes the anode electrode from the patient's hand and applies it numerous times with a slight tapping motion to the spot to be examined.

Essential conditions for success, for a reliable diagnostic result, are the following: (1) the examining electrode must be the anode electrode; (2) the anode electrode must have a very sharp point, so as to assure a maximum of current density, and (3) the application of the current must be direct and frequently repeated, and any escape of current must be avoided.

A negative result does not warrant a negative conclusion! Diagnostic value is to be attached only to a positive reaction. The galvanic current acts on the sensory and vasomotor nerves of the skin. The sensory reaction consists of a scratching, pricking or burning sensation, and the vasomotor reaction of a reddening of the skin. The intensity of the reaction varies with the character of the lesion and is of diagnostic import. The vascular reaction is the more important because it is objective; as a rule the sensory and vasomotor reactions run parallel to each other, but there are cases in which one is more marked than the other.

The diagnostic importance of galvano-palpation consists in the fact that the cutaneous vasomotor and sensory reactions are of a secondary nature, being dependent on internal diseases, and that topically the reaction spots correspond to the site of the disease. Thus, for example, in an ulcer of the stomach the reaction phenomena (reddening of the skin, etc.) will be strictly limited to the area of skin over the ulcer, and there will be no reaction phenomena whatsoever elsewhere. A third point of great importance is this: the intensity of the

reaction is proportional to the intensity of the irritation or inflammation in the subjacent tissue or organ, and consequently we may gain information as to the progress of the disease by studying the character and intensity of the reaction at regular intervals.

The tissues and organs that lend themselves to diagnosis by galvano-palpation are as follows: on the head, the outlets of the trigeminus, the nose, the sinuses, and nasal cavities; on the neck, the vagus, the accessorius, and the sympathetic, the larynx, the thyroid gland, the cervical roots and the brachial plexus; in the thorax, the lungs, the heart, the aorta, and the dorsal roots; in the abdomen, the superficial portion of the liver, the gall bladder, the anterior wall of the stomach, the large intestine, the appendix, the kidneys, the lumbar and sacral roots; on the extremities, the bones, joints, muscles, peripheral nerves (as far as they are directly under the skin).

A circumscribed reaction over the thyroid gland is an important symptom of hyperthyroidism and can be elicited even with a current of 0.3 milliampères. The anterior wall of the larynx lends itself easily to galvano-palpation; in tuberculous laryngitis there can be elicited a very intense reaction over the seat of the lesion. In thyroidism and in cardiac neuroses we get a strong reaction over the manubrium sterni. In aortitis we get a very characteristic reaction, *viz.*, a circumscribed redness between the manubrium and the corpus sterni at a spot corresponding to the left half of the transverse aorta and the beginning of the second rib (left). Topographically this spot corresponds to the superior cardiac plexus and the inferior margin of the aortic arch.

Galvano-palpation is of special value in those cases of abdominal disease in which the patient's statements are of no value as aids to the localization of the malady. In such cases we can always rely on the vascular reaction. Thus, for example, if a patient complains of pain in the region of the appendix, whereas galvano-palpation elicits redness over the gall-bladder, we may be certain we are dealing with an affection of the latter viscus. It is interesting to note that in cases of spastic constipation we find galvano-hyperesthesia (*i.e.*, a positive reaction) in the right iliac fossa, and in atonic constipation in the left.

It is one of the great advantages of galvano-palpation that it can be applied even in cases of very acute inflammations without doing the patient any harm. Naturally, it may also be employed in the case of a person who may have lost consciousness and even in children.

In cases of neuralgia the method is of great value inasmuch as it enables us to decide whether we are dealing with an affection of the nerve roots or of the peripheral nerves themselves. Bones, joints and muscles are also suitable objects for examination. I have been enabled by this method to prove that "muscular rheumatism" is not a muscular neuralgia but a circumscribed myositis.

The method is perfectly simple, can be easily and quickly applied by anyone having the necessary apparatus (especially a sensitive galvanometer and a sharp anode electrode), and yields valuable results, when the reaction is positive.

PARTIAL ASPHYXIATION IN AN INFANT, RESULTING FROM THE INHALATION OF A DUSTING POWDER.

By LOUIS FISCHER, M.D.,

NEW YORK.

THE following case seems to deserve publication on account of its rarity and of the success of the treatment employed:

R. M., seven months old, was seen by me in consultation with Dr. S. M. Clurman. He was a breast-fed infant, gaining in weight. At the time of the present illness he weighed about twenty pounds. According to the history given he was left to play with a box of dusting powder consisting chiefly of stearate of zinc. When discovered by the mother his mouth was filled with powder. Twenty-four hours later I was called to see the infant and found the respirations 60, pulse 160, and temperature 99°. There was marked dyspnea, also retraction of the chest. The breathing was labored, not croupy, but a stenosis of the air passage existed.

Examination of the thorax revealed crepitant râles—diffused on both sides, also a complete absence of the respiratory murmur on the left side of the lung, fair breathing on the right side.

Deficient oxygenation existed, as was apparent by the cyanosis of the lips and ears. There was no evident dullness on percussion. The alæ nasi were very prominent. There was superficial breathing—very labored. We expected some assistance from the *x*-ray picture which was taken by Dr. Abrams of Brooklyn. It showed a normal thorax—no abnormality, no pathological lesions discernible.

The case was seen frequently by Dr. Clurman. The symptoms increased hourly, so that a grave prognosis was made. Steam inhalations were used with no apparent benefit. On palpating the epiglottis and larynx I was able to bring away considerable powder which adhered to the adjacent parts. Emetics were frequently given, but did not seem to dislodge the foreign particles of powder. There was an occasional cough. On the following day the respirations rose to 74, pulse 164, temperature 102.5°. Pneumonia was suspected. To be prepared for all emergencies Dr. Charles Goodman was called and requested to be present should grave symptoms demand a tracheotomy. After studying all symptoms carefully and considering catheterization of the larynx, intubation, and possibly, tracheotomy, it was decided to use stimulating expectorants, chiefly senega, and thus dislodge by mechanical means as much foreign material as possible. This measure proved successful. The expectorant was given. The symptoms gradually subsided, and the infant made an uneventful recovery within three days.

33 WEST SEVENTY-THIRD STREET.

A Fourth Symptom Added to the Triad of Hutchinson.—Cantonnet adds hydrarthrosis to the triad of Hutchinson—notched teeth, deafness, and interstitial keratitis—as evidence of hereditary syphilis. He thus makes it a tetrad. Cantonnet is an ophthalmologist, and as these practitioners see these cases first because of the keratitis (or perhaps since many of them treat the ear because of the deafness) he and his colleagues are likely to note the presence of any other stigmata. The hydrarthrosis is painless and hence easily escapes observation. Statistics of Clutton showed hydrarthrosis eleven cases, keratitis ten cases, notched teeth five and deafness two cases. Puech in one material saw twenty-seven cases of keratitis, eleven hydrarthroses and five auditory cases. Fouquet saw eighteen keratitides, eleven hydrarthroses, two deafnesses, and Merlier five keratitides, four hydrarthroses, and one deafness. Hence hydrarthrosis appears to be more common than notched teeth and deafness, but less common than keratitis. The joint symptom may be mono- or polyarticular. It may often be found by searching for it, and quite frequently a case believed to have been of traumatic origin will be found to occur in a heredosyphilitic.—*Le Bulletin Médical.*

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DIABETES INSIPIDUS.

WE took the opportunity a few weeks ago to call attention in these columns to some of the features of diabetes insipidus. It seems worth while at this time to point out some of the more recent studies which have led, if not to a definite theory of the pathogenesis of the disease, at least to a clearer conception of some of the controlling factors in instances of the condition which are apt to come to our notice. The subject has been reviewed by J. Bauer and B. Aschner (*Wien. Archiv f. inn. Med.*, 1920, i, 297), who have carefully studied several cases especially in regard to the manner in which they react to the injection of pituitrin. Several reliable observers had already determined that the injection of pituitrin into a patient suffering with diabetes insipidus results in a remarkable diminution in the amount of urine excreted and an increase in the specific gravity. This reaction is seen in the majority of the cases of this disease, but in some few it is very slight or even absent. It depends upon some substance in the posterior lobe of the pituitary gland and perhaps also to some extent in the pars intermedia. The dependence of diabetes insipidus upon lesion of the hypophysis is not exactly clear cut, for removal or complete destruction of the posterior lobe or of the whole gland does not result in the typical polyuria and careful microscopic examination of the gland in cases which have been so studied have failed to show any recognizable lesion. Nevertheless some relationship appears to exist. It is difficult to say whether this reaction can be associated in any way with the remarkable effect of lumbar puncture in one or two instances of the condition. Drainage of the cerebrospinal fluid brought about a temporary improvement of the symptoms in one instance and in another apparent cure. These authors recognize these difficulties and are inclined to believe that the influence of the hypophysis is exerted indirectly through the central nervous system and possibly also through the circulatory system.

Three ways are suggested through which diabetes insipidus may establish itself in the body. In the hereditary type of the disease there is apparently a primary anomaly of the kidney, in so far as its inherent nervous apparatus is concerned. In some instances it appears to depend upon a disturbance in the centers in the floor of the fourth ventricle of the brain. These are the ones in which the reaction to pituitrin injections is most striking. Occasionally the disease seems to result from a disturbance in the correlation of the "thirst perception center" and the diuresis center, and in these cases it makes no difference whether the primary irritation of the thirst center results from increase in the concentration of crystalloids in the tissues or whether it is purely psychogenic. The result is the same. They also point out that the discussion as to the importance of primary polyuria or primary polydipsia is of no value, for the two are so closely linked together that either may result from the other. Furthermore, the lack of concentrating power of the kidney may either cause or result from a polyuria.

It is readily seen that the problem of diabetes insipidus has not been solved, but it must be admitted that some progress has been made in that direction. Nor must the reader despair if there seems a tendency to add still another pathological condition to the long list of troubles now blamed upon the endocrine system. The essentially nervous foundation of the disease seems fairly well established, and the next ten years will see more rapid advance in our information than the last ten.

TRUE AND FALSE DYSPEPSIA.

THE term dyspepsia signifies a disturbance of the gastric functions. Therefore, it is a term which designates a functional change and not a morbid entity. When we say dyspepsia we do not imply that the functional disturbance is in any way related to a change in the gastric mucosa—Hayem and Lion's theory of gastritis—or that there is a morbid change in the nervous system controlling the gastric secretion—Leube's theory of nervous dyspepsia. So far as a functional disturbance of the stomach is concerned, dyspepsia involves three gastric functions, namely, the secretory function, and the functions of sensibility and motility, one of these functions being more involved than the other two. Besides these true dyspepsias which imply some functional change of the stomach—changes of the sensibility, motility, or chemism—there exist false dyspepsias in which the functions remain absolutely normal, but the subject, being a psychopath, believes that he is suffering from some gastric disease.

The essential characters of these false dyspepsias consist, firstly, in an absence of any real disturbance of the stomach that can be clinically detected by radioscopy and chemical examination of the gastric secretions; secondly, by the presence of very marked nervous or psychic disturbances. In the statistics published by the late Dr. Déjerine and those of Dubois, of Berne, these false gastropathies represent the majority of cases, while Le Pannetier, working at the department for diseases of the digestive system at the Hôtel Dieu in Paris, found, on the contrary, that this syndrome was rarely present. Le Pannetier partially explains this difference in the

statistics by the fact that several true gastropathies, developing in a neuropathic subject, give a peculiar character to the affection which causes it to resemble the false gastropathies. In order to make a precise diagnosis the clinical examination must be completed by a study of the gastric chemism and a radioscopic examination of the stomach.

The diagnosis of a false dyspepsia—a diagnosis that exclusively implies resort to appropriate psychotherapy—should be made with the greatest reserve and after having examined the stomach thoroughly in order to eliminate any organic lesion such as ulcer, cancer, or gastritis, an organic dyspepsia. False gastropathies may change into true gastropathies by various mechanisms—the mechanism of insufficiency of the nervous system on the secretion, mechanism of inanition, or mechanism of drug intoxication.

The term nervous dyspepsia leads to confusion, and under this term should be distinguished: Firstly, dyspepsias of alimentary origin, toxic, etc., having a more or less marked reaction on the nervous system. Secondly, dyspepsias due to a change in the nervous system of the stomach, sympathetic or bulbar. Doupault and Leube understand nervous dyspepsia in this light. Thirdly, the psychogenous dyspepsias. Consequently it is evident that the term nervous dyspepsia is a misnomer and should be discarded from text-books.

The treatment must be directed against the causative factors of the dyspepsia. In true functional dyspepsias the treatment should correct the underlying pathological changes. When the psychic functions are disordered the dyspepsia will be of the false variety and therefore the treatment is to be directed to the cure of the neuropathy or pyschopathy presented by the patient.

THE PROPHYLAXIS OF ENDOCARDITIS.

IN the *Prescriber* for November, 1920, Dr. G. Arbour Stephens gives some original views on endocarditis and its treatment. He points out that for none of the diseases in which this condition is liable to occur—rheumatic fever, scarlet fever, tonsillitis, pneumonia, cancer, gout, diabetes, and Bright's disease—is there any specific treatment, and that consequently treatment is restricted to preventive measures. He defines endocarditis as an exudation disease, as is evidenced by the vegetations, which are composed of elements derived from the blood. The next stage in the development of the theory is that the disease in which endocarditis occurs is an exudation disease, and as an exudation disease is that condition in which the calcium content of the body is reduced below normal, the obvious treatment is to increase the calcium content by appropriate dietetic measures, that is, if the theory be correct. Stephens insists that the diseases mentioned occur more frequently in those whose calcium content is low and, moreover, draws attention to the point that the greater tendency to endocarditis in the young, when the calcium metabolism at dentition and puberty is under its most severe strain, must be taken into consideration, as well as the fact that heredity probably plays a part in the causation of most of these diseases. Heredity, like pedigree, is almost synonymous with bone, the great lime-containing organ, and apart from a mere tendency, the bad feeding habits of the mother are readily indulged in by her children.

If then these diseases are, as Stephens says, of the "exudation class," due to a lowered calcium content, and also to a perverted or acid appetite, the only rational way of dealing with them is by considering and modifying the food supply of the people. Clean, healthy food, including a pure milk supply, fresh laid eggs, and home-made cheese, should be the staple articles of diet, rather than the over-salted bacon, badly cured fish, and can-preserved food which seem to appeal to the appetites of to-day. Even if Stephens has somewhat exaggerated the importance of the calcium content of the body in the diseases he has referred to, there is no doubt, as Dr. Aulde in this country so eloquently argues, that a low calcium content is prejudicial to health and indeed signifies an actual condition of ill-health. The common-sense treatment of the condition and the preventive treatment of certain predisposing diseases consist almost wholly of dietetic measures.

Others might take to heart, quite as much as the British, Stephens' strictures on the character of our food supply. All over the world to-day canned, preserved, and cured food is consumed to an enormous extent, largely because of the necessities of transportation. Such food is of course better than none, and by it thousands in central and eastern Europe have been kept from starvation, but it is not suitable for a staple diet, and every effort should be made in the war-devastated countries to encourage the cultivation of fresh food, both vegetable and animal. In the meantime supplying the lime deficiency artificially, as recommended by Aulde, would be indicated.

THE RICH BABY AND ITS KEEPER.

THE family possessing simultaneously money and babies (such families undoubtedly do exist) will in practically every instance be found also to possess a nurse. The nurse may be "practical" or she may be just a maid; but she takes care of babies—ergo, she is a nurse. She comes highly recommended, she requires one day a week off, father pays a good round sum for her services,—ergo, she is a "high class nurse;" she can be trusted.

Unless the general practitioner has a remarkable monopoly of the family's good graces, a "baby specialist" is employed, especially if the baby is artificially fed. The specialist arrives, gives ideal directions for care and feeding, and departs, rejoicing in his high-class baby. Sooner or later he may be commanded to return. He receives a cold greeting; and finds the reason in a pale, sickly baby who has rapidly lost weight. He is in imminent danger of being "fired," and of being deprived of as many patients as this family, at least, can contrive to alienate from him.

How often does this syndrome indicate a lesion not in the pediatrist, not in the baby, but in the irate mother herself. She can afford to employ someone whom she thinks she can trust, and who promptly goes her own pseudo-pediatric way unmolested except for occasional visits from members of the family for the purpose of fondling their baby (who may be getting less care, or worse care, than their pediatrist's poorest clinic baby). How often does the pediatrist come upon some "old and trusted nurse" who must sneak "a little castoria" or "a little paregoric" into the baby's unsuspecting bowels.

Such cases of unwary mothers and incompetent nurses are fortunately relatively infrequent. But they occur often enough to warrant constant vigilance on the part of the medical man in change of the rich baby. He should bear in mind that the severe cases of (preventable) athrepsia are by no means limited to the poorer classes; that he must be strict in his insistence on the right treatment, whether his patient be rich or poor, though the former often require more punctilious watching of the step when a scolding is contemplated!

The health of the baby is purchasable. But no social order has yet been devised which permits a mother to delegate responsibility for her baby's well-being.

A Bill for the Protection of Infancy and Maternity.

The Children's Bureau of the United States Department of Labor has just sent out a bulletin urging support of a bill asking Federal aid in the protection of infancy and maternity. The statistics of the Children's Bureau show that in 1918 some 23,000 mothers died in childbirth in the regisration area of the United States and nearly a quarter of a million babies died under one year of age. These statistics show that it is safer to be a mother in fourteen important foreign countries than in the United States. During the past twenty years the typhoid fever rate has been cut in half, the tuberculosis rate markedly reduced, the diphtheria rate reduced more than one-half, but there has been no decrease in maternal deaths. It has been shown that 80 per cent. of the mothers have received no advice or trained care during pregnancy. In the country as a whole there has been practically no organized effort to meet the need for instruction in prenatal and infant hygiene and for trained care during pregnancy and confinement. This problem is not local or sectional, but nation-wide. Federal action is therefore urgently needed. The bill for which the Children's Bureau is urging support offers a practical method of cooperation between the Federal Government and the States. Such Federal aid would stimulate the rapid extension of work which is necessary to prevent further loss of life and health; it would make possible the coordinating and supervising of local work; it would provide facilities in those areas where the local funds are least able to provide them by making State and Federal appropriations available to supplement local resources, and, in general, it would further the nation-wide interest in the protection of maternity and infancy, and help it to find prompt, effective and permanent expression.

Nevo-Encephaloma.

This peculiar neoplasm is described by Audry in the *Annales de dermatologie et de syphiligraphie*, i, 8-9. A case is reported in detail. As cerebral tissue in an embryonal state is associated with ordinary nevus tissue the condition may be regarded as akin to a small, atypical encephalocele, spina bifida, and similar conditions. The location shows that the brain substance emerged as a result of incomplete closure of the nasolacrymal fissure. The types of tissue are not intimately mixed for the cerebral component lies beneath the ectodermic structures. In the reported case the patient was a child aged three years with one tumor on the vertex and another at the upper third of the right eyebrow, both formations being congenital. The latter of the tumors was clearly a nevo-encephaloma, but the mass on the vertex was a serous multilocular cyst, the significance of which was not apparent. Although the child was healthy and generally well developed there were several minor stigmata about the head and face. The forehead was bulging and somewhat asymmetrical. The left eyebrow was at a lower level than the right, and the external extremity of the latter seemed pulled up strongly. The space between the tumor and the eyelid was the seat of fine, short, and sharp hairs directed like the eyebrow hairs. There was an ogival palate but dentition was normal and heredosyphilis could be excluded. Clinically the tumor would have passed readily as a wen. It was removed along with the other mass. There was no suggestion of malignancy.

Progress of the Warfare Against the Pestilences of Eastern Europe.

A French Red Cross Report, digested in *La Presse Médicale* for Sept. 15, 1920, xxviii, 65, gives a sketch of the epidemic situation in Eastern Europe. Beginning with Eastern Galicia, it is stated that typhus has recently shown a recrudescence evidently as a new contamination from Lithuania, Volhynia, and Podolia, where a quarter million cases are believed to exist with a mortality averaging 25 per cent., which means the death of 25,000 each month. From this region Eastern Galicia and Eastern Poland are constantly menaced, and the battle ground to fight the plague must be along this frontier. On the other hand Checo-Slovakia is almost free from typhus, while smallpox, although nearly 1,500 cases have been reported, is running a benign course. In Poland only the Eastern portion is afflicted with typhus, and smallpox and dysentery, while they occur, are not menacing enough to cause alarm. In Roumania the situation is well in hand; in Transylvania it is encouraging. The regions included in the limits of Jugo-Slavia show a certain amount of typhus, but less than 300 cases a month for the entire realm. Austria and Hungary are doing well aside from the unusual incidence of tuberculosis, and in Turkey a vigorous crusade has almost stamped out typhus.

News of the Week.

A Vaccine and Serum for Yellow Fever.—Mr. George Vincent, President of the Rockefeller Foundation, authorizes the announcement of the discovery by Dr. Hideyo Noguchi, at the Rockefeller Institute for Medical Research, of a vaccine for yellow fever which promises to confer immunity against the disease. The discovery of the yellow fever organism has also made it possible for Dr. Noguchi to develop a serum which it is believed will reduce the mortality from yellow fever. Already vaccination against yellow fever of people going to tropical countries is being made in New York. This work is being done at the Broad Street Hospital with vaccine furnished by the Rockefeller Institute. The first shipment of vaccine for yellow fever from the Rockefeller Institute to tropical countries was made a year ago when three hundred bottles were sent to Mexico. Other shipments have been made since then, the latest on Nov. 10. The Central American countries are so well convinced of the efficacy of Dr. Noguchi's vaccine that those who have been successfully vaccinated are permitted to travel without quarantine detention.

Smallpox Ravages Hayti.—A report from Rear Admiral Knapp, who is making a joint investigation of conditions in Hayti for the Navy and the State Department, shows that there are 788 known cases of smallpox on the island, 694 of which are in Port au Prince. The report adds that every effort is being made to get vaccine to the outlying districts. Aircraft, automobiles, trains, and pack mules are being used to get vaccine into the infected regions.

Typhus Suspects on an Atlantic Liner.—When the American Liner *Haverford,* from Liverpool via Queenstown, reached quarantine at Marcus Hook, Dec. 8, twelve steerage passengers were held as typhus suspects before the vessel was permitted to proceed to her pier in Philadelphia.

Pellagra and Income Vary Inversely.—After a three-year study of pellagra in the cotton-mill villages of South Carolina, the United States Public Health Service shows that pellagra varies inversely with the family income in this locality. As the income fell the disease was found to increase and to affect more and more members of the same family. As the income rose the disease decreased, and was rarely found in families that enjoyed the highest incomes, even though this highest was still quite low. It was found that expenditures for food, the intelligence of the housewife, the ownership of cows, gardens, etc., were also factors influencing the incidence of this disease. A recent statement by one of the large life insurance companies indicates that the food standards of Southern wage earners must have improved remarkably of late, for the death rate from pellagra has fallen from 6.7 per 100,000 in 1915 to 2.3 in 1919.

Public Health Service Issues Warning to Consumptives.—The migration of army patients suffering with tuberculosis to the semi-arid west is causing the United States Public Health Service no little concern, for all the Service hospitals and all the contract hospitals in that region are now completely filled. It is considered unfortunate that patients should leave places where the Government is ready and able to care for them and go to other sections where it is absolutely impossible for it to provide proper care and where even ordinary housing accommodations are largely unobtainable.

Anthrax Increasing in New York.—The *Monthly Bulletin* of the New York City Health Department for November presents the results of an investigation of 34 cases of anthrax occurring in this city from Jan. 1, 1919, to Oct. 1, 1920. A comparison of the number of cases during this period with previous five-year periods from 1900 to 1920 shows only 40 cases for three five-year periods from 1900 to 1914, inclusive, and 34 cases for the five-year period from 1915 to 1919 inclusive. One reason for this increase is the large quantity of hides that have passed through this city during the world war and the great demand for hair and bristles during the past five years. Of the 34 cases which the present report reviews, 23 recovered and 11 died. The fatal cases usually terminated before the eighth day. As 14 cases recovered without operation, and 9 recovered with operation, it seems logical to judge that it is best not to operate. Again, out of 14 that received only anti-anthrax serum, but two died. Out of 12 that received serum aided by other treatment, four died. The method which seems most successful, according to these observations, is the administration of anti-anthrax serum, 10 c.c. by local infiltration, every eight hours, and 40 c.c. intravenously, every four hours.

Rest and Health Home for Women.—The Women's Welfare Association of Washington, D. C., which established the Women's Evening Clinics seven years ago, has fitted up a house at Eleventh and L streets where working women can spend several weeks in a nursing ward and can have the benefit of medical examination and treatment. The home has a gymnasium and a physical training department, and the clinics are thoroughly equipped and conducted by the leading physicians of Washington. It is hoped to make this "Good Health Home" a model for the beginning of a nation-wide movement to establish such homes in every city and community.

New Hospital for Albany.—Mrs. James C. Farrell plans to build a million dollar hospital in Albany to take the place of the present St. Peter's Hospital. The new edifice will be erected on a large plot of ground in the Pine Hills section of the city and will be known as the James C. Farrell Memorial Hospital.

Law to Halt Making of High Heels.—The Massachusetts Osteopathic Society, at its annual convention in Boston, Dec. 4, announced that it would introduce a bill into the next Legislature placing a ban on the manufacture, sale, and wearing of high-heeled shoes. The proposed bill would limit the height of heels to one and one-half inches.

United States Public Health Service Corrects Misstatements.—Surgeon-General Cumming corrects the recently widely circulated statement that the United States Public Health Service had found that chaulmoogra oil was as efficacious in the treatment of tuberculosis as it had been shown to be in that of leprosy. He states that experiments made some years ago with the oil gave no results. Recent experiments with the ester, or derivatives, have been begun because of the hopes based on some

similarities between the bacilli of leprosy and those of tuberculosis; but these have not proceeded far enough to indicate what results will be obtained.

Dr. Rudolph Matas of New Orleans was elected Vice-President of the American Medical Association at a recent meeting of the Trustees of the Association, to fill the vacancy caused by the death of Dr. Isadore Dyer.

Surgeon J. W. Kerr of the United States Public Health Service sailed for Europe on Nov. 20 to assist in the investigation of immigrant conditions in Europe.

Professor Charles E.-A. Winslow of Yale University has been appointed to direct the public health work of the League of Red Cross Societies in Europe.

Dr. Edward J. Kempf, formerly clinical psychiatrist to the Government Hospital for the Insane, Washington, D. C., has opened an office at 100 Central Park South, New York City.

Charitable Bequests.—The will of the late Commodore Elias C. Benedict provides for legacies of $150,000 each for the Flower and Ophthalmic Hospitals, New York, and the Greenwich Hospital, Greenwich, Conn.

Phi Chi Medical Fraternity Convention.—The annual convention of the Alpha District of the Phi Chi Medical Fraternity will be held in Boston, Jan. 3 and 4, 1921, at the Fraternity headquarters of Delta Chapter, 144 Huntington Ave. The home of this Chapter is the medical school of Tufts College. The program will open with clinics by prominent clinicians at Massachusetts General Hospital, Boston City Hospital, Boston Dispensary, Carney Hospital, and the Salvation Army Hospital. A sight-seeing tour and visits to various medical schools and colleges of greater Boston will be conducted. Business sessions will be held each afternoon. A reception and smoker, followed by a banquet at the Hotel Vendome, will be given on the evening of Jan. 3.

The Automobile Death Rate During 1919.—According to figures recently given out by the Census Bureau at Washington, a total of 3,808 persons were killed in automobile accidents in the United States, or died as a result of injuries therefrom, during the last year. An automobile accident death rate of 14.1 out of every 100,000 of population was reported for 1919, an increase of 245 in the total number of deaths over 1918. In 1919 the rates for Kansas City, Mo., San Antonio, and Cleveland were much lower than for 1918, and give ground for the hope that with better regulation of traffic the rate in other cities may be lowered. Youngstown, Ohio, had the highest automobile death rate of any of the sixty-six cities on the list, namely, 28.5 per 100,000. New York had the largest total number of deaths, 780, an increase of 89 over the previous year, and a rate of 14.0 per 100,000. Chicago's total deaths numbered 328, with a death rate of 12.3.

The Radium Institute, located at 205 West Seventieth Street, New York City, has purchased five hundred milligrams of radium, which is to be used in equipping a new department of the institution.

Motor Cycles for Crippled Veterans.—A report from Melbourne, Australia, describes how, after many unsuccessful attempts had been made to solve the problem of locomotion for veterans who had lost both legs or one arm and one leg, the happy idea was conceived that a motor cycle sidecar might be altered so that it could be driven from the sidecar. This experiment has worked well and many generous citizens have donated motor cycles to the hospitals. The Red Cross Society has purchased twenty-five motor cycles and had them so altered as to be easily driven and controlled from the sidecar, thus enabling a number of crippled men to accept business positions.

Physician Arrested for Impersonating Health Officer.—A physician, practising in New York City, was recently arrested by an officer of the Sanitary Squad of the Department of Health, for impersonating an officer of the Department. He was released on bail and, in the Second District Magistrates' Court, was held for trial in Special Sessions. This physician had made a practice of visiting hotels and restaurants, representing himself as an officer of the Health Department, and demanding to see the food-handlers' certificates on file in these places. He then demanded that all those whose certificates were not on file be examined by him. The Sanitary Code provides that all food-handlers shall be examined, and shall not be permitted to continue work without a food-handler's certificate, but private physicians are not authorized to use this provision of the code to compel employers to have their employees examined. The Health Department permits private physicians to make these examinations, after written application has been made for such permission, and after authorization in writing has been sent to such physician.

The Brooklyn Cardiological Society.—The first meeting of the Brooklyn Cardiological Society was held at the office of the President, Dr. William J. Cruikshank, 102 Greene Avenue, Brooklyn, on the evening of Nov. 29, 1920. The following officers were elected: *President,* Dr. William J. Cruikshank; *Vice-President,* Dr. Glentworth Butler; *Secretary,* Dr. William W. Laing; *Treasurer,* Dr. Frank Bethel Cross. The following eminent cardiologists heve been elected to honorary membership in the new organization: Dr. Thomas Lewis, London, Eng.; Dr. Richard C. Cabot, Boston, Mass.; Sir James Mackenzie, London, Eng.; Dr. John Cowan, Glasgow, Scotland; Dr. Robert Hurtin Halsey, New York; Dr. William Thomas Richie, Edinburgh, Scotland, and Dr. William S. Thayer, Baltimore, Md.

The Union Health Center at 131 East Seventeenth Street, New York City, established by the International Ladies' Garment Workers' Union for the benefit of its members, to guard and promote the health of the workers in the garment industry, will be opened Saturday, Dec. 18, at 7.30 P. M. This is the first health center to be established on an industrial basis, and it is to serve the 100,000 workers of the International. Opening addresses will be made by Commissioner of Health Dr. Royal S. Copeland, Mr. Benjamin Schlesinger, President of the International Ladies' Garment Workers' Union, and other prominent persons.

More Soldiers' Hospitals Needed.—In his annual report sent to Congress on Dec. 11, Dr. Hugh S. Cumming, Surgeon General of the Public Health Service, asked for additional hospital facilities for the treatment of former service men and women,

and the appointment of an administrative head for the three agencies involved in rehabilitation work. Dr. Cumming points out that 20,000 patients were receiving hospital care from the Public Health Service last July 1, as compared with 2,000 in October, 1919, and urges Congress to make available funds for new construction. Under Dr. Cumming's plan the War Risk Insurance Bureau, the Federal Board for Vocational Education, and the Public Health Service should operate under an administrative head as coordinate and independent bureaus in close cooperation.

Health Department Makes Crusade Against Poor Food.—The work of the Bureau of Food and Drugs of the New York City Health Department shows that the adulteration and selling of food unfit for human consumption has assumed menacing proportions. The Department has 300 of these cases before the courts at the present time, and since the beginning of the year has collected $35,000 in fines for violations of the sanitary code affecting the adulteration, storage and sale of food products. Since Jan. 1, 1919, the Department of Health has condemned 17,256,004 pounds of foodstuffs. In order to put a check on these violations of the sanitary code thirty women of the sanitary reserves have been sent out to inspect the restaurants and food stores of the city.

Police Oppose Hospital Plans.—The rank and file of New York's police do not want the $5,000,000 police hospital that is being fostered by Police Commissioner Enright and the deputy commissioners. The Patrolmen's Benevolent Association have held a meeting at which they voiced their objections to such an institution. They state that there is not sufficient demand on the part of patrolmen to warrant the expenditure of such a large sum of money, and say that when ill they prefer to be taken to a hospital of their own selection near their homes. They do not wish to be regarded as a special class looking for or in need of charity. They prefer a salary in keeping with the work they perform and the risks they undergo out of which they may pay for proper treatment when sick.

Medical Society Elections.—THE NEW YORK SOCIETY OF MEDICAL JURISPRUDENCE, at its 313th regular meeting held Dec. 13, 1920, re-elected the officers which have served during the past year. These are as follows: *President,* Dr. Nathan B. Van Etten; *Vice-President,* Charles Oakes, Esq.; *Treasurer,* Charles P. Blaney, Esq.; *Corresponding Secretary,* Dr. Edward E. Hicks; *Recording Secretary,* Dr. L. Howard Moss.

Vacancy in Bureau of War Risk Insurance.—The United States Civil Service Commission announces an open competitive examination for Chief, Section of Medical Referees, at a salary from $4000 to $6000 a year. Vacancies in positions requiring similar qualifications, at these or lower salaries, will be filled from this examination. The examination is open to both men and women. The duties of the appointee will consist of supervision of the Section of Medical Referees engaged in examining case files and making disability ratings based upon the medical evidence contained in reports of physical examinations obtained from medical officers in the field and other routine work connected with the medical aspect of claimants. Applicants must have been graduated from a medical school of recognized standing, and have had at least five years' active practice, at least one year of which must have been spent in a modern well-equipped hospital. The receipt of applications closes Jan. 11, 1911. Applicants should apply for Form 1312, stating the title of the examination required to the Civil Service Commission, Washington, D. C.

Openings for Dietitians.—The United States Public Health Service announces that opportunities are now open in the hospitals of the Public Health Service for the employment as dietitians of many women graduates of schools of household economics who have had student training or hospital experience in civilian or army hospitals. Applications for appointment should be made to the Surgeon General, United States Public Health Service, Washington, D. C.

Obituary Notes.—Dr. RICHARD A. PYLES, a graduate of Washington University, in 1883, died after a long illness at his home in Washington, D. C., on Dec. 5, at the age of fifty-eight years. For many years he was surgeon in the District of Columbia National Guard and was major and surgeon in chief of the First District United States Volunteer Regiment in the Spanish war.

Dr. WILLIAM J. BURNETT, a graduate of the University of Michigan Medical School, in 1869, died at his home in Woodmere, L. I., on Dec. 6, at the age of seventy-seven. Dr. Burnett formerly practised medicine in Long Island City, and later became President of the Long Island City Savings Bank.

Correspondence.

INCONCLUSIVE EXPERIMENTS REGARDING DRUG ADDICTION.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—I have been greatly interested in an article appearing in the *Archives of Internal Medicine* of Sept. 15, 1920, by Pellini and Greenfield dealing with animal experimentation of an exceedingly technical nature. The authors have arrived at certain conclusions, which conclusions have been accepted by certain organs of the lay and semi-scientific press as ultimate and authoritative, and interpreted in certain of them to mean that opiate addiction has no physical basis but is simply a social vice or habit of indulgence.

The importance from a scientific point of view of accurate observation and critical analysis of deductions drawn from observed phenomena is axiomatic, and what is true from a scientific viewpoint *per se* is doubly true from a public health administrative viewpoint, epecially when dealing with a subject of such vital importance as that of narcotic drug addiction. Otherwise legislators, administrators, and the public may not be safeguarded against the possibility of hasty interpretation, misleading conclusion, and hence dangerous application.

In view of the immense amount of recorded data at variance with the conclusions of the authors, and the extreme caution manifested by most scientific men in interpreting any phenomenon observed in experimentation of an immunological nature, I feel that we should be extremely cautious in drawing conclusions from this single piece of work.

For the past nine or ten years I have been deeply interested in the subject of narcotic drug addiction, first taking this problem up as a public health activity while Health Officer of Jacksonville, Florida. Since then I have made more than one extensive review of the related literature and have followed very closely current work both clinical and experimental, and as one seeking information upon every angle of this important subject, I would much appreciate from you or your readers any data or discussion that may throw light upon this and the many other problems of the unsettled narcotic drug situation.

C. E. TERRY, M.D.,

Chairman, Committee on Habit-Forming Drugs, Food and Drug Section, American Public Health Association.

DARIEN, CONN.

RESPONSIBILITY OF THE STATE FOR DRUG ADDICTS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—It is a well-known fact that poor suffering drug addicts, in their intense desire to obtain drugs to the use of which they have become enslaved, will sacrifice anything, regardless of truth or loyalty, to further if possible the chance of an immediate and perhaps future supply of the narcotics they are hungering for, even though as a matter of fact their hopes for such supply are groundless. This serves to illustrate their entire irresponsibility as witnesses or as trustworthy citizens.

Therefore I maintain that any State which refuses or neglects to provide an institution or other means for the humane care and treatment of these unfortunates should be held accountable as an accessory to whatever misdemeanor or crime a drug addict may commit.

J. C. BATESON, M.D.

SCRANTON, PA.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, Nov. 20, 1920.

First Meeting of the London Association of Medical Women's Federation.—The first meeting of the above association was held on Nov. 9 last, Mrs. Fleming, M.D., being in the chair. Dr. Helen Chambers read a very interesting paper on cancer research in radiotherapy. She said in part that the treatment of malignant disease by irradiation could be considered from two aspects: (1) The physical conditions necessary to ensure that the cancer cell absorbs a dose of radiation sufficient to cause its death, and (2) the effect of irradiation treatment upon the general state of resistance of the patient to the growth of undamaged cancer cells. The first of these necessitated a detailed knowledge of the physical nature of the type of radiation used and the absorptive power of the tissues at different levels. It also called for a knowledge of the dose of radiation required to kill the cancer cell. This dose, the rad, had been determined for certain tumors by Professor Russ, and for others by Prince and Wood working under the Crocker Fund in New York. The second consideration, that of the production of immunity to malignant diseases, had been the aim of all research workers on cancer in the past. Largely as the result of work by Haaland it had been the general opinion that immunity to transplanted cancer in animals could be produced only by the absorption of living tissue, particularly by living cancer tissue. This outlook precluded the production of immunity as a practical problem of treatment. It had not yet been shown that immunity could be produced in spontaneous tumor-bearing animals. Dr. Chambers thought that there was no reason to believe that the reaction of human patients would differ materially from the reaction of animals to malignant disease. It had been shown by Contamin and later by Wedd, Morson and Russ, that the absorption of irradiated tumor tissue produced active immunity in animals. In that case the irradiated tissue which caused immunity gave no evidence of life after inoculation. On the other hand, if the irradiation had not been sufficient to prevent growth no protection was obtained. The antigen causing immunity could be regarded as a product of the damaged tumor cell, for actively growing carcinoma caused no protection; there was indeed some evidence that it caused increased susceptibility. All attempts to separate the antigen from irradiated carcinoma material had so far entirely failed; it was a body, or group of bodies, which is easily destroyed, and the conditions under which it exists are not yet known. The evidence indicated that it was desirable to treat cases of malignant disease first by irradiation of the primary tumor, whenever possible with a lethal dose to the tumor cells, and to follow this treatment by surgical operation.

The Venereal Problem.—The *Lancet* of this date refers to an article on venereal disease which appeared in the September number of the *International Journal of Public Health* from the pen of Mr. Walter Clarke, assistant editor of that journal and acting chief of the Department of Social Hygiene of the League of Red Cross Societies. Certain conclusions arise out of a careful perusal of Mr. Clarke's paper: (1) That although the bulk of legislation in the newer Anglo-Saxon communities, and notably Canada, South Africa, Australia, New Zealand, and the United States, is too recent to allow of passing a final judgment as to success, yet on the whole the working of compulsory notification is regarded as satisfactory; (2) the problem of prostitution has received elsewhere much more serious attention as a factor contributory to venereal disease than it has in Great Britain; but although there is need for the investigation of professional prostitution in Great Britain, difficulty is presented by the increasing prevalence of promiscuous intercourse in all classes of society. This phase of the problem may tax the diagnostic acumen of the most searching investigators; (3) the American Federation of Labor, assembled in convention, indorsed the efforts of the United States Public Health Service, co-operating with the various States, in combating the spread of venereal diseases, and called upon organized labor to assist in every possible way the eradication of these scourges of civilization. The writer in the *Lancet* expresses the hope that the labor party in this country will not do less towards the solution of a problem which involves

the life and happiness of all classes of the community.

The Tuberculosis Bill.—Owing to the opposition evinced towards bills recently brought before the House of Commons by the Ministry of Health, these bills have been deleted as to the obnoxious features or very considerably pared down. One of the last of the Ministry of Health bills to be "cut" was the Tuberculosis Bill. This is the bill which imposes upon county and county borough councils the duty of making provision for the treatment of tuberculosis in sanatoriums or other approved institutions. The bill also empowers these councils to provide and maintain village settlements for the benefit of persons suffering from tuberculosis, and their families. The village settlements and other proposals of a minor character are now to be dropped. The bill will as a result of this decision simply provide for the transfer of the duties of the insurance committees under the National Health Insurance Act, so far as they relate to the treatment of tuberculosis to these councils. The transfer was sanctioned by Parliament when the bill amending the insurance act was passed last year, and in its limited form the present measure is not likely to meet with much criticism from those who are resisting proposals entailing increased expenditure falling on either the rates or taxes.

Rates and Public Health.—A good deal of criticism has been leveled recently against the Ministry of Health, both in Parliament and outside, for the manner in which they are increasing the burdens on the ratepayers and proposing to further increase these burdens by far reaching schemes to ameliorate the health of the people. In his defense of the Ministry, of which he is the head, Dr. Addison the other day in an interview said that it was the fashion at the moment to attribute the large rate increases to the Ministry of Health. But the facts were these: By the assistance of the officers in eighteen typical boroughs in different parts of the country, there had been obtained recently an analysis of the causes of the increase in rates, and a return on this subject had been made to Parliament. The average increase in the rates in the pound during 1920-21 over those of 1918-19 was ten shillings and seven pence gross, or more than 100 per cent. Producing a table showing the items of increased expenditure attributable to the new services required by the Ministry of Health, and forming part of what is described as "new work" by the local authorities, Dr. Addison said it would be seen that increases of wages and salaries, with the added cost of materials and contracts, amounted to nine shillings and six pence half-penny out of the ten shillings and seven pence, while the whole of the "new work" was only responsible for four pence and three farthings. Dr. Addison pointed out that the new work included the construction of new roads, housing, extensions of hospitals and sanatoriums, the treatment of venereal disease, maternity and child welfare, and other items. Nearly all the increased expenditure arose from the fact that local authorities had found themselves obliged with all others, to pay a great deal more for everything they buy, and to make increases in wages and salaries to meet the increased cost of living. As to how far expenditure on health matters was justified the Minister observed that health was not always capable of monetary valuation, and often not of statistical computation in any form. However, there was one form of expenditure the value of which could be computed. The infant mortality rate was one of the most valuable and sensitive indices of the health of a community. The distressing revelations of the after effects of ill-nourished childhood in the C-3 class which formed the subject of much anxious comment during the war must not be forgotten. The promises of the future in this direction seemed to be even brighter than the achievements of the past. For if the returns for 1920 were taken the remarkable fact would be found that the infant mortality rate in each of the three completed quarters of the present year was the lowest on record. In 1911 the infant mortality rate for England and Wales in the second quarter was over 200 per thousand. The last quarter it had fallen to 65. The striking improvement during the past year was, of course, due to more than one cause, but it was certainly fair to say that it was in the main due to improved maternal nutrition and care, and to the improved quality and extent of the services of personnel, attention, and instruction, which had been afforded by the local authorities in their infant and child welfare schemes, with the active assistance of many patriotic outside bodies.

Dental Clinics for Adults.—Pending the adoption of a national dental scheme Sir Philip Sassoon, M. P., had inaugurated at Folkestone a dental clinic for adults which it is thought will demonstrate the possibility of securing the maximum of skilled dental treatment at the minimum of cost to all concerned. Under arrangement with the Folkestone Town Council, the clinic is situated in the same rooms as those used for the school clinic. Strict precautions will be taken so that the facilities offered by the clinic are not abused. On the other hand, in cases of real necessity, no man or woman needing treatment will be turned away because he or she is unable to pay.

Murder of a British Member of the Indian Medical Service.—Colonel Foulkes, I. M. C., was shot dead recently in his bungalow by a number of tribesmen, and his wife was seriously wounded.

LETTER FROM BELGIUM.

(From Our Own Correspondent.)

LIÈGE, November 6, 1920.

International Congress of Military Medicine and Pharmacy.—The Belgian Army Medical Staff has organized an international Congress of Military Medicine and Pharmacy to be held in Brussels in June, 1921. To it will be invited all physicians and pharmacists who served in the army of the allied and neutral nations. At the end of the great events which disturbed the nations of the world from 1914 to 1918, it will be interesting to review the work of the different sanitary services and to compare the various teachings, with the view to mutual benefit, and it will also be useful to make a permanent record of the advances in medicine made during the war, in order to render them of use in the future.

The following questions will be discussed: (1) The lessons of the war regarding the treatment of fractures of the extremities. (2) The antivenereal and antituberculous campaigns of the army. (3) The chemical and physiological study of the gases used in warfare, including the results of their action on the organism and the importance of the knowledge of these results in determining invaliditiy pensions. (4) The general organization of the Sanitary Service in the armies.

Subscriptions to the Congress, as well as communications and reports on the different questions above mentioned, should be sent not later than April 1, 1921, to the Secretary General of the Congress, Dr. Jules Voncken, Hôpital Militaire, Liège, Belgium. Each paper should be accompanied by a brief summary.

Cattle Plague.—The epidemic of cattle plague seems to be definitely at an end. The two or three centers of the disease which still exist in the northwest of the country are very evidently being extirpated. It was through prophylactic and collective hygienic measures that this plague has been overcome in spite of its terrible gravity. We may draw from this incident valuable knowledge for the prophylaxis of transmissible diseases in general. The success of a struggle against these epidemics rests upon the preventive measures instituted by an intelligent, instructed cooperation. Efforts in the line of preventive vaccination are perhaps destined to meet with greater difficulties, greater obstacles than are well-considered and energetic hygienic measures. The lesson of the cattle plague in Belgium is a striking example of this.

The Present Treatment of Joint Lesions.—Under this title, Prof. Willems has published in three successive numbers of *Liège Médical* (Organ of the Faculty of Medicine of Liège) a very detailed study of the treatment of joint lesions by immediate, active mobilization. He passed in review one by one, simple wounds of the soft parts of the joint and wounds with bony involvement, these two varieties of wounds being treated under two heads, whether they are sterile or infected. As might have been expected, this is a very clear and categorical review of a method of treatment of joint troubles which has already rendered great service. It should, however, be still further insisted upon. As Georges Gross has said in the notable treatise on Reparative and Orthopedic Surgery by Jeaubran, Ombrédanne, and Nové-Josserand, this method is undoubtedly the method of the future.

Treatment of Peritoneal Exudations by Ether.—In an interesting communication made to the Royal Medical Society of Gand, Dr. Colson reported favorable results obtained by the local use of ether in the abdominal cavity in cases of peritoneal infection. Of five cases operated upon in extremis, three recovered. The method consists of subumbilical median laparotomy and evacuation of the pus found in the abdominal cavity; then a second incision is made in the region of the appendix and finally a half liter of ether is poured into the abdomen. Two drains of moderate size are then inserted into the dependent portion of the abdomen and the patient is placed in Fowler's position. The fluid collects in the pelvis where absorption is at a minimum and pressure is greatest, owing to the weight of the intestinal coils. The postoperative treatment is the same as that ordinarily employed after abdominal section. The ether acts not only as a germicide but also as a heart tonic.

Treatment of Trachoma by Arsenobenzol.—Dr. Henri DeWaele has recently proposed the treatment of trachoma by means of arsenobenzol, this method being based upon the assumption that trachoma is due to the presence of a protozoon parasite. He reported to the Royal Academy of Medicine of Belgium some cases thus treated by means of an ointment of 1 per cent. of salvarsan.

Progress of Medical Science.

Boston Medical and Surgical Journal.

December 2, 1920, clxxxiii, 23.

1. Leucocytic Reaction in a Paratyphoid Dysentery and Following Vaccine Inoculations. Geneva Tryon.
2. The Combined Operative and Radium Treatment of Malignant Disease of the Nasal Accessory Sinuses. Harry A. Barnes.

1. The Leucocytic Reaction in a Paratyphoid Dysentery and Following Vaccine Inoculations.—Geneva Tryon, during an epidemic of dysentery in 1915 in the Boston State Hospital, conducted this investigation. The organism which caused the disease belonged to the paratyphoid enteritidis group, but could not be identified with any of the well known members. Clinically, the disease appeared in three forms: a dysenteric-pneumonic, a dysenteric, and a diarrheal. The duration of the disease was from five days to three weeks. The majority of the cases occurred among the old and feeble women patients in the Infirmary Department. Because of some isolated observations of a polymorphonuclear leucocytosis, it seemed worth while to study the leucocytic reaction more carefully, and during the seventeen months following the first outbreak of the disease several series of examinations were made. The leucocytic reaction consisted of a hyperleucocytosis, with the highest count rising but little above twice that of the normal count for the individual and a relative increase in polymorphonuclears at one or more periods during the following twenty-four hours, this relative increase not always being synchronous with the highest total count. The individuals chosen as normal cases in the series of examinations had no record of having had an attack of dysentery or diarrhea. In comparing the leucocytic reaction with the clinical history it was concluded: (1) That the stronger normal individuals show more reaction to subcutaneous injections of vaccine than the weaker ones who have had the disease and recurrent attacks. (2) That the leucocytic reaction for the individual is more marked during or immediately after an attack of the disease and diminishes with recurrent attacks, which corresponds to the clinical observation that the resistance of the individual to the disease is lessened by a previous attack. (3) The fact that there may be a polymorphonuclear reaction to a subcutaneous injection of vaccine, coincident with the cessation of a diarrhea would indicate the use of a vaccine therapy. In the few cases in which this treatment has been given the results have been favorable for a recovery from an attack. Detailed tabulations of the leucocytic reactions are given.

New York Medical Journal.

December 4, 1920, cxii, 23.

1. The Parathyroid and Convulsive States. Smith Ely Jelliffe.
2. More Adequate Provision for Epileptics. William T. Shanahan.
3. A Comparative Study of the Phenomena of Epilepsy. Chester A. Marsh.
4. Mentality in Epilepsy. Walter H. Kidder.
5. Epilepsy Treated with Luminal. Harvey M. Watkins.
6. Venesection: A Lost Art. David W. Kramer.
7. Practical Experience in the Training Treatment of Epileptics. T. E. Uniker.
8. Injections of Cerebrospinal Fluid in Cerebrospinal Fever. Navroji A. Cooper.
9. The Relationship Between Diseased Tonsils and Pulmonary Tuberculosis. William H. Rhodes.

5. Epilepsy Treated with Luminal.—Harvey M. Watkins reports some brief observations with luminal covering a period of three months during which time the drug was administered to 22 patients, no other medicine being used except an occasional laxative. Seven of the patients were of the idiopathic type, five were patients in whom the petit mal seizures predominated, two were status patients and the remaining eight were those in whom there was an equal distribution of grand mal and petit mal seizures. The method of administration was one and a half grains in tablet form twice daily, night and morning. It was found that luminal reduced the total number of convulsions in all classes sixty per cent., although a small proportion of patients had an increased number of convulsions during its use. It had practically no effect upon some patients, and about ten per cent. showed untoward symptoms from its use. It had all the bad effects of bromides with the exception of the rash. Cures are not to be expected as luminal is at best a palliative remedy; it is not virtually a specific. It must be used over a long period of time and continually, as once its administration is discontinued the epileptic habit returns with increased severity. Undoubtedly luminal serves a field in the therapeutics of epilepsy. It is worth a trial in every case but to determine its relative value it will be necessary to use it in a great number of cases and over a long period of time.

8. Injections of Cerebrospinal Fluid in Cerebrospinal Fever.—Navroji A. Cooper reports the case of a boy fourteen years old suffering from a severe form of cerebrospinal fever, with complete recovery from the malady as well as all its concomitant adverse symptoms, nervous, sensory, and muscular, under the injections of the patient's own cerebrospinal fluid. The case was very serious and of a severe form of cerebrospinal meningitis from the very beginning. The disease in its initial stage simulated rheumatism, but neither the salicylates nor other medication had any effect on its course. If anything, the condition went from bad to worse, a bronchopneumonia supervening. There was a distinctly good effect from the mixed influenza vaccine in the bronchopneumonic condition, but not on meningeal symptoms. After the administration of the vaccine and urotropin the cerebrospinal fluid was found sterile and clear. It is certain that both the vaccine and urotropin had no effect on his meningeal symptoms and fever. But the fever and meningeal symptoms abated gradually every day under injection of the cerebrospinal fluid. The patient's complete recovery was due to the injections of his own toxins contained in the cerebrospinal fluid without which, the author believes, the patient could not have made an advance toward such an uninterrupted and perfect recovery.

Journal of the American Medical Association.

December 4, 1920, lxxv, 23.

1. Blood Concentration Changes in Influenza, with Suggestions for Treatment. Frank P. Underhill and Michael Ringer.
2. The Roentgenologic Diagnosis of Gallbladder Lesions. Dudley Roberts.
3. Nontuberculous Lung Changes Following Pneumonia. Edward N. Packard.
4. Studies on Gastric and Duodenal Ulcer. A. C. Ivy.
5. A Critical Review of Five Hundred Cases of Gastric and Duodenal Ulcer. Elmer L. Eggleston.
6. Intubation and Visualization of the Duodenum with the Duodenal Tube: Diagnostic Procedure in Duodenal Ulcer and Periduodenal Adhesions: Summary of the Findings in Three Hundred and Sixty-one Established Cases. I. O. Palefski.
7. Plastic Surgery: Its Interest to the Otolaryngologist. Ferris Smith.
8. A Study of Mercury Injections by Means of the Roentgen Ray. H. N. Cole, Sydney Littmann and Torald Sollmann.
9. Indications for Spinal Drainage in Certain Mental Diseases: Preliminary Report of Manometric Readings, with Results of Treatment in Twenty-five Cases. Horace Victor Pike.
10. Milky Ascites in Hepatic Syphilis. H. W. Traub.
11. Diagnosis and Treatment of Amebic Abscess of the Liver. Tom S. Mebane.

2. The Roentgenologic Diagnosis of Gallbladder Lesions.—Dudley Roberts has secured his most satisfactory results with a fine focus gas or hydrogen tube, a plate target distance of from 28 to 30 inches, a small diaphragm and long cone giving an exposure field of only 5 or 6 inches. A parallel spark gap of 2½ to 3½ inches is regularly used, and a milliamperage of from 20 to 30 in the tube. Exposures are made with the patient prone on the cassette during forced, sustained expiration. The effort is made to under expose the film slightly and push the development short of causing fog or stain in the effort to bring out detail. Statistical studies of diagnostic results are extremely unsatisfactory, as chance enters so largely, particularly if the series of cases is small. From his experience the writer draws the following conclusions: (1) The roentgenologic diagnosis of gallstones and the dilated gallbladder with a small percentage of failures is possible at the present time; (2) negative diagnosis has a value that is proportionate to the intensity of detail and sharpness of image secured in the given case. Negative diagnosis has very little value in subjects so heavy that satisfactory roentgenograms cannot be made. Subjects of slight or medium body thickness can be roentgenographed with an intensity of detail that justifies an experienced interpreter in a negative diagnosis of stones or a dilated gallbladder; (3) the roentgenologic diagnosis of gallstones necessitates such an expenditure of time and money in the taking of satisfactory exposures, and so much experience in the interpretation of intensely detailed roentgenograms, that it is not at present a safe and practical method of diagnosis for general adoption. Ten or fifteen per cent. of stones can be plainly visualized even by an extremely poor equipment and technique, but under such conditions the importance to be attached to negative findings is negligible; (4) gallbladder roentgenograms of satisfactory detail can be made only with direct rays of low penetrating power, and duplitized films with fast screens; (5) an insuperable limitation of roentgenologic diagnosis of gallbladder lesions is the apparent impossibility of securing roentgenographic evidence of chronic cholecystitis without dilatation or of new growth of the gallbladder and biliary ducts.

3. Nontuberculous Lung Changes Following Pneumonia.—Edward N. Packard holds that on account of the recent high incidence of pneumonia, a great many chronic lung changes will be encountered in the next few years. The signs and symptoms of the compensatory and degenerative changes following unresolved pneumonia often mislead in diagnosis. The apical findings in an emphysematous chest often mislead—sometimes simulating a tuberculous lesion, sometimes masking a real tuberculosis. With the overgrowth of fibrous tissue in the lung there is also bronchial dilatation and frequently infection (chronic bronchitis, bronchiectasis). These changes, unlike tuberculosis, are almost always basal. Packard agrees with Lawrason Brown in the belief that abnormal physical signs at one apex should be considered as due to pulmonary tuberculosis, until proved not to be; while those at the base should be looked upon as not tuberculous until definitely proved so.

5. A Critical Review of Five Hundred Cases of Gastric and Duodenal Ulcer.—Elmer L. Eggleston excludes from the five hundred cases reviewed cases which occurred prior to 1912, being convinced that before this time the study of ulcer was not made in conjunction with the roentgenologist, and that the possibility of error in diagnosis was so great as to rob the statistics of much of their value. Of the 500 cases, 415 were classed as duodenal and 85 as gastric. From this review the writer concludes: (1) If peptic ulcer, particularly duodenal ulcer, is observed early in its history, and if the patient will submit to a carefully planned course of treatment for a reasonable time and will follow up this treatment by a carefully regulated dietary regimen over a period of some months, one can be sanguine of obtaining complete cure. (2) In uncomplicated cases of long standing, proper medical treatment provides relief in at least 70 per cent. of the cases. (3) In the great majority of cases in which the symptoms disappear during a course of medical treatment and there is later a return of the symptoms, the fault is due to dietetic carelessness. (4) Surgical treatment is to be preferred for the cases complicated by pyloric stenosis not yielding readily to medical measures, cases showing repeated hemorrhage, penetrating or perforating ulcers, and for cases in which a prolonged medical course is impossible. (5) Simple gastroenterostomy fails to provide permanent relief in a con-

siderable number of cases, and should be supplemented by resection of the ulcer, cauterization, infolding or partial gastrectomy.

The Lancet.

November 13, 1920, cxcix, 20.

1. Lectures on Mental Defect and Criminal Conduct. Sir Bryan Donkin.
2. Pregnancy and Latent Syphilis: I. The Interrelationship Between Pregnancy and Syphilis. R. A. Hendry. II. Spirillolysis and Its Causation. Amand Routh. III. Results of Three Years' Treatment of Syphilitic Mothers and Babies. John Adams.
3. Experiments with Cerebrospinal Fluid. J. E. R. McDonagh.
4. Treatment of Diphtheria Carriers with Detoxicated. Klebs-Loeffler Vaccine. A. Reith Fraser and A. G. B. Duncan.
5. Further Experiments for Preservation of Lemon Juice. P. W. Bassett-Smith.

2. Pregnancy and Latent Syphilis.—R. A. Hendry, discussing the interrelationship between pregnancy and syphilis, reached the following conclusions: (1) That the clinical evidence of syphilis is unreliable; (2) that the Wassermann reaction is the test by which, at present, the diagnosis must usually be made; it must be borne in mind that a "negative" or a "slightly positive" reaction may accompany syphilis during pregnancy, and, moreover, that a "positive" may occur in a nonsyphilitic individual; (3) that the examination of stillbirths furnishes reliable, but, at present, insufficiently available, evidence; (4) that the institution of mercurial treatment before the pregnancy justifies a favorable fetal prognosis; (5) that the prognosis when treatment is begun during the pregnancy depends on the unknown and already present degree of infection of the fetus.

Amand Routh, discussing spirillolysis and its causation, recalls the fact that when the *Spirochæta pallida* was discovered it was found to be larger than the spermatozoon's head, and was a large infecting agent relative to the mature ovum. If an ovum was able to be infected at the moment of fertilization via the parental semen, or by spirochætes in the mother's tissues previous or subsequent to fertilization, it was impossible to understand why such a large infecting organism, capable of unlimited multiplication, did not invariably destroy the delicate embryo, or to explain how such infected fetuses ever survived their birth—to explain, in fact, how the infection of syphilis tended to become latent during pregnancy. It is known now, he points out, that the spiral nature of the mature spirochæte is able, under the action of various substances, or even by a spontaneous spirillolysis, to break up into "granules," generally by a transverse division. The many interesting facts brought out in this connection by Noguchi and others make it probable that the spirochæte may become granulosed during pregnancy, and it also makes it possible that in some cases infection may be by means of the granules and not by the mature organism. The further problem is to determine the agents which nature has provided for this spirillolytic action on the *Spirochæta pallida* during pregnancy.

It is evident that it must be some agent which is present very early in pregnancy, in order to prevent almost immediate destruction of the fertilized ovum infected by the *Spirochæta pallida*. Such agency must also continue in action during the pregnancy, or there would be no chance of a child being born alive or of surviving in utero long enough to be treated through its mother. The writer had proposed, as early as 1914, that the chorionic ferments or "syncytial toxins," or their derivatives, have this granulosing power. These ferments of the chorionic villi are intended for trophoblastic purposes to facilitate the burrowing of the fertilized ovum into the uterine mucosa at the placental site. Any excess of the syncytio-toxins is apparently controlled or neutralized by so-called syncytio-lysins, as a result of the trophoblastic action on the maternal tissues. Failure of such control may be the cause of the various serious autoxemias of pregnancy. If the chorionic ferments are able to exert a destructive or digestive action on the local, probably prepared maternal tissues, it would probably be able to act chemically on the spirochæte, and make it break up into granules. The resulting granules, in Routh's opinion, are kept biologically inactive by the ferments and remain "latent," so that they do not "sprout" or multiply in the tissues of the maternal or fetal portions of the placenta so long as the chorionic ferments are present and no mature spirochætes are able in an ideal case to pass from mother to child, or vice versa, and the infection would remain latent during the pregnancy. After pregnancy, Routh says, the chorionic ferments gradually disappear from both the maternal and the fetal tissues, so that the biological activity of the granules may then be resumed and the mature organism may become developed.

John Adams, giving the results of three years' treatment of syphilitic mothers and babies, summarizes by saying that a pregnant woman with syphilis, whether active or latent, if treated for three or four months before her confinement, will probably be delivered of a healthy child at full term.

4. Treatment of Diphtheria Carriers with Detoxicated Klebs-Loeffler Vaccine.—A. Reith Fraser reports three cases showing the results obtained. He holds that the length of time during which these cases were carriers of virulent bacilli is important. Since vaccines when given in sufficient doses can have such a marked effect on the virulence of the organism or on the organism itself in such difficult cases they will certainly cure convalescents where resolution is delayed. It is generally conceded that the convalescent with an otherwise unhealthy nasopharynx is most prone to become a chronic carrier. Here is a point in common in the three cases reported: In the first a nasal polypus, in the second congenital syphilis, and in the third a gunshot wound. The first had an attack of diphtheria, while the other two had not. In spite of these ideal conditions for bacterial growth, disappearance of the virulent diphtheria bacilli followed detoxicated vaccine treatment. Other organisms with the same morphology, but nonpathogenic, could still flourish on the site, as a mixed vaccine was not used. Exactly what determines the chronicity of carriers is not yet by any means clear. We are still unaware of the mechanism whereby the convalescent with delayed resolution becomes free. In spite of a multitude of varied efforts, no certain means of clearing up chronic carriers has yet been evolved. The cure of carriers is the most hopeful form of prophylaxis. One would expect the vaccine to confer more or less protection on those exposed to infection. Here one has, then, a method of promising efficiency in dealing with contacts, convalescents, and carriers. Antitoxin protects only from the toxin produced by the living Klebs-Loeffler bacilli in the tissues. The vaccine prevents the growth and life of the bacilli. In a case of diphtheria both vaccines and antitoxin should be given. The advantages of dosage allowed by employing detoxicated vaccine must not be overlooked.

Le Bulletin Médical.

November 6, 1920, xxxiv, 52.

Thornwaldt's Disease.—Baillet gives a brief account of this affection. The discoverer, a practitioner of Dantzig, first reported the new malady in 1887. The latter was a suppuration which apparently was seated in Luschka's canal in the pharynx. The said canal was first mentioned by Mayer in 1842, Luschka's account, which was much more detailed, having been published in 1868. In the same year von Troeltsch described a cyst of this cavity. Thornwaldt's contribution came next in order. The so-called "pocket" is in reality a cul-de-sac, a canal which measures about 1½ cm. in depth, which is very difficult to disinfect—hence the tendency to chronic recurrent suppuration. Naturally the condition shades into inflammation of the pharyngeal tonsil and to suppuration in the ethmoidal and sphenoidal cinuses, so that diagnosis during life is very difficult. The question is largely an academic one, as the treatment involves curetting the nasopharynx. If the condition persist the pathologically altered canal of Luschka should in theory be extirpated, but this is said by Ballenger of Chicago to be impracticable in a part of the cases. It may be undertaken in two stages. By means of curved scissors the adenoid tissue is first excised; one blade is then inserted into the canal and used as a curette to destroy the pyogenic membrane. The author believes that a very small curette should answer as well.

Book Reviews.

AN ATLAS OF THE PRIMARY AND CUTANEOUS LESIONS OF ACQUIRED SYPHILIS IN THE MALE. By CHARLES F. WHITE, O.B.E., M.B., Lecturer on Venereal Diseases, Rochester Row Military Hospital, and W. HERBERT BROWN, M.D., Physician for Diseases of the Skin, Victoria Infirmary, Glasgow. New York: William Wood & Company, 1920.

THIS atlas comprises 79 ordinary photographic representations of disease with four colored plates. The six chapters are devoted respectively to primary syphilis, extragenital chancres, non-syphilitic or soft sores, secondary or cutaneous syphilides, late or tertiary syphilides and common skin-diseases frequently mistaken for syphilis. Since the highest function of an atlas must be to teach differential diagnosis, the present volume can be specially recommended to the general practitioner.

MEDICAL RECORD VISITING LIST OR PHYSICIAN'S DIARY FOR 1921. Revised. New York: William Wood and Company.

THIS well-known visiting list appears in good time; it contains the customary blank pages for names of patients with date of attendance, and special blanks for consultation practice, obstetric engagements and practice, vaccinations, register of deaths, addresses of patients and of nurses, and cash account. At the beginning of the volume there will be found the usual miscellaneous information, such as tables of dosage and of date of labor, treatment in emergencies, etc. The arrangement of the volume is all that can be desired; its size and appearance are also attractive.

THE TOPOGRAPHICAL ANATOMY OF THE LIMBS OF THE HORSE. By O. CHARNOCK BRADLEY, M.D., D.Sc., M.R.C.V.S., Principal of the Royal Veterinary College, Edinburgh. New York: William Wood & Company, 1920.

THIS little volume comprises 172 pages and 115 illustrations. The latter include no radiograms but are very elaborate and exhaustive and prepared from original dissections. The seven chapters comprise as subjects the thoracic limb, hoof and contents, arteries of thoracic limb, nerves and blood supply to the muscles of the same, the pelvic limb, arteries of pelvic limb, nerve and blood supply of the muscles of the same. The blood vessels and the muscular insertions on the bones are shown in colors.

THE THEORY AND PRACTICE OF MASSAGE. By BEATRICE M. GOODALL-COPESTAKE, Examiner to the Incorporated Society of Trained Masseuses, etc. 2nd Edition. New York: Paul B. Hoeber, 1919.

THIS book has 265 pages and 67 illustrations. The number of chapters is 23, arranged in three sections devoted respectively to general principles of massage, massage in surgical conditions and in medical conditions. Aside from neuro-muscular affections, fractures, and dislocations, massage is indicated in affections of the abdominal viscera, in arthropathies including acute rheumatism, in circulatory stasis and in pregnancy. A chapter is devoted to the after-treatment of war injuries.

PHYSICAL RECONSTRUCTION AND ORTHOPEDICS. By HARRY EATON STEWART, M.D., Captain Medical Corps, U. S. Army, Division of Orthopedics; Assistant Director, Section of Physiotherapy, Surgeon-General's Office; Instructor in Medical and Orthopedic Gymnastics and Massage, New Haven Normal School of Gymnastics; Attending Surgeon, New Haven Orthopedic Dispensary; Formerly Instructor in Corrective Gymnastics, Teachers' College, Columbia University. Authorized for publication by the Surgeon-General of the U. S. Army. 67 original illustrations and two diagrams. New York: Paul B. Hoeber, 1920.

RECONSTRUCTION has become the watchword of the hour, and this volume is one of the forerunners of what will become, we predict, a valuable literature. The author has devoted the first third of the book to physical reconstruction, and the other two-thirds to orthopedics. His remarks on the use and abuse of exercise are good. Massage is fully dealt with. Vocational therapy is only lightly touched and in his suggested prescription blank for its subjects he uses the term "functional neurosis," which is tautological, and "insanity," which is undesirable. His discussion of orthopedic conditions consists of a brief description in each case followed by an account of the exercise recommended. The chapter on foot strain is especially valuable, dealing with flat foot, bunions, corns, etc. Many pictures illuminate the text, and the work as a whole will be found of great value in dealing with a class of patients who deserve our utmost attention.

UNTERSUCHUNGEN ÜBER DIE MYELOMKRANKHEIT. Von ARVID WALLGREN. Upsala: Almquist & Wiksell, 1920.

THIS Swedish work appears also or perhaps solely in German text and is based on studies made in the University Medical Clinic and Pathological Institute. The chapters are devoted to etiology clinical symptomatology, blood changes, Bence Jones's albumins, general and visceral symptoms, autopsy finds, histology, the myeloma cell, alternative of local tumor or systemic disease, clinical diagnosis, prognosis and treatment, and case histories. The latter number 14, and but one patient still survives. There are 17 microphotographs. The monograph is a most thorough one.

BACKWATERS OF LETHE. Some Anesthetic Notions. By G. A. H. BARTON, M.B. London: H. K. Lewis & Co., Ltd., 1920.

FOUR essays in this small volume are devoted respectively to chloroform, alkaloidal anesthesia, gas anesthesia, and modern methods. The essay entitled *arma virumque cano* deals with apparatus; that on "the haven" is devoted to the anesthetic sequences used by the author, together with his special apparatus, while "schools and rapids" deals with the disturbances of anesthesia. The title of the book and of several of the essays are illustrations of the author's aim to infuse a little "jazz" into a dry subject.

HANDBOOK OF ANAESTHETICS. By J. STUART ROSS, M.B., Ch.B., F.R.C.S.E., Lecturer on Practical Anæsthetics, University of Edinburgh. With an introduction by HY. ALEXIS THOMSON, C.M.G., M.D., F.R.C.S.E., and chapters on Local and Spinal Anæsthesia by WM. QUARRY WOOD, M.D., F.R.C.S.E., and upon Intratracheal Anæsthesia by H. TORRANCE THOMSON, M.D., F.R.C.S.E. Edinburgh: E. & S. Livingstone, and New York, William Wood & Co., 1919.

THIS little volume contains 54 illustrations and its 214 pages of text comprise 21 chapters, some of which are as follows: Asphyxia or anoxemia, the shock of anesthesia, nitrous oxide, nitrous oxide and oxygen, ether, intratracheal ether, ethyl chloride, nitrous oxide and ethyl chloride, chloroform, chloroform and ether, accidents of anesthesia, sequelæ of anesthesia, choice of anesthetic, preparation of patient, posture of patient, and others indicated in the title page.

THE NEW PHYSIOLOGY IN SURGICAL AND GENERAL PRACTICE. By A. RENDLE SHORT, M.D., B.S., B.Sc. (Lond.), F.R.C.S. (Eng.), Examiner in Physiology for the F.R.C.S.; late Hunterian Professor, Royal College of Surgeons; Senior Assistant Surgeon, Bristol Royal Infirmary; Lecturer on Physiology, University of Bristol. Fourth edition, revised and enlarged. New York: William Wood and Company, 1920.

THE first edition of this little book appeared in 1911, and at once made a name for itself as a work of unusual merit. Each revision has enhanced its value, and these revisions have been so thorough that but little now remains of the original work. In the present edition the chapters on food deficiency, the blood and the spleen, surgical shock, the spinal cord, and the functions of the cerebral cortex are almost new; there is a new chapter on the heart; the chapter on digestion contains important additions; and almost every chapter bears the marks of careful revision. For students who have finished their work in physiology, and for practitioners who wish to see the value of much of the newer work on this subject, this book can be cordially recommended. The book is entirely practical and is, also, very readable.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON MEDICINE.

Stated Meeting, Held October 19, 1920.

DR. CARY EGGLESTON IN THE CHAIR.

THE program of the evening was contributed by the staff of the New York Hospital.

Report on Artificial Pneumothorax.—Dr. WILLIAM R. WILLIAMS made this presentation, in which he stated that pneumothorax as a therapeutic measure had been employed a number of times at the New York Hospital, though it had not been considered the treatment of choice. It was indicated in pulmonary tuberculosis, where it had been resorted to in patients who could not or would not go away, or who were too far advanced in the disease to be admitted to a sanatorium. They had not employed it in generalized tuberculosis, but only in cases in which the lesion was chiefly unilateral—and one did not often find strictly unilateral lesions in far advanced cases. The chief symptoms for which pneumothorax was indicated were excessively large cavities, excessive coughing or excessive hemoptosis; it was employed also in abscesses of the lung, with or without tuberculosis. In each of these groups they had utilized the procedure. The gas used was nitrogen, procured in a tank, under rather high pressure. Nitrogen was used in preference to oxygen because it was not absorbed as rapidly as oxygen. The essential points in the apparatus were measure of volume and pressure of the gas and a water manometer to indicate intrapleural pressure. A rubber tube and a hollow needle completed the apparatus necessary to perform artificial pneumothorax. The Robinson apparatus, which provided all these features, had been used, and had been found very satisfactory. Though there was no rule as to the site of the puncture, they had preferred the posterior portion of the lung, either in the axillary region or further back toward the spine. They employed local anesthesia and introduced the needle very carefully and slowly to avoid pleural shock. In introducing the needle the first thing to determine was when its point was in the pleural cavity. When the needle was in the pleural cavity the manometer showed rhythmical respiratory excursions, usually measuring from 2 cm. to 8 cm. negative pressure, with the water manometer. When the pressure became positive they ordinarily stopped the introduction of gas. The amount of gas introduced at first was from 200 c.c. to 500 c.c., though under special conditions one might use twice that much. The interval between injections was from two to five days at first; later it might be prolonged to a week or even longer. The *x*-ray had been used as a guide to indicate the progress being made, to show how extensively the lung was displaced, and to give evidence of adhesions when these were present. If the adhesions did not yield at all the operation was not repeated many times, but was usually stopped after two or three injections of the gas. It sometimes happened, in trying to introduce the gas, that so far as could be ascertained from the readings of the manometer, one could not enter the pleural cavity, and in those cases they did not introduce gas. Three or four attempts to find the pleural cavity at one seance was quite enough. The unfavorable results sometimes encountered with artificial pneumothorax were those associated with paracentesis, and these symptoms were considered as indications for stopping introduction of gas. Rarely there were the more serious accidents of shock and collapse, which had to be guarded against by care in technique. Sometimes the patient's temperature showed a slight increase for a day or two. One accident that might occur was emphysema into the mediastinum sufficiently extensive to cause death. Most of the patients in whom this procedure had been employed were extremely ill and the favorable results looked for were a decrease or cessation of cough, a fall in temperature and a decrease in expectoration, together with an improvement in the patient's general condition. They had frequently found these results very generously shown. They had had 20 cases in which patients suffering from pulmonary tuberculosis where the indications mentioned had been regarded. One of these was practically well. She had received 17 injections of gas and her weight had increased from 90 to 124 pounds. She had been followed for two years, was free from symptoms and was back at work, though he would not say that she was cured. Dr. Williams cited a number of cases, each with unfavorable prognosis under any method of treatment, which showed marked improvement under this treatment. Among these patients was a young man who, following artificial pneumothorax, was considered to be in very good condition. He was drafted into the army, and though the draft board was told that he had been subjected to pneumothorax they paid little attention to the statement. He was sent to camp, where he had to do some fairly hard work. After a few weeks he broke down, developed fever and cough, was kept in the hospital three or four weeks, and then was discharged with active tuberculosis. He came back quite ill and showed no improvement after that time. Four of the cases in this series showed such tight adhesions that attempts at pneumothorax were abandoned. Two of the series developed pyopneumothorax. One of these had received nine injections. As soon as the patient developed distinct pus the injections were abandoned, and he was sent to the country. He still had some pus in the chest but was feeling very well. One patient died as the direct result of the operation. They had successfully injected the gas on previous occasions. On this occasion the first attempt failed. A second attempt was made but did not succeed. The patient suddenly went into collapse, became comatose, had tonic spasms, his heart became rapid and weak, and he died about three hours after the operation. At autopsy it was found that the lung on which they were operating was adherent everywhere; at the point of puncture there was an ecchymosis on the pleural surface of the lung, apparently where the gas was admitted at the last puncture. There was a large cavity in the right upper lobe. There was no evidence of embolism, thrombosis or hemorrhage in the head. This accident was due, presumably, to some error in technique, but he was unable to offer a satisfactory explanation. In all the other cases there was a distinct subjective improvement following the production of artificial pneumothorax. The patients said they felt distinctly better and returned, asking to have the pneumothorax repeated. This, however, did not mean that they were all on the highway to recovery. He would not use this procedure as the method of choice, because he thought it much better to send the patients out of town and treat them under more favorable surroundings than were afforded in city hospitals. They had had seven cases of tuberculosis with pleural effusion, and had found at the end of three or four weeks, after giving two or three injections of gas, that the pleural effusion disappeared. They had also had several cases of lung abscess following pneumonia in which they used pneumothorax. All were subjectively benefited, but there was only one who was really cured. In pleural effusion without tuberculosis practically all the fluid could be removed without distressing the patient, and as the gas was slowly absorbed the patient gradually adapted himself to the changed pressure without discomfort. With reasonable care the danger in artificial pneumothorax seemed to be comparatively slight.

Dr. ALFRED MEYER said he would like to ask what brilliant draft board it was that passed a man as fit for service who had been subjected to artificial pneumothorax. There was a great difference in the way in which local anesthesia was administered. He had been greatly shocked at what might justly be called the brutal way in which patients were put on the table by some and the trocar introduced without any anesthesia at all, and without a re-examination. He did not think this indicated that the man doing the work felt his responsibility. In employing local anesthesia one must do more than merely produce anesthesia of the skin. Whether using adrenalin chloride, cocaine, or any other local anesthetic, the agent should be introduced drop by drop, deeper and deeper, until one reached the pleural cavity, and a few drops should be left in the pleural

cavity. One should then wait a few minutes until the anesthetic effect had been produced. That was the logical method of anesthesia and the only one he had used. He had known of three sudden deaths from the mere exploratory puncture of the chest, two of which occurred in hospitals in this city. He would never permit the puncture of a chest without local anesthesia and he had fortunately never had a sudden death from this procedure. No one should undertake this work without a manometer as a guide, both as to whether the pleural cavity had been entered and as to the amount of pressure of the gas. There should be a standardized method of reading the manometer. It was well to remember that as the water in the manometer stood at the zero point when at rest, when variations occur, the level will be the same distance above the zero mark on one side as it is below the zero mark on the other—in other words, the actual hydrostatic pressure, whether positive or negative, is obtained by doubling the reading on one side. It was a good rule never to have positive pressure in the early stages of the treatment. It should be remembered that one could never tell the exact condition of a lung, no matter how skilful one might be, and hence in the beginning of a treatment one should go very slowly and feel one's way, going from negative pressure slowly up to positive in successive inflations. In cases of severe hemorrhage one should be very certain that the compression was being made on the side from which the hemorrhage came, and in those cases one had to make positive pressure at the first sitting. With reference to the number of exploratory punctures, the physical and radiographical examination should be an indication, and every man contemplating performing pneumothorax should have a primary and secondary choice as to the location of puncture. He had heard of a man who made seven attempts in a first treatment. There should be a limit to the number of attempts made and certainly seven was away beyond a reasonable limit. He agreed with Dr. Williams that three or four punctures for locating the pleural cavity were quite sufficient for a primary pneumothorax. Personally, he had never made more than three attempts. Why was it that with some operators effusion and pyothorax were so frequent and with others so rare? He had a suspicion that in some instances the instruments were all put in alcohol and that during their use some alcohol was introduced into the pleural cavity; perhaps this was responsible for the effusion. Another possible factor was the high pressure, which might stretch adhesions to the extent of causing rupture, infection and effusion. Certainly the reason for the frequency of effusion in the experience of some and the infrequency in that of others must be sought in the technique. Dr. Meyer had been doing substitutive pneumothorax. He had employed this measure in hemothorax in leucemia and in carcinoma of the pleura. He substituted nitrogen for the fluid withdrawn. One patient with carcinoma whom he had treated in this way had obtained so much relief that she had begged for it.

Dr. MAURICE FISHBERG had been keenly interested in the patient mentioned by Dr. Williams who had died soon after the attempt to produce pneumothorax. He had had over one hundred cases under his care, and had not seen a fatality due to this procedure. He felt thoroughly convinced that if the technique were followed correctly there would be no such fatalities. He felt sure that there was some fault in the technique inasmuch as four previous punctures were made without causing any alarming symptoms. At autopsy the pleura was found completely adherent. It was possible that during the first four punctures the gas went into a bronchus and out of the mouth. It would seem that physical diagnosis or the radiographic examination or both, would have shown that in this case a second puncture should not have been made. The ecchymosis showed that the needle had entered a blood vessel. Those doing this work were careful not to introduce gas until there was a negative pressure of 8 to 10 cm. Dr. Fishberg said he had performed this operation more than a thousand times, in some cases extending over three, four or five years. It was true nitrogen was not as quickly absorbed as oxygen. At present they were using air for the reason that investigations had shown that within twenty-four hours the gas in the pleura was of the same composition as regards the proportion of oxygen and nitrogen irrespective whether atmospheric air was used or nitrogen. It was not necessary to use nitrogen and the use of atmospheric air saved trouble and expense. Some workers said they had only 5 per cent. of hydro- or pyo-pneumothorax, while others reported 50 or 75 per cent. effusions, 10 to 30 per cent. of which were purulent. When a patient got a purulent effusion the prognosis was exceedingly grave, though he had had under observation one patient who had lived over two years after developing pyopneumothorax. Five years ago, Dr. Fishberg recalled, he had said that pneumothorax was suitable to only 5 per cent. of cases with pulmonary tuberculosis, and to-day he could say that that 5 per cent. did better with pneumothorax than if pneumothorax had not been applied. At the Montefiore Hospital they made it a practice to keep patients on whom pneumothorax had been performed in the institution, and under observation as long as was necessary, even for several years. Still of many of them who were followed up, it was found that the majority had died, or remained sick, so that it was rather discouraging. The pneumothorax treatment of tuberculosis might be compared to the radium treatment of cancer. It was often encouraging when one took a tuberculosis patient with a temperature of 103 or 104 deg. Fahr., and introduced gas, to find within a week that the temperature had dropped to normal, remaining down perhaps three or four months. But in three, six, eight or twelve months, 50 to 75 per cent. would develop effusion. He could scarcely help questioning the accuracy of reports that showed only 5 per cent. effusions. As to the case that was accepted by the local draft board, they had had one man who was summoned from the hospital with a pyopneumothorax and was examined by the local draft board and accepted for service. They had made an affidavit at the hospital that he had been subjected to pneumothorax and with difficulty had succeeded in having the man discharged; but it took one month to get him out of the army, even with his pyopneumothorax.

Dr. WILLIAMS, in closing, said the local board was very fallible, but sometimes pneumothorax cases showed very few signs. What he resented was that they did not accept the statement of an accredited hospital. As to the fatality, he believed there was an error of technique but he did not know what it was; they thought all precautions against accident had been taken. The patient had had gas successfully introduced on previous occasions. There were some bands of adhesions, though, as the *x*-ray showed, they were justified in introducing more gas and collapsing the lung further. It was not an unusual experience to find adhesions that were gradually separated until satisfactory collapse of the lung was obtained. All were agreed that every possible precaution against accident should be taken; it was agreed also that this was a legitimate procedure for cases which otherwise would be almost hopeless.

Report on Three Cases of Splenic Anemia Treated by Splenectomy.—Dr. JOSEPH C. ROPER presented this report, in which he stated that one of these patients had been operated on twelve years ago and the other two five months ago. The first patient was admitted to the hospital at the age of 6 years, with a three years' history of malaria. The findings of importance were that the liver was 8 cm. below the costal margin; the spleen 14 cm. below the costal margin; erythrocytes, 2,336,000; leucocytes, 8,100; hemoglobin, 45 per cent.; normoblasts, 5,600, and megaloblasts, 1,200. Following operation the blood count was as follows: erythrocytes, 4,100,000; hemoglobin, 49 per cent.; leucocytes, 16,000; normoblasts, 64,000. Two years later the erythrocytes were 4,818,000; hemoglobin, 64 per cent.; leucocytes, 8,000; normoblasts, 1,000. Six years after the operation the erythrocytes were 2,640,000; hemoglobin, 56 per cent.; leucocytes, 17,000; normoblasts, 1,000. The fragility test six years after operation showed hemolysis beginning in 0.45 per cent. sodium chloride and complete in 0.25 per cent. sodium chloride. The spleen after removal measured 20 by 13 by 8 cm. and weighed 1420 grams. The capsule was smooth and the cut surface uniformly dark brown, showing no gross evidence of trabeculæ or follicles. Microscopically there was dif-

fuse connective tissue increase with almost no lymph tissue recognizable; only an occasional clump of lymphocytes; no structures resembling follicles; many cells with partly granular scanty cytoplasm and large oval or globular, pale-staining vesicular nuclei; many cells with eosinophilic granules and few with basophilic. The diagnosis was splenomegaly due to myeloidization. The other two patients were brothers 4 and 2 years of age, with negative family history. The older child had a history extending over two years, the younger over one year. The principal symptom was a moderate degree of jaundice, slowly increasing anemia and weakness, and increasing size of the abdomen. The four-year-old child showed on admission 2,500,000 erythrocytes, 17 per cent. hemoglobin, 9,000 leucocytes, 4,000 nucleated erythrocytes. Two days after splenectomy there were 3,600,000 erythrocytes, 16 per cent. hemoglobin, 20,00 leucocytes, 102,000 nucleated erythrocytes. Four days post-operative there were 3,280,000 nucleated erythrocytes. Seven weeks post-operative the blood showed 2,840,000 erythrocytes, 32 per cent. hemoglobin, 24,600 leucocytes and "many" normoblasts and megaloblasts. This child was transfused before splenectomy. Two days after operation the blood showed 5,000,000 erythrocytes, 43 per cent. hemoglobin, 75,700 leucocytes, 429,600 nucleated erythrocytes. Four weeks later there were 350,000 erythrocytes, 35 per cent hemoglobin, 30,000 leucocytes and 143,000 nucleated erythrocytes. The donor's cells were still easily distinguished from the patients in the last examination. Fragility tests in both cases showed hemolysis beginning at 50 and 55 and complete at 30. There was not excess of reticulated cells. The Wassermann was negative. The urine contained considerable urobilin but no bilirubin. The spleen of the four-year-old child measured 22 by 12 by 6 cm. The capsule was smooth, color normal and consistency increased. The cut surface was dark red. Malpighian follicles were observed microscopically; increase in connective tissue was not diffuse, but in strands occurring around diffuse blood vessels and as trabeculæ. The Malpighian corpuscles were not retained as such but lymphocytes were numerous. There was an increased blood content and a very large quantity of brownish pigment granules. The other spleen weighed 490 grams and showed the same microscopical conditions.

Dr. NATHAN E. BRILL asked Dr. Roper why he grouped the three cases which he had presented in the category of splenic anemia. It was pretty generally accepted, if he understood the literature on splenic anemia correctly, which he thought he did, that the disease was restricted to those cases which showed a spleen of large size, an anemia of the *chlorotic* type and a leucupenia, all associated with hemorrhages occurring most commonly from the mucous membranes, particularly from the stomach, from nasal mucosa and in the skin. In splenic anemia the anemia was definitely of the chlorotic type with greater relative reduction in the amount of hemoglobin than in the number of red blood cells, which rarely showed less than 3,000,000 per cubic millimeter. There were no extensive changes in the red blood cells and no embryonic forms. The enlargement of the spleen in these cases was progressive. Whether the terminal stage of this disease resulted in so-called Banti's disease, as suggested by Osler, he did not care to discuss. Banti's disease, however, did not represent a distinctive clinical and pathological entity, but it might well be a phase of a pre-existing associated or combined disease of blood, liver and spleen. None of Dr. Roper's cases presented the distinctive data thus described as characterizing splenic anemia; all showed hyperleucocytosis, the reverse of leucopenia, all showed marked changes in the red blood cells, including forms suggestive of bone marrow stimulation, indicating possibly von Jaksch's anemia. In fact, one of the cases, reported as having a spleen which was transformed into a myeloid spleen, and having a large number of myelocytes in the blood together, with embryonic forms of red blood cells, might have been an instance of myeloid leucemia. Dr. Brill did not wish to say that it was, but suggested this as a possibility. From the pathological viewpoint cases of splenic anemia showed a general fibrosis of the spleen, including the reticulum associated with its encroachment on the Malpighian bodies, even obliterating them, distension of the sinuses, and desquammation of the endothelium of the sinuses. These changes were not reported as having existed in the extirpated spleens of these cases. Hence it was that he would like to ask Dr. Roper to explain why he had classified these cases in the group of splenic anemia.

Dr. ELI MOSCHCOWITZ said that assuming that Dr. Roper was correct and that at least two of these cases were cases of splenic anemia, he was glad that Dr. Roper did not say that the patients were "cured." A few years ago he had studied the question of the value of splenectomy in Banti's disease and had expressed scepticism as to its value in that disease. For this he had been taken to task. His scepticism was based upon the fact that patients with Banti's disease lived for many years, even for ten or twelve years, even when splenectomy was not performed. He had been much pleased recently to read in the "*Archives of Surgery*" an article by Harvey Cushing in which he reported two cases of Banti's disease. In one splenectomy was performed in 1898. This case had gone down twice in the literature as a cured case of Banti's disease. Dr. Cushing reported him as suffering at present from the same symptoms as before splenectomy was done. In the other case splenectomy was perfomed, he believed, twelve years ago and the patient was still suffering from the same symptoms. Recently there died at Mount Sinai Hospital a patient on whom splenectomy had been performed by Dr. Gerster in 1909. That case had also gone into the literature as a case of Banti's disease cured by splenectomy, yet the patient died of symptoms that could be interpreted as those of the terminal phase of Banti's disease. He had anemia and ascites, and all the evidence pointed to his having died of Banti's disease. The report of a case of splenic anemia as "cured" by splenectomy, even after five years from the time of the operation, was not, in the speaker's opinion, of much value.

Dr. RALPH G. STILLMAN said when the third case had been first reported they had been inclined to make the diagnosis of von Jaksch's anemia. That inclination had been strengthened by the fact that the histological picture in the spleen was very similar to that seen in two other cases which were studied at the same time. But as time went on and the patient was followed doubt had arisen as to the correctness of that diagnosis. Pearce had expressed the opinion that the case was one of hemolytic icterus. A satisfactory diagnosis was still lacking. Whether the other two cases could be classified as splenic anemia was open to discussion and depended somewhat upon the understanding of that term. He wished to mention the fact that although some of the patients were by no means cured by the operation, yet a remarkable improvement often took place and they were able to live comfortably for years. The older child operated upon four or five years ago, he had seen at fairly frequent intervals; she was not well but had improved. With the irregular use of iron and arsenic her hemoglobin rose and fell and at times the nucleated red cells mounted to very high figures. These nucleated red cells had not been absent from her blood at any examination made since her operation, with the exception of one made during her last admission to the hospital for phlebitis, and the question naturally arose as to whether the infection had anything to do with their absence. Apparently in this case the splenectomy had removed some inhibitory influence upon the bone marrow, or at least had produced some change in the body activity so that either the red cells were produced much more rapidly or they were injected into the circulation much more rapidly than before the spleen was removed.

Dr. DAVID BOVAIRD called attention to a paper by W. J. Mayo, published in the second volume of "Contributions to Biological Science," in honor of Sir William Osler's seventieth birthday, which was both radical and thought provoking. Briefly Dr. Mayo stated that cases of splenomegaly were potential cases of splenic anemia, and that as the onus of these conditions rests upon the spleen, even though the etiology is not clear, the spleen had best be removed. In some cases of chronic enlargement of the spleen, known to be luetic and which did not respond to anti-luetic treat-

ment, following the removal of the spleen the patient became responsive to anti-luetic treatment. It was further stated that von Jaksch's anemia was an infantile type of splenic anemia, the various types of the blood picture in this disease being simply manifestations incidental to the age of the patient. Mayo went still further and discussed the possible relation of enlarged spleen to cirrhosis of the liver, and stated that in atrophic cirrhosis of the liver splenectomy had alleviated the symptoms. The paper was the most radical one he had seen and presented arguments for the removal of the spleen in various forms of splenic anemia and atrophic cirrhosis of the liver. Dr. Bovaird said that as we had progressed we had separated one type of disease after another from the group of diseases formerly considered as belonging to splenic anemia, until there was left a fairly definite group of cases which, clinically, we know as splenic anemia. The pathology in such cases seemed to be mostly a fibrosis. But as Dr. Roper had noted in one of his cases there was a somewhat different pathology, a condition resembling a myeloid spleen, so doubtless we would eventually separate still other types of cases from the group we now recognized as splenic anemia, until we would have a group that agreed in pathology and which clinically we would recognize as an entity. As yet the subject was still complicated.

Dr. ARTHUR F. CHACE expressed the opinion that undoubtedly splenectomy was of value in the first stages af splenic anemia but he questioned whether it was of much value in the secondary stage when the liver had become involved. He thought that in cirrhosis of the liver the Mayos had given up removing the spleen, and other surgeons seemed to be of the opinion that nothing was gained by removing the spleen in cirrhosis, though it might be of value in the first stages before ascites had developed. He had watched one case for five years to determine whether or not operation was advisable. Finally the patient became so anemic and weak that it was decided to operate, and after operation the blood picture changed for the better. He recalled another case in which results following splenectomy were favorable, but there was a possibility of this case being one of hemolytic jaundice, in which condition splenectomy was more favorable than in splenic anemia.

Dr. LOUIS SHAPIRO quoted the conclusions from an article on Banti's disease, by Dr. Charles Norris, Dr. Douglas Symmers and himself, published in the *American Journal of Medical Sciences* in 1917, in which they showed that Banti's disease was neither an independent clinical entity nor anatomical entity, and expressed the opinion that this designation should be eliminated from the nomenclature of splenic pathology, giving the reasons for this statement. In this article they concluded further that the histological changes in the spleen in the condition described by Banti were identical with those due to syphilis. The lesion was a chronic diffuse interstitial splenitis attended in certain instances by sclerosis of the Malpighian follicles. Banti and his followers had attached great significance to the latter finding. As a matter of fact, sclerosis of the Malpighian follicles was characteristic only of recessive status lymphaticus, in which it occurred with unfailing regularity, and in the spleen of so-called Banti's disease it was but a coincident histological change.

Dr. ROPER, replying to Dr. Brill's question as to why he had classified these cases as splenic anemia, said they were obviously not cases of hemolytic jaundice or Gaucher's disease. There was a growing tendency to classify cases which ordinarily would come under the name of von Jaksch's disease as an infantile form of splenic anemia. The blood in children as young as these might easily show variations not seen in the adult types, but this should not exclude them from the classification. Regarding Dr. Stillman's suggestion that the first case might be one of hemolytic jaundice, Dr. Roper felt that had it been there would have been very definite improvement after six years. The most brilliant results in splenectomy had been obtained in hemolytic jaundice. This case could not be classified as definitely improved after six years.

Notes on the Use of the Fluoroscope in Gastro-enterology with Reports.—Dr. ARTHUR L. HOLLAND made this contribution, in which he said that owing to the demands made upon the staff of the New York Hospital during the war, and particularly on that of the *x*-ray department, the fluoroscope was called upon much oftener than it had been in the diagnosis of gastrointestinal disease. It was some time before they had acquired sufficient confidence to put cases through to operation to treatment without a further confirmation by plates. As they had progressed, however, they had found that in a large number of cases they could do as well, or better than they had been doing with the plate method. Duodenal ulcer, for instance, they were early able to demonstrate in nearly every case. They now gave the preference to the fluoroscope, reserving the plate method for those interesting cases in which they wished to preserve records. Their former report on this subject had occasioned some criticism and hence the present report. For this report they had taken 100 consecutive cases from the records of their two hospital services, examining first the records indexed under post-pyloric or duodenal ulcer. Of these there were 31 that were diagnosed at operation by the surgeons as post-pyloric or duodenal ulcers; 28 of these had been correctly diagnosed by the fluoroscope. In three cases the exact location of the lesion was not indicated. There were 12 cases in which the diagnosis at operation was gastric ulcer. Of these they had fluoroscopically diagnosed 10 accurately, approximately 83 per cent. There were 13 cases that were operated upon and diagnosed by the surgeons as carcinoma. In 10 of these they had given their opinion that the pathology found fluoroscopically furnished evidence of carcinoma. In three cases the fluoroscopic reports were not clear and definite. This gave thus far 56 cases, 48 of which, or 85.7 per cent., were diagnosed fluoroscopically with approximate accuracy. In order to get some idea of what their percentage of correct negative diagnoses was, Dr. Fellows, who had gone over the records for him, searched out the cases that had been operated on for extragastric lesions, in which they had given negative diagnoses for organic disease of the stomach or duodenum. Chronic appendicitis gave the largest number in the extra-gastric lists. There were 22 such cases, in 19 of which they had given a correct negative diagnosis for disease of the stomach or duodenum. Eight cases were indexed under operations for adhesions, in all of which their negative fluoroscopic diagnosis for organic disease of the stomach or duodenum was upheld by the surgeons. In all but one the fluoroscopic findings suggested adhesions. In other words, they were sustained in their negative diagnosis 42 times out of 46. This gave a record of 90 per cent. correct diagnoses, with 10 per cent failures or doubtful results. Dr. Holland discussed these failures and showed why some of them had occurred. The fluoroscopic room was small, badly ventilated, and superheated, and most of the observations were conducted before a section of twelve or more students, and at times hurriedly. Some of the patients were bedridden and had to be examined in the recumbent position, which was always difficult. While making this research they had been able to make a few notes on some of the clinical data given in the histories. For instance, in duodenal or post-pyloric ulcer, out of 28 cases there were 10 in which the histories were typical; in eight the histories were strongly suggestive, six were irregular, and in four the clinical data did not in any way uphold or even suggest the diagnoses. In 21 out of the 28 the acid values as shown by gastric analysis were high; in only four were the acid values below normal. In only one was free hydrochloric acid absent. The syndrome of post-pyloric ulcer was therefore fairly reliable, but where it failed it did so so completely that the aid which the fluoroscope gave was not to be ignored, and doubly armed with the clinical, laboratory and the fluoroscopic findings, one should have no difficulty in making in practically 100 per cent. of the cases a positive or a negative diagnosis. There were few other internal diseases in which this could be done. It was impossible to place a lesion accurately by clinical and laboratory methods alone; judging from their experience, the fluoroscope was the most reliable means they had for this purpose.

Dr. CARY EGGLESTON expressed the opinion that the majority of them would not be as successful as Dr.

Holland had been. The interpretation of a condition by means of the fluoroscope to the uninitiated was not a simple procedure, but there was hope that they might be able to master its use and if this were done, it offered one advantage over radiographs, which required time and were often more difficult to obtain.

Dr. GEDIDE A. FRIEDMAN said there was no doubt that the fluoroscope was of great value for the diagnosis of peptic ulcer, but it must not forgotten that the history of the patient was the chief aid for diagnosis of gastric or duodenal ulcer. It was true, as stated, that examination of the gastric contents were not valuable for the diagnosis. It was equally true that in a very small percentage of cases there was no definite history pointing to either gastric or duodenal ulcer. Every one knew that in 75 per cent. of patients who visited gastroenterological clinics, peptic ulcer might be suspected. It was his belief that radiologists took very careful histories from the patients. He had been at the Vanderbilt Clinic for ten years and could guess pretty well from the history alone as to the presence of an ulcer. Only occasionally he was wrong. This being true, a large percentage that presented themselves for fluoroscopic examination should have peptic ulcer. But how was it possible to diagnosticate ulcer from fluoroscopic examination in the majority of cases? The chief roentgen sign for ulcer of the duodenum was believed to be the deformed cap. But one found a similar deformity in gallbladder diseases. Spasticity of the stomach did not mean necessarily ulcer, because this had been present in many other conditions. Dr. Holland said that a perforated gastric ulcer was detected under the fluoroscope and that this diagnosis was confirmed at operation. Any one who was doing much gastrointestinal work would frequently diagnose a perforated ulcer correctly from the history and the physical examination alone. It was true that the appendix might be visible under the fluoroscopic screen. But this did not always mean appendicitis, as he was convinced from the negative findings of the pathologist in such cases. Adhesions around the appendix might be found without actual pathology in the latter. One must keep in mind that the appendix was a muscular organ, and, as such, passed through atonic and spastic states. Retention of the contrast meal in the appendix might be found 96 hours later without actual pathology in the appendix. On the other hand, concrements had been diagnosed in the appendix because of spasticity of the musculature, and when the surgeon did not find stones, the pathologist was not able to detect appendicitis. From all that was said he would not be convinced that it was possible to make a correct diagnosis in 100 per cent. by means of fluoroscopic examination alone.

Dr. GEORGE WOOLSEY said he was glad to bear witness to the value of the fluoroscope in skilled hands as he had seen it used by Dr. Holland. Last May, in a paper he read before the Surgical Section on the "Results of Operation in Gastric and Duodenal Ulcer," he had mentioned a series of cases that had been radiographed by Dr. Cole, a large number of radiographs being taken in each case. These cases, some 20 in number, were also fluoroscoped by Dr. Holland, and afterward operated upon in Bellevue Hospital by himself, and the results of the radiographic and fluoroscopic diagnoses confirmed. There was no advantage on the part of the radiographic plates over the fluoroscopic findings. Since that time they had depended more and more upon the fluoroscope, so that in cases sent over from Cornell to Bellevue for operation the fluoroscopic examination was all that was made for diagnosis before admission to the hospital. In one or two of these cases, which were rather difficult of diagnosis, they made the observation that the plates did not show the lesion which was confirmed at operation. One of these cases was operated upon previously and only adhesions found. In this case Dr. Holland was able to demonstrate a perforating ulcer on the posterior surface near the lesser curvature, about five inches from the plyorus. This could be seen only with the patient in the oblique position and was not shown by the ordinary antero-posterior plates. Another post-pyloric ulcer was not shown by the *x*-ray plates. In addition to its efficiency in demonstrating gastric and duodenal ulcer the fluoroscope was simpler to use and cheaper than the *x*-ray plates. He had watched the fluoroscopic examination and then operated, and could bear testimony to the great value of the fluoroscope in the hands of an expert in the diagnosis of gastric and duodenal lesions.

Dr. I. SETH HIRSCH said it would seem that one of the benefits of the war was the revelation to the general profession of the value of the fluoroscope. Where formerly it was an instrument in the hands of the specialist, it was now being generally adopted by the clinician to meet the demands of every day clinical diagnosis. And yet the fluoroscope was no new instrument, but for fifteen years had been actively used in the hospitals of the city under his direction in diagnosis of diseases of the chest and gastrointestinal tract. There was no necessity for making a distinction between the fluoroscopic and the radiographic examination, nor of balancing the value of one form of examination against the other, any more than there was anything to be gained from balancing the value of percussion against auscultation in the examination of the chest. A complete roentgenological examination must include both the examination by the fluorescent screen and the photographic plate. While fluoroscopy had its advantages, it also had its numerous disadvantages. The two procedures supplemented each other. Of the two methods of examination, however, it must be conceded that, in spite of the simplicity of its technique, the reading of the fluoroscopic image was far more difficult. It was continually observed that in the eagerness to adopt this valuable diagnostic procedure, it was utilized with insufficient understanding of the meaning of the images obtained. It was surely as difficult to read the Roentgen image as the pathological slide and it needed no argument that it required more than a microtone and miscroscope to make pathological diagnosis. The fluoroscopic examination was absolutely essential in the study of the gastrointestinal tract. It was essential in the examination of all the movable organs, lungs or heart, etc. The varying phases of the functional activity of an organ could not be completely studied from plate examinations, no matter how made. The attempt to make an examination of the gastrointestinal tract from plates alone was like attempting to diagnose an ataxic gait from a single photograph. In the gastrointestinal tract a complete fluoroscopic and plate examination must be made. There were appearances which could not be correctly analyzed on the plate, and there were others which could be successfully interpreted only by a fluoroscopic examination. If one were limited by circumstances to one method, the fluoroscopic would by all means be the choice. The great value of the Roentgen ray in the diagnosis of ulcer of the stomach and duodenum and the high percentage of correct diagnosis possible by this means could not be denied. And yet such statistics as were given to-night were of no great value in demonstrating the accuracy of this method, because the examiner possessed a clinical knowledge of the cases. It was impossible to deny the influence of the clinical knowledge of the case upon the one making the examination. One often saw what one wanted to see. He differed with the opinion of the reader of the paper as regards the equipment of the individual who was to make the fluoroscopic examination. The individual who made the ideal fluoroscopic or radiographic examination was the one who knew nothing of the clinical aspect of the case. The roentgen findings were to be reported in accordance with the established data of the art, and an interpretation based on these findings only was to be made. It was then for the clinician to take the roentgen report and in connection with the history and his own clinical data to build up a final diagnosis. The vast majority of organic lesions of the gastrointestinal tract could be diagnosed on roentgenological findings alone. But only a small percentage of the cases examined had organic lesions and the functional diseases of the gastrointestinal tract could be diagnosed on roentgen findings alone.

Dr. L. T. LE WALD said he had examined about 10,000 cases a year and stated that neither method alone was sufficient. He used the fluoroscope and also asked the patient questions, and subjected the patient to palpatation, etc., if necessary. If Dr. Holland had confined his remarks to duodenal ulcer alone they would not have provoked so much criticism because in duo-

denal ulcer per se the fluoroscopic examination was as important as the plate method. However, there should be no conflict between the radiographic and the fluoroscopic methods, and if the internist was going to use the fluoroscope he must also use the plates. When it came to tumors, etc., one had an entirely different problem which could be worked out only by careful plate study. Dr. Le Wald declared that he had seen disaster follow only fluroscopic examination where a complete examination of the digestive tract by the plate method was not carried out. If the roentgenologists' work was confined solely to the negative or positive diagnosis of duodenal or gastric ulcer, the problem would be a very simple one. Unfortunately, the cases which seemed to fall to his lot came for a diagnosis of some intra-abdominal lesion, so that after excluding a duodenal ulcer, for example, his troubles had just begun. A prolonged study of the entire digestive tract and other abdominal and thoracic organs had to be made, together with perhaps a combined urological and *x*-ray examination. The status of the roentgenologist had been definitely fixed by the fact that the Association of American Medical Colleges required that roentgenology must now be taught as a specialty in all class A medical schools.

Dr. Holland, in closing, said that he thought the grounds on which some of the objections were based were not quite correct; he thought he had made it plain that no comparison of fluoroscopy and radiography had been attempted. In the New York Hospital the fluoroscope was used during the early part of the war because the *x*-ray department had been reduced and they had found that as clinicians, using the instrument as a clinician used a stethoscope, they could get considerable help from it. The surgeons connected with the Hospital had confirmed their diagnoses in such a large percentage of cases that they too had come finally to have great confidence in it as a diagnostic means. Percentages, however, had very little value in themselves in a matter of this sort. As to those extra-gastric lesions, such as gall-bladder disease and appendicitis, he did not for a minute consider the fluoroscope; that he had used it with these cases that had been operated on for gall-bladder disease and appendicitis simply to prove their negative diagnoses, but at the same time in perhaps one-half of these cases they had by interpreting the indirect signs, such as increased peristalsis and spasm, been able to call the surgeons' attention to the fact that there was trouble somewhere else in the abdomen. This had been some help, as they were thus forearmed. As to considering the clinical histories, it was inevitable that they should ask some questions of the patients. After all, one could not hope to do much with the fluoroscope outside of the stomach, duodenum, and the colon after a barium enema. Dr. Holland said that he bowed humbly to Dr. Hirsch's tremendous experience. Dr. Holland said that he did not know who had done the *x*-ray work in the case in which Dr. Woolsey operated, but that he had done the fluoroscopic work and was able to tell accurately where the trouble would be found. And very often this same thing had occurred—the surgeons finding the lesion that they had by the fluoroscope predicted where it would be found.

Observations on Asthma and Hay Fever.—Dr. ALBERT VANDER VEER, Jr., presented this contribution in which he said that the observations, conclusions, and statistics from which this paper was written were founded on about 2,000 case histories of hay fever and asthma of Dr. Robert A. Cooke and the writer. No attempt was made to cover the entire subject; the present communication was intended simply as a statement of the present status of knowledge of these diseases. Although we had a rational and successful treatment for hay fever, he thought the laiety were not reaping the full benefit from it. They were still using timothy and ragweed pollens to make up their extracts for the early and late types of hay fever. Many years ago they had abandoned the use of mixed pollens. Occasionally a case needed an extract from golden rod, corn, dandelion, or one of the less important pollens, but at least 95 per cent. of the cases came under the first two mentioned. Their preparations were saline extracts of the pure pollens, standardized according to the amount of nitrogen contained, and given in gradually increasing doses up to the end of the season, a total of fifteen to twenty injections at five to seven day intervals. They had been unable to get satisfactory results by a course of injections stopping before the season opened, as the immunity began to decrease shortly after any injection, and they found that after a week or ten days it dropped to a point where the patient was no longer properly protected. As yet they had been unable to produce permanent immunity, although some cases would go for several years without treatment. The percentage of satisfactory results ranged from 70 to 75, varying with the severity of the year, the extract used, and the intelligence of the patient treated. Local reactions were slight and might be disregarded. Constitutional reactions were rare, but were much more unpleasant and should be guarded against by every possible precaution. A general urticaria was the form they usually took. They might be almost entirely controlled by injections of epinephrin. . Dr. Vander Veer presented the replies to a questionnaire sent out to patients each year. He received 379 such replies in 1917; 400 in 1918, and 473 in 1919. It seemed to him that these figures were large enough and the percentages ran close enough to say that on the average 25 per cent. were entirely relieved, 50 per cent. were quite comfortable, 15 per cent. were slightly benefited, and 10 per cent. showed no improvement. This gave about 75 per cent. which were considered quite satisfactory. Factors which at present they were unable to control would eventually enable them to improve this percentage. These were the preparation of a stable extract which would last through the season without deterioration and, secondly, some method of more accurately gauging the maximum dose a patient might take without developing a constitutional reaction. The advance in our knowledge of asthma had been greater during the past few years than with hay fever. The relatively simple cases, hypersensitive to one or more animal epithelia, or to one or more foods, were easily controlled by removing the offending animal or abstinence from the food. The more difficult cases were those of multiple sensitization and those with a complicating bronchitis or other infection. Asthma due to food alone was a relatively rare occurrence. Less than three per cent. of all cases would be found due solely to food. He thought they had been led astray on this matter by the patient's own histories, as practically all asthmatics were worse after a large meal and were apt to blame their trouble on this or that food, which, strange to say, they were at times able to eat with impunity. Several years ago they had found that many asthmatics gave a reaction to dust collected from their houses and bedrooms. These reactions were usually as constant and positive as those due to pollens and unmistakably pointed to the presence of a substance which could conceivably cause the trouble. The more they had investigated his subject the more such cases they discovered until now they formed a large group in the total number. Dust was a conglomeration of many substances, among them talcum powder, chicken feather dust, mattress dust, pollen and animal epithelia. When a positive reaction to dust was obtained they endeavored to make up extracts from each possible source of trouble, test them out, remove such as gave positive reactions and then, after a thorough house cleaning, again test with extract of the whole dust. If the reaction was now negative it proved that the source of possible trouble had been removed and the patient, as a rule, was relieved. They had occasionally made up extracts for treatment from the dust where there was some objection to following out the usual procedure, and the results were fairly successful. though not as satisfactory as removing the cause of the trouble. The cases which at present gave the most trouble and in which they had achieved the least were those with negative skin reactions to all these tests. These, as a rule, were people past middle age, with negative family history for allergy, and a complicating chronic bronchitis or other infection. The course of treatment here was long and discouraging. Vaccines were made from the sputum and injections were given over long periods of time. All chronic infections of tonsils, sinus, teeth, etc., were given careful attention. These patients were often benefited by change in climate and this should be tried, but not until other measures

had failed. The speaker called attention to the fact that until recently there had been no facilities for the treatment of asthma and hay fever among the poor. Gradually such clinics were being started. They had been working with such a clinic under the First Medical Division of the New York Hospital in conjunction with the Cornell Medical School. Here they had a laboratory well equipped for the work and a visiting nurse whose services were very essential in the handling of the so-called dust cases. Asthma was a fairly prevalent disease, the cause of an immense amount of suffering and tremendously expensive to the community, due to the time lost from work. We had now a rational fairly successful method of treating it and were justified in hoping for great advances in the future. Several illustrative cases were cited.

Dr. FENTON B. TURCK said that some of the experimental work that he had done in his laboratory was of interest in connection with the subject of hay fever and asthma. He had observed that when autolyzed lung tissue was injected into the bronchi of animals there was always an immediate response in the shape of rhinitis. If very high concentrations of autolyzed lung tissue were injected, the animals immediately developed rhinitis, and, following this, severe respiratory symptoms, and died in an exceedingly short time. If the autolyzed lung tissue were injected in lower concentrations, the animals developed the same symptoms in a lesser degree and recovered. The reason of this was that a reaction took place in the lung itself. In all cases of rhinitis a reaction took place in the lungs and gradually manifested itself in other portions of the respiratory tract. If one side of the bronchial tree were injected, the lungs on both sides immediately became engorged. The proteolytic enzymes, erepsin, trypsin, and pepsin found in all animal and vegetable tissue seized upon the cells of the body, autolyzed the tissues, and a reaction followed due to the breaking down of the animal's own tissues. The dust of human origin from pillows and beds was an exceedingly interesting factor in the causation of these respiratory affections. Animals were very susceptible to minute quantities of homologous autolyzed tissue. He had observed that if healthy control animals were placed in the same cages with those animals that had their paws coated with autolyzed homologous tissue, the control animals soon showed a reaction rhinitis, bronchial affections, and pneumonias. It was by demonstrated biological reactions as well as by empirical facts that the scientific aspects of this subject could be explained. Active immunity might be established by injecting very minute quantities of ferments to cause autolysis, or by chloroform as a cauterizing agent; this was followed by a specific passive immune serum, made by injecting horses with human antigen, thus combining active with passive immunization.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

OREGON STATE BOARD OF MEDICAL EXAMINERS.

July 6, 7, 8, 1920.

ANATOMY.

1. Describe the first part of the duodenum; give relationships.
2. Name the branches of the abdominal aorta.
3. Bound and give contents of the popliteal space.
4. Locate the prostate gland and give relationships.
5. Describe the subclavian artery, naming the branches.
6. Give origin, insertion, action, and nerve supply of the tibialis anticus muscle.
7. Describe the blood supply of the kidney.

PHYSIOLOGY.

1. What is the function of the red corpuscles? State their number and their variation with altitude.
2. Describe the lymphatic system and state what factors control the lymphatic circulation.
3. Give the names and state what kind of nerves the sixth and eleventh cranial nerves are. What does each supply?
4. Name the four divisions of the circulatory system and describe how the circulation of the blood is regulated.
5. Describe the physical properties of (*a*) lymph and (*b*) chyle.
6. What produces the second sound of the heart, where is it best heard, and what events in the heart's action are coincident with it?
7. Describe the phenomena which occur when muscle is in a state of activity.
8. State the functions of the spinal cord and enumerate its special centers.

BACTERIOLOGY AND HISTOLOGY.

1. Define bacteria: (*a*) Give method for recognition and cultivation; (*b*) Conditions most favorable for growth, and the different ways of entering the body.
2. What are pyogenic bacteria? Name the important pathogenic anærobes.
3. Define germicide, antiseptic, asepsis, sterile, disinfectant, spore, flagellum, and mycelium.
4. State the method of sterilizing the following: Fluid culture-media, test tubes, rubber gloves, rubber stoppers, cotton plugs or stoppers.
5. Where is the gonococcus usually found? Describe its characteristics; Give in detail a method of staining it.
6. Describe fibrous tissue and yellow elastic tissue, and state where they are found.
7. Define the following terms: (*a*) Neurone; (*b*) Dendrite; (*c*) Axone; (*d*) Implantation cone; (*e*) axis cylinder.
8. Describe Peyer's patches and give location.
9. Name the structures found in the portal canals of the liver.
10. (*a*) Name the stages into which the process of caryokinesis is divided. (*b*) Describe the formation of the achromatic spindle.

MATERIA MEDICA AND THERAPEUTICS.

1. Give the therapeutic uses of iodides, and when contraindicated.
2. Give the dosage and action of three drugs used to retard the heart's action. Name three that increase the heart's action.
3. State your medicinal procedure in a case of eclampsia with convulsions.
4. Write a prescription for a cough mixture containing a sedative-expectorant, a hypnotic, and a cardiac stimulant.
5. Mention the indications for and against ether and chloroform anesthesia.
6. (*a*) Name three vasomotor depressants, three vasomotor stimulants, and give the dosage of each. (*b*) Name three mineral cathartics, three vegetable cathartics, and give dosage of each.
7. In a child eight years of age find a case of diarrhea: Outline your treatment and diet.
8. How do you decide the donor in giving a blood transfusion.
9. What is phagocytosis? Define leucocytosis, emmenagogue, and hydragogue.
10. Name three suitable remedies for croup and give your method of treatment.

CHEMISTRY AND TOXICOLOGY.

1. Give diagnosis and treatment of acute poisoning with phosphorus. How would you test for phosphorus?
2. How does wood alcohol differ from grain alcohol? Give formulæ. How would you treat a case of poisoning by wood alcohol?
3. What two remedies are especially indicated in chronic lead poisoning? Describe the action of each in said condition.
4. Complete the following equation and describe the properties of the substance formed: $Hg. Cl_2 + 2KI = ?$
5. Define anhydrous, deliquescent, efflorescent.
6. Give the differential diagnosis between convulsions due to strychnine poisoning and tetanic convulsions.
7. Describe a test for lactic acid in the stomach contents.
8. Describe a chemical test for detecting the presence of blood in urine.
9. What is uric acid, and from what source in the human economy is it derived? Describe a test for uric acid.

10. What are enzymes? Give chemical characteristics.

ANSWERS.

ANATOMY.

1. THE DUODENUM is the first part of the small intestine, and is so called from being about twelve fingers' breadth in length, is about eight to ten inches in length. It consists of four portions, from the position of its course—ascending, descending, transverse, and terminal ascending. The *first* or *ascending portion* is about two inches in length, and ascends to the neck of the gall-bladder. It is completely invested by peritoneum for about an inch.

Relations of the first part: In front—Liver, gall-bladder. *Behind*—Bile-duct, vena portæ, hepatic artery, gastroduodenal artery. *Below*—Head of pancreas.

2. The *branches of the abdominal aorta* are: Celiac axis, inferior phrenic, suprarenal, renal, spermatic (or ovarian), superior mesenteric, inferior mesenteric, lumbar, middle sacral, and common iliacs.

3. BOUNDARIES OF THE POPLITEAL SPACE. *Externally, above:* By the biceps. *Externally, below:* By the plantaris and external head of the gastrocnemius. *Internally, above:* By the semimembranosus, semitendinosus, gracilis, and sartorius. *Internally, below:* By the inner head of the gastrocnemius.

Contents: Popliteal artery and vein, external and internal popliteal nerves, termination of external saphenous vein, small, sciatic nerve, articular branch from obturator nerve, lymph glands, and loose adipose tissue.

4. The prostate gland surrounds the neck of the bladder and first part of the urethra in the male. Its base is attached to the base of the bladder, and its apex is in relation with the posterior layer of the triangular ligament and the compressor urethræ muscle. The posterior surface is in relation with the rectum and is about an inch and a half from the anus.

RELATIONS OF PROSTATE. *Anteriorly:* Symphysis pubis, anterior ligaments of bladder, branches of dorsal vein of penis. *Posteriorly:* Rectum. *Laterally:* Levator ani. *Base:* Surrounds neck of bladder, seminal vesicles, and vasa deferentia. The *apex* rests on triangular ligament.

5. THE SUBCLAVIAN ARTERY. On the right side, this artery arises from the innominate artery; on the left side it arises from the aorta. It passes outward to the lower border of the first rib, where it becomes the axillary artery. The artery is divided into three parts, by the scalenus anticus muscle; the first part being internal to the muscle, the second part behind the muscle, and the third part extending from the outer margin of that muscle to the lower border of the first rib. Hence the arteries differ in their first portions only. The *branches* are: The vertebral, thyroid axis, internal mammary, and superior intercostal.

6. TIBIALIS ANTICUS. *Origin:* The upper and outer two-thirds of the shaft of the tibia, the interosseous membrane, and the intermuscular septum. *Insertion:* The internal cuneiform bone and the base of the first metatarsal. *Action:* Flexor of the foot. *Nerve supply:* The anterior tibial.

7. *Blood vessels of kidney.* "The renal artery enters the kidney at the hilus, and divides into branches that pass toward the cortex, then turn over and form incomplete arches in the region between cortex and medulla. From these arches vessels pass to the surface which are called the interlobular arteries; they give off vessels at right angles, which are the afferent vessels of the glomeruli; a glomerulus is made up of capillaries. From each a smaller vessel (the efferent vessel of the glomerulus) passes out, and like a portal vessel on a small scale, breaks up once more into capillaries which ramify between the convoluted tubules. These unite to form veins (interlobular veins) which accompany the interlobular arteries; they pass to venous arches, parallel to, but more complete than, the corresponding arterial arches; they ultimately unite to form the renal vein that leaves the hilus. These veins receive also others which have a stellate arrangement near the capsule (venæ stellulæ). The medulla is supplied by pencils of fine straight arterioles which arise from the arterial arches. They are called arteriæ rectæ. The efferent vessels of the glomeruli nearest the medulla may also break up into similar vessels which are called false arteriæ rectæ. The veins (venæ rectæ) take a similar course and empty themselves into the venous arches. In the boundary zone groups of vasa recta alternate with groups of tubules, and give it a striated appearance."—(Halliburton's *Physiology.*)

PHYSIOLOGY.

1. The *function of the red corpuscles* is to carry oxygen from the lungs to the tissues of the body. The *number* of the red corpuscles is about 5,000,000 in the male, and about 4,500,000 in the female, to each cubic millimeter of blood. At high altitudes the number of red corpuscles is increased.

2. The lymphatic system consists of: lymphatic glands, lymph vessels, perivascular lymph spaces, the lymph canalicular system, the pericardial, pleural, peritoneal, and synovial cavities, and the lacteals.

The lymphatic circulation is, strictly speaking, not a circulation at all, since the lymph flows only in one direction, namely, toward the heart. The lymph capillaries take up any excess of the blood plasma which is not required for the nutrition of the tissues. These capillaries consist of a single layer of epithelium, and empty themselves into vessels very like the veins. The lymph vessels are well provided with valves, which are so closely approximated as to give the vessels a beaded appearance. All the lymphatic vessels, except those of the right upper half of the body, empty into the thoracic duct, which terminates in the left subclavian vein, where the left internal jugular vein also enters. Those from the right upper half of the body discharge into the right lymphatic duct, which, in turn, empties into the right subclavian vein at its junction with the right internal jugular vein.

The forces concerned in the circulation of the lymph are: (1) The pressure of the blood in the blood-vessels; (2) thoracic aspiration; (3) muscular contractions of the voluntary muscles; (4) contractions of the intestine; (5) the action of the valves in the lacteals and lymphatics.

3. The *sixth cranial nerve* is the abducens; it is a motor nerve, and supplies the external rectus muscle of the eye. The *eleventh cranial nerve* is the spinal accessory; it is a motor nerve and supplies the trapezius and sternomastoid muscles.

4. *Four divisions of the circulatory system:* Heart, arteries, capillaries, and veins. The circulation of the blood is regulated in (a) *the arteries* by: (1) The elasticity and tone of the arteries, (2) the force and frequency of the cardiac contractions, (3) the resistance in the capillaries; (b) in the *capillaries* it is regulated by (1) the action of the heart, (2) the action of the arteries; (c) in the *veins* it is regulated by (1) the action of the heart, (2) aspiration of the thorax, (3) the contraction of the muscles, and (4) slightly by the valves in the veins.

5. Lymph is a colorless, albuminous fluid, alkaline in reaction, with specific gravity of about 1015, containing lymph corpuscles, and coagulating when drawn from its vessels. *Composition:* Proteins (serum albumin, fibrinogen), sugar, sodium chloride and carbonate, water, urea.

Chyle looks much the same, but has a milky appearance owing to the presence of fats.

6. The second sound of the heart is caused by the vibration due to the closure of the semilunar valve; coincident with it are: the commencing dilatation of the ventricles, opening of the auriculo-ventricular valve, continuation of the auricular diastole, and closing of the semilunar valves.

The second sound is heard best over the second right costal cartilage.

7. During contraction the following changes take place in a muscle: (1) It becomes shorter and thicker, but the volume remains the same. (2) It consumes oxygen. (3) It sets free carbon dioxide. (4) It forms sarcolactic acid. (5) It becomes acid in reaction. (6) It becomes more extensible and less elastic. (7) There is an increase in heat production, and consequently a rise of temperature. (8) The electrical reaction becomes relatively negative.

8. *The functions of the spinal cord* are: (1) The con-

duction of nerve impulses; (2) reflex action; (3) coordination; it also contains special centers which preside over definite functions.

The special centers in the spinal cord are: the cilio-spinal, secretory, vasomotor, genital, vesical, and rectal centers.

BACTERIOLOGY AND HISTOLOGY.

1. *Bacteria* are unicellular organisms of vegetable nature, devoid of chlorophyl, and multiplying by fission. They are recognized by their shape, size, motility, grouping, growth, and behavior to cultures and staining reagents. The chief culture media are: milk, blood serum, bouillon, gelatin, agar, potato. The conditions favorable for their growth are: moisture, temperature of between 10° and 40° C., nutritive material in the shape of decomposable organic matter, a medium of neutral or faintly alkaline reaction, rest, and absence of bright light; most of them require oxygen. Variations of these requirements are found. Bacteria enter the body through the abraided skin or mucous membrane, or through the alimentary, respiratory, or genito-urinary tracts.

2. *Pyogenic* bacteria are such as produce pus.

Important pathogenic anaerobes: Tetanus bacillus, bacillus of malignant edema, and bacillus of symptomatic anthrax.

3. *Germicides* are agents which destroy bacteria and their products.

Antiseptics are agents which prevent or restrain putrefaction.

Asepsis is absence of bacteria and their products.

Sterile denotes that a substance is free from live bacteria.

Disinfectant is an agent which restrains infectious diseases by destroying or removing the specific poisons which cause such diseases.

Spore is a tiny body which, under certain conditions, appears in bacteria and enables them to continue their existence under unfavorable conditions.

Flagellum is a delicate filament attached to bacteria, and is supposed to aid in locomotion.

Mycelium is a mass of interlacing filaments or hyphæ found in fungi.

4. *Fluid culture media* may be sterilized by heat or filtration; *test-tubes*, by dry heat; *rubber gloves*, by dry heat; *rubber stoppers*, by immersion for one hour in a 1:1000 solution of mercuric chloride; *cotton plugs*, by hot air.

5. The *gonococcus* is usually found in the male urethra, the female genital tract, and the conjunctiva. It appears in the form of diplococci; is biscuit-shaped, non-motile, non-sporogenous, aerobic, parasitic, without flagella, stains readily with the basic anilin dyes, and is Gram-negative.

To demonstrate *gonococci:* On a cover-glass make a smear with the discharge as thin as possible, and let it dry in the air; cover it with a freshly made solution of anilin-oil-gentian-violet for one or two minutes; wash it in distilled water; leave it in Gram's solution for two minutes; wash it in 95 per cent. alcohol until decolorized; wash it in distilled water; counterstain with a dilute carbolfuchsin without heat, or with a saturated aqueous solution of Bismark brown; wash in distilled water, dry with filter paper, mount, and examine with an oil-immersion lens. The gonococci will appear as *diplococci within the leucocytes*, which have been *decolorized by Gram's stain*, and have taken the counterstain.

6. *Fibrous tissue* "is a kind of connective tissue in which the white fibres predominate; it is found in tendons and ligaments, in the periosteum, dura mater, true skin, the sclerotic coat of the eye, and in the thicker fasciæ and aponeuroses of muscle.

The tissue is one of great strength; this is conferred upon it by the arrangement of the fibres, the bundles of which run parallel, union here, as elsewhere, giving strength. The cells in tendons are forced to take up a similar orderly arrangement, and are arranged in long chains in the ground-substance separating the bundles of fibres, and are more or less regularly quadrilateral with large round nuclei containing nucleoli, which are generally placed so as to be nearly contiguous in two cells. The cell spaces in which the cells lie are in arrangement like the cells; they can be brought into relief by staining with silver nitrate."

Elastic tissue "is a form of connective tissue in which the yellow or elastic fibres predominate. The yellow fibres are larger than those found in areolar tissue, and are bound into bundles by areolar tissue. It is found in the ligamentum nuchæ of the ox, horse, and many other animals; in the ligamenta subflava of man; in the arteries and veins, constituting the fenestrated coat of Henle; in the lungs and trachea; in the stylohyoid, thyrohyoid, and cricothyroid ligaments; and in the true vocal cords. Elastic tissue being extensible and elastic (*i.e.* recoiling after it has been stretched), has a most important use in assisting muscular tissue in a mechanical way, and so lessening the wear and tear of such an important tissue as muscle. Thus, in the ligamenta subflava of the human vertebral column it assists in the maintenance of the erect posture; in the ligamentum nuchæ in the neck of quadrupeds it assists in the raising of the head and in keeping it in that position. In the arterial walls, and in the air tubes and lungs, it has a similar important action." (Halliburton's *Physiology*).

7. *Neurone* is a nerve cell with all its processes.

Dendrite is a process of the nerve cell which brings impulses to that cell.

Axone is a process of the nerve cell which carries impulses away from the cell.

Implantation cone is a small elevation sometimes found at the junction of the axone and cell body.

Axis cylinder is the same as the axone.

8. *Peyer's patches* are aggregations of solitary glands, measuring from about half an inch to three inches in length; they are found mainly in the ileum, but also occur in the duodenum, and jejunum; they are situated lengthwise in the intestine, and are located opposite to the mesenteric attachment. Each patch is surrounded by a group of the crypts of Lieberkühn. There are said to be from 30 to 50 of these patches in the human intestine. As a rule, they have no villi on their surface.

9. *Structures found in the portal canals of the liver* are: Artery, bile duct, vein, lymphatics, and connective tissue.

10. *The stages of caryokinesis* are: (1) The *prophase*, or stage of preparation of the nucleus for division; (2) the *metaphase*, or separation of the nuclear constituents; (3) the *anaphase*, or formation of two daughter nuclei; (4) the *telophase*, or reconstruction of the two daughter nuclei, and the division of the cytoplasm.

Formation of the achromatic spindle: This occurs during the prophase. The centrosome divides into two daughter centrosomes; each of these is surrounded by its attraction sphere; the two centrosomes move apart but remain connected by fibrils; these fibrils form the achromatic spindle.

MATERIA MEDICA AND THERAPEUTICS.

1. IODIDES. *Therapeutic use:* "Iodides are believed to be more or less specific in tertiary syphilis and actinomycosis. *Iodides* are also employed in: (1) The asthma of emphysema and chronic bronchitis. (2) Arteriosclerosis and some other conditions with chronic connective-tissue production; not in cirrhosis of the liver or chronic nephritis (unless for arterial hypertension). (3) Aneurysm of the aorta. (4) Cases with high arterial tension, from whatever cause. (5) Chronic rheumatism or rheumatoid affections. (6) Poisoning by the heavy metals. (7) Colloid goiter. It is generally thought that they should not be used in hyperthroidism.

Contraindications.—The chief of these is pulmonary tuberculosis. (From Bastedo's *Materia Medica*, etc.).

2. THREE DRUGS USED TO RETARD THE HEART'S ACTION. (1) *Aconite*, dose 10 minims of the tincture. It is supposed to stimulate the vagus nerve; the diastole is prolonged, and the heart is slowed. (2) *Veratrum*, dose, 20 minims of the tincture. It is supposed to stimulate the vagus nerve, and slow the heart. (3) The *nitrites*, dose of amyl nitrite, 2 to 5 minims, by inhalation. The nitrites act by dilating the arterioles; this may happen from the action of the drug on the ends of the nerves, and also on the arterial muscles (chiefly the latter).

Three drugs that increase the heart's action: Digitalis, epinephrin, and pituitrin.

3. *Medicinal procedures in a case of eclampsia with*

convulsions: "The principal reliance for controlling the convulsions is on the combined use of ether-oxygen inhalation, veratrum viride, or nitroglycerin, catharsis, diaphoresis, active diuresis by hypodermoclysis (and the prompt evacuation of the uterus). For veratrum, chloral may sometimes be substituted." (Polak's *Manual of Obstetrics*).

4. ℞. Apomorphinæ hydrochloridi..gr.ss
Strychninæ sulphatis.....gr.ss
Heroinæ hydrochloridi.....gr.j
Spiritus chloroformi.....ʒj
Aquæ q.s. ad.....ʒij Misce
Signa: One teaspoonful q.3.h.

5. As a general rule, ether would be the anesthetic of choice. But chloroform may be used: (1) In hot climates; (2) when large numbers of persons have to be rapidly anesthetized; (3) in brain surgery; (4) in labor; (5) in patients who are known to take ether badly; and (6) in the conditions mentioned below, in which ether is contraindicated. The following *contraindications* for ether and chloroform are from Hare's "Practical Therapeutics": "*Ether* should not be used by inhalation in bronchitis or acute nephritis because of its irritant properties; in peritonitis or gastritis, because it is apt to induce vomiting; in aneurysm or in the presence of marked vascular atheroma because it may rupture a blood-vessel by raising arterial pressure; nor in diabetes, lest it produce diabetic coma; and if anemia is present and an examination of the blood shows that the hemoglobin is below 50 per cent., the use of the drug should be avoided if possible. *Chloroform* is not to be used in cases of fatty heart or dilatation of the heart, in those with a known idiosyncrasy, nor in the so-called lymphatic persons with overgrowth of lymphoid tissues, as, for example, adenoids. In the latter case it is particularly apt to cause sudden death. In valvular disease of the heart chloroform may be used with caution, although ether is preferable. Given a case of valvular disease that must be subjected to operation, the chances are bettered with an anesthetic than without it, as the pain and mental shock are worse for the heart than is the anesthetic."

6. *Three vasomotor depressants:* Amyl nitrite, 3 minims; spirit of glonoin, 1 minim; sodium nitrite, 1 grain.

Three vasomotor stimulants: Citrated caffeine, 5 grains; extract of ergot, 4 grains; adrenalin chloride, 1/150 grain.

Three mineral cathartics: Mercury with chalk, dose 5 grains; sodium sulphate, dose 2 drams; magnesium sulphate, dose 4 drams.

Three vegetable cathartics: Castor oil, dose 6 to 8 drams; resin of jalap, dose 2 grains; fluid extract of cascara sagrada, dose 15 minims.

7. *Diarrhea in children:* Fresh air, preferably in the country, or at the seashore, is advisable; bathing is of advantage. Food must not be given, but thirst may be controlled by water, or albumin water. Buttermilk, given two or three times a day, has been recommended. The alimentary tract must be cleared out; calomel and sodium bicarbonate will accomplish this for the small intestine, and irrigation is best for the colon; after the digestive tract has been cleared out, spirit of chloroform may be given for the pain. If vomiting is present, an emetic should be given, or the stomach should be washed out.

8. *In blood transfusion:* "The donor should be a healthy adult, with a negative Wassermann reaction. His serum should not agglutinate the corpuscles of the patient, and the patient's serum should not agglutinate the donor's corpuscles. Agglutinins should be excluded by tests done immediately before the transfusion and a single examination is not sufficient to establish the compatibility of two bloods on all future occasions. If agglutinins are absent hemolysis will also be absent. If there is great urgency, and testing of the blood of patient and donor are impracticable, a small preliminary transfusion should be done half an hour before the main mass of blood is transfused, so that gross incompatibility may be recognized in time. Febrile reactions occur after about 25 per cent. of transfusions, even though the bloods of donor and patient have been shown to be compatible. Rigors occur in about 10 per cent. of the cases." (From Da Costa's *Modern Surgery*).

9. *Phagocytosis* is the phenomenon of various ameboid cells by which bacteria and other particles of matter are engulfed or absorbed by these cells.

Leucocytosis is an increase of the number of colorless corpuscles of the blood.

Emmenagogue is an agent which induces the menstrual flow.

Hydragogue is a cathartic which produces copious watery stools.

10. *Treatment of croup.* First, be sure that the case is not one of diphtheria.

"During the paroxysm, the child should at once be placed in a hot bath and hot or cold compresses should be applied to the throat. These measures should be preceded or followed by the administration of a mild emetic. The syrup or wine of ipecac, in doses of ʒss to ʒi every few minutes until vomiting is produced, is very efficient. Bartholow recommends turpeth mineral, gr. i to iii; Da Costa suggests the cautious use of apomorphine hydrochloride, gr. 1/10. In very severe paroxysms the inhalation of chloroform may be necessary.

As soon as the paroxysm has been broken a laxative should be given. Calomel, gr. ii and sodium bicarbonate, gr. iii, should be administered and followed in six or eight hours by a dose of castor oil or magnesia. During the intervals between the paroxysms, small doses (♏v to x) of the syrup or wine of ipecac, or the following should be given:

℞. Tincturæ aconiti.....♏xxiv
Syr. ipecacuanhæ.....fʒiss
Tincturæ opii camphorat.....fʒiij
Liquor. potassii citratis. ad....fʒiij
M. S.—One teaspoonful every hour or two.
(From Hughes' *Practice of Medicine*).

CHEMISTRY AND TOXICOLOGY.

1. *Symptoms of acute phosphorus poisoning:* "Eructation of gas having the odor of garlic. The mouth, when observed in the dark, is frequently faintly luminous (phosphorescent). After several hours pain in the throat, a sense of heat in the epigastrium, nausea, and vomiting. The vomited matters are sometimes bloody, and frequently luminous when agitated in the dark. The abdomen is tender, and there are diarrhea and colicky pains. After one or two days these symptoms cease, there remaining only pain in the back and limbs and a feeble pulse. Death sometimes occurs suddenly in from two to four days. Usually about the fourth day the patient becomes jaundiced, suffers from headache, insomnia, and retention of urine, rapidly becomes delirious and comatose, and dies."—(From Witthaus' *Essentials of Chemistry and Toxicology.*)

Treatment: By an emetic or the stomach tube remove from the stomach all of the poison which has not been absorbed; then give old French oil of turpentine or potassium permanganate; the food must be free from fats and oils.

Test for phosphorus: "Mitscherlich's process for detecting phosphorus is based upon the property of unoxidized phosphorus of becoming luminous in the dark. The matters supposed to contain the poison are rendered fluid by dilution with water, and acidulated with sulphuric acid. They are placed in a flask upon a sand bath, and the flask connected with a Liebig's condenser, which is placed in absolute darkness. Upon heating the flask any phosphorus present is volatilized, and, condensing in the tube, forms a luminous ring. This reaction is very delicate, and the appearance of the ring is proof positive of the presence of unoxidized phosphorus."—(Witthaus' *Essentials of Chemistry and Toxicology.*)

2. *Wood alcohol* is methyl alcohol; it differs from grain alcohol (which is ethyl alcohol) in specific gravity, boiling point, and in its oxidation products. The oxidation products of methyl alcohol are formaldehyde and formic acid; the oxidation products of ethyl alcohol are acetic aldehyde and acetic acid. Further, methyl alcohol is exceedingly injurious. Methyl alcohol has the formula $H.CH_2OH$; ethyl alcohol, CH_3CH_2OH.

Symptoms of poisoning by wood alcohol: "Gastrointestinal disturbance, abdominal pain, general weakness, nausea, vomiting, vertigo, headache. The symptoms of ordinary alcoholic intoxication supervene, with

delirium, restlessness, unconsciousness, collapse, and coma. The pupils are usually dilated and irresponsive; nystagmus may be present. Dyspnea and cyanosis are marked. The temperature is subnormal. There is optic injury, the symptoms of which are bilateral, and consist in scotoma, dimness, or total blindness, the pupils are dilated and insensible to light. The loss of vision may start in a few hours, or be delayed several days; it generally becomes complete; subsequently there is some improvement, which in most cases finally relapses into total blindness."—(From Sollmann's *Pharmacology.*)

Treatment of poisoning by wood alcohol: Wash out the stomach, and administer a hypodermic of pilocarpine; strychnine is a serviceable tonic, and the iodides are said to benefit the amaurosis. Rectal injections of normal saline solution are useful.

3. *Two remedies which have been recommended for use in cases of chronic lead poisoning are:* (1) Potassium iodide, which is said to increase the elimination of the lead, and (2) magnesium sulphate, which converts the lead in the alimentary tract into lead sulphate (which is said to be insoluble). The value of these "remedies" is doubtful.

4. $Hg_2Cl_2 + 2KI = 2KCl + Hg_2I_2$.

Mercurous iodide is a greenish-yellow, amorphous powder, insoluble in water and in alcohol.

5. *Anhydrous* denotes the absence of water, especially water of crystallization.

Deliquescent substance is one which absorbs moisture from the air.

Efflorescent substance is one which, on exposure to air, loses its water of crystallization.

6. In *tetanus*, the onset is gradual, is apt to begin with trismus, swallowing is difficult or impossible, the condition is persistent, consciousness is dulled or lost, and there is history of a wound or injury. In *strychnine poisoning* the onset is more sudden, the muscles of the jaw and neck are generally the last to be affected, there are marked remissions with muscular relaxation, consciousness is retained, and there is no history of a wound or injury.

7. *Test for lactic acid in stomach contents:* Mix equal parts of Uffelmann's reagent and filtered stomach contents; the blue color is changed to a canary yellow by the presence of lactic acid.

8. *Test for blood in urine:* Boil a small amount of the urine in a test tube, add caustic soda and continue to boil; the phosphates and coloring matter of the blood precipitate showing a brownish-red color, while the supernatant fluid is of a bottle-green color.

9. Uric acid is a dibasic acid, with the formula $C_5H_4N_4O_3$. It belongs chemically to the group of substances called "purins," uric acid being trioxypurin. The uric acid which is derived from the purin bodies contained in the food is called "exogenous" uric acid; while that which comes from the breaking down of the tissues of the body which contain amino purins and oxypurins or nucleins is called "endogenous" uric acid.

Test for uric acid: Add a little dilute nitric acid, evaporate nearly to dryness, cool, add a little ammonium hydroxide. If uric acid is present the nitric acid residue is yellowish-red, and on the addition of the ammonium hydroxide a reddish-violet color is produced.

10. *Enzymes* are organized ferments produced by living cells; they cause definite chemical changes in certain substances. They are soluble in water, in glycerol, and in dilute salt solution; they are precipitated by alcohol and by ether; they work best in a temperature of about 40° C., but there are exceptions, each enzyme having its own optimum temperature; each enzyme has a very limited action, being specific for one substance only; each enzyme will work only in a medium of definite reaction, either alkaline or acid; and the products of their activity must be removed. When these conditions are fulfilled, enzymes are capable of doing a large amount of work.

(*To be continued.*)

Sequelæ of Epidemic Encephalitis.—Remond and Lannelongue report five cases of the disease and emphasize the frequent and often severe relapses and further the exhaustion syndrome which may follow the malady. The latter may suggest that the patient has developed multiple sclerosis.—*La Presse Médicale.*

Therapeutic Hints.

Neuritis Due to Autointoxication.—G. N. Murphy, after suffering for nine months from neuritis, which failed to yield to various methods of treatment, prescribed by himself or other physicians, concluded that his trouble was due to autointoxication. He then formulated the following prescription:

Creosote	drs. 2
Soluble iodine	drs. 2
Turpentine	dr. 1
Oil of cloves	dr. 1
Menthol	grs. 10
American oil	oz. 16

Mix well by shaking and take one tablespoonful twice a day—night and morning.

This was followed, the first week, with a saline flush of the bowels each morning; after that, and during the remainder of the treatment, he flushed the bowels every alternate day. He also largely eliminated from the diet such articles as lean meat, eggs, cheese, rich pastries, pickles and highly seasoned articles, and drank about two quarts of water every twenty-four hours. Under this plan of treatment he made a good recovery.—*Clinical Medicine.*

Habitual Vomiting in Young Infants.—Marfan, holding that the treatment, at first, is the same whether the physician is confronted with habitual vomiting or with pyloric stenosis, the differential diagnosis often being impossible until after a certain period of time, says certain external remedies and some medicines must be employed along with the regimen of feeding. In the common form of habitual vomiting the treatment is limited to the employment of enemas of very hot water (104° to 105° F.), and the administration of certain antidyspeptic medicine, among which the subnitrate of bismuth occupies first rank. The following prescription is recommended:

℞ Subnitrate of bismuth ..... gr. 2
Sweetened mucilage,
Syrup ..... āā mils. 45
Shake.

Sig.: One coffeespoonful, five to ten minutes before feeding, six times daily, or, then, four times a day, ¼ gram of subnitrate of bismuth given with the bottle.

If it is suspected that hyperacidity contributes to maintaining the vomiting, one may give, one hour after feeding, an alkaline substance (bicarbonate of sodium, citrate of sodium, lime water). Gastric ferments, such as rennet, have been advised and pepsin and papaine have been recommended.—*Clinical Medicine.*

Constipation in Old People.—A. J. Reppito recommends the following for old people, as it acts on the urinary as well as the digestive system:

℞ Fld. ext. cascara .....
Fld. ext. queen of the meadow ....
Fld. ext. parsley root .....
Tinc. senna .....
Glycerin .....
Water ..... āā, ℥j

M. Sig.: One teaspoonful in water three or four times a day, governing dosage by action.—*Medical World.*

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Original Articles.

THE INFLUENCE OF RADIOACTIVITY IN THE TREATMENT OF HYPERTENSION.*

BY C. EVERETT FIELD, M. D.

NEW YORK.

DIRECTOR OF THE RADIUM INSTITUTE.

THE kind invitation of your presiding officer for me to address your worthy society also included the subject of the desired talk, therefore I have no option. While it is of utmost importance for us to study measures of prevention and control of symptomatic high blood pressure, and to employ our time in an effort to gain better results in the polyarthritis case, still somehow my heart clings to that employment of radium which gives relief and hope to the greatest sufferer we know—the patient afflicted with malignant disease. It is in that climax of suffering, we meet that which encourages us most. Radium, here, frequently by its power to control hemorrhage, allay pain, check odor, exerts a tonic influence that puts even a forlorn hope in the mind of the hopeless.

It is possible, therefore, that I would have preferred to tell you something of this phase of my work, but sometimes it is just as important to help the class of patients we are now to consider, to abate their distress, increase their span of life, and aid them to "grow old gracefully."

The theme of symptomatic high blood pressure, hypertension, or arteriosclerosis, as you may elect, forms an enormously important subject for discussion, not so much on account of the early classic symptoms by which we recognize the abnormality, but because we now classify it as the forerunner of most serious degenerative changes in the cardiovascular, renal, and cerebral systems.

Our attention, as physicians, is keenly directed to the rapid increase in mortality statistics of those just past 45 and 50 from diseases of the kidney, heart, and circulatory system. We are intent in our study of such measures of diet and hygiene as might increase the life period of this class of patients. They represent those of active intellectual pursuit and those of sedentary occupation. Rarely do we meet hypertension in the man who toils with muscle and brawn.

It is my firm belief that by an early recognition of the manifestations first recorded as hypertension and with the inauguration of measures at our command, we can prolong life for many years in at least 75 per cent of such cases.

*Read by invitation before the Flatbush Medical Society, March 12, 1920.

It is our duty to watch our healthiest clientele, those who pride themselves in never having a day of sickness, who may, however, acknowledge slight tendency to gastric or intestinal fermentation of excessive type. Such should be educated to the possibilities and taught the importance of a periodic routine examination.

With the patient, however, referred to us with the clear evidence of head symptoms, precordial distress, a possible nephritis, and high blood pressure, our picture is changed and we are called upon to give relief. We have little use for the one-remedy man, any more than we would favor one sectarian religious creed for the moral ills of the whole world.

Treatments that may avail cover diet, baths, mineral waters, electricity, thermal applications, measures of regime and hygiene, stimulant drugs, ferment bacilli, and a long list of therapeutic hints not to be mentioned.

During the past five years we have been giving our attention to radium, following the rather exaggerated reports of success coming from the European Spas.

Observing carefully our clinical results, together with conservative deductions made from our laboratory findings, we do not hesitate in placing radium in the very forefront of therapeutic measures for the relief of hypertension. The liberal colleague will of course understand that we advance radium therapy only as an adjunct to such system of treatment as seems indicated. Furthermore, owing to the scarcity of radium, and the expense entailed, it should naturally be called in service only when other treatments fail to bring the full relief desired or fail to hold that relief with a degree of permanency.

If we are true in our personal estimate of the virtue of radium, it will in turn interest you, the general profession, to know more intimately its physiochemical properties, following internal administration.

In presenting the cause of radium, as a measure of treatment in symptomatic hypertension, let us keep in mind the fact that we are considering the use of a physical agent, rather than a drug. We will gain a better conception of the modus operandi of its physiochemical influence if we recognize in radium a means, as described by von Noorden, of introducing into the tissues, cell structures, and protoplasm of the body, a current of fluid electricity.

Hypertension in periods long or short, precedes degenerative processes, and at times gives but little warning, owing to the promptness with which some form of compensation takes place. We may also

conclude that hypertension from any cause cannot persist for any considerable period without developing organic changes in the heart, kidneys, and general vascular system.

In a brief consideration of etiology, we will simply refer to the predisposing and direct causes such as overwork, loss of sleep, nerve strain, faulty digestion, and toxic principles. Romberg is quoted as saying, "Everyone acquires his arteriosclerosis within the circuit which he has taxed most." Metabolism is the copestone of hypertension. Finding all channels leading to the exhibition of toxic influence, we naturally cast our hope for a lifting of the veil on the biochemist. Recognizing, then, fully the status of the body ferments and the fact that each acts in harmony with constituents of its own substance, we can readily see how complex must be a study of the multitude of ferments, which in the body combine to build up all that is vital and to consume that which is waste.

The administration of drugs with the hope of influencing metabolism, we can readily appreciate, fails, owing to the complex balance in which the various ferments are sustained. The metabolic deficiency may be sought for in some of the toxic conditions dependent upon the ductless glands.

The theories relating to the causative features of high blood pressure are many; but for our immediate need we care not to debate now whether it is due to a hyperplasia of the suprarenal capsule, or, according to the old theories of Cohnheim and Traube, to mechanical interference in the flow of the blood stream, for we may content ourselves in the belief as clinicians that faulty ferments of toxic origin are the basic factors.

To have the radium situation clearly before our minds, we must acknowledge that much of the early experimental research with radium had many of the hindrances common to the study of so rare and new an element.

From the earliest experiments to the present, lowering of high blood pressure during radium treatments has been the common report. Physiochemical processes are exact and the physiological and biological manifestations that follow must to a similar degree, be definite. Therefore it is that, in almost 95 per cent. of the high blood pressure cases treated, certain improvements are promptly noted; precordial distress, headache, vertigo disappear at times even with small dosage. The general energy of the heart is markedly improved and peripheral resistance is reduced. A factor that by some has been discounted is the viscosity of the blood, yet a change in type exerts an enormous influence of the arterial system; under emanation it is rendered less viscid. The elasticity of the muscular wall of the artery relieves the heart of much unnecessary load. When the tonicity is low, increased tension results. Radium emanation improves the general muscle tone of the entire system.

Recently, Dr. Sailer said: "The fundamental element in physics, in chemistry, possibly in the universe, was the atom, and until a clear idea of the structure of the atom was had, much progress in the solution of the problems under consideration could not be made." The close inter-relation of ionization and colloidal states is vital in our study of every phase of the high blood pressure subject.

The phenomena of ionization as evidenced in many of the normal ferment processes may be illustrated in its importance by a definition: "The modification of a substance by which it acquires electrical charges is termed ionization; for instance, common salt and sugar in water, designated formerly as a solution. We now know that the activity of the salt is materially increased while the sugar suffers no change—the sodium atoms acquiring a positive electrical charge and the chlorine atoms a negative charge." The above thought by Leffman is here introduced with the hope of paralleling the action of radioactivity in activating chemical processes, and at the same time to give appreciation of his work.

According to von Noorden, redioactive elements exert forces which, in accord with the definite laws of physics, markedly influence biological processes. Furthermore, the chemicophysical properties of radium may be traced in the human body even in the minutest doses. Metabolism, while classed as a body chemistry, is in itself dependent to no small extent on physics. In the laboratory radium readily activates and intensifies fermentative and digestive processes; within the body, it stimulates even more actively the numerous ferments.

Radioactive substances present three distinct products of disintegration which we term rays. Alpha rays are positively charged helium atoms and constitute 90 per cent. of the energy of radium. Beta rays, also electrons, in turn are negatively charged particles. Gamma rays are not material in nature, being classified as exceedingly short-length waves of ultra violet light.

In the process of decay or transmutation, something happens within the tiny atom of radium, and much as the meteor flies from the planet, the alpha ray is spontaneously thrown off into space with a speed of over 12,000 miles per second. From this, another and still another particle is born until the entire series in evolution is complete. In common with the liberation of the alpha particle, we have the formation of a gaseous substance known as emanation, which contains in itself all of the power and energy of radium. The radiations of emanation acting as carriers of enormous energy within the body develop heat and electricity and foster chemical transformation. By its use we permeate the body with a stream of electrons through the channel of the blood stream. It carries a normalizing activity to the tissues, fluids, protoplasm, cells, and nuclei.

Abundant literature detailing the exhaustive biological and physiological research of worthy observers is at hand and can largely be accepted, especially that which pertains to metabolism. The careful and accurate findings of such workers as von Norden, Gudzent, His, Deutelmoser, Klemperer, Falta, and von Neusser tend to substantiate much of the true physiological effects of emanation.

The physiological manifestations of radium naturally center around its effect on metabolism and the blood. There are evidences of a selective influence as regards radium, such as the affinity that attracts it to the bone marrow, where it serves to increase markedly the red blood count. There is temporary leucocytosis. It is said to aid in

keeping uric acid in a soluble form and to promote the elimination of that already deposited. Dilatation of the blood vessels follows an excitation of the vasomotor nerves; the viscosity of the blood is diminished. Digestive processes are greatly improved by activating the ferments. Diuresis is produced. Emanation exerts stimulant, tonic, and sedative influences. Following its use respiration is improved.

The researches of Gudzent and Lowenthal in purin metabolism found it activated by the smallest doses of radioactive waters. Carbohydrates are mobilized and oxidized in increased quantities. Bickell and Bergell have proven the activation by emanation of peptic ferments in the stomach. Braunstein, Richet, and Deutelmoser also have reported as to the activities of glycolytic, urolytic, pancreatic, and lactic-acid ferments. Neuberg has given valuable data on autolytic fermentation.

That radium increases protein metabolism indicates its use in gout and old age conditions. There remains a mass of work already reported as to metabolic activation with radium which we cannot even here mention; we, however, must let these brief references be left as indicative, and hasten on to the more recent work with radium therapy that bears directly on our subject.

Quite recently (1917 Zwaardemaker, physiologist at the University of Utrecht, made the startling statement that radioactivity possesses a significant, if not the essential force in controlling the automatic action of the heart. This belief has been more or less common among many radium therapists during the past ten years. He shows that of the twelve elements which go to make up the animal tissues, two possess characteristic atomic property which may enable them to exert unusual influences. Iron is ferromagnetic and potassium is reputed to be radioactive. Although the emanation activity is very low, it may serve to hasten other chemical forces.

Negatively charged beta particles of radium produce coagulation of oppositely charged colloids and the effect appears to be an electrical one. Potassium gives off beta rays of high penetrating power, but that they are few in number is shown by the fact that it takes over fifty days to appreciably fog a photographic plate. Its ionizing power is a thousand times weaker than that of uranium.

Zwaardemaker's experiments covered the excision of a heart and causing it automatically to keep beating by perfusing suitable chemical circulating fluids. He found that when potassium was omitted from the fluid the heart immediately ceased beating. By renewing the potassium the automaticity was assured. He then found that he could substitute radioactive substances other than potassium, using equiradioactive quantities of thorium, uranium, or rubidium, and that they were equally effective.

Presuming then that such substitution proved that radioactivity in some forms was a necessary adjunct to the circulating fluid, he describes radioactivity as one of the essential factors in the automatic function of the heart. My only reference to the value of this experiment is to direct attention to the possible value of even minute doses of radium, and further, that suitable dosage might be estimated to make up the required energy when potassium is deficient or lacking.

I am frequently asked the question, "Just what can we hope for clinically?" Recognized early, metabolic deficiencies may be promptly improved with the hope of a permanent cure. We have a right to assume that the process of hypertension can be checked so as to prevent the development of a nephritis. When nephritis and cardiac lesions are advanced, the pathological processes can surely be held in check and life in a measure conserved; while at the last stake with a broken compensation we may sustain the patient by lowering tension, building up resistance, increasing somewhat the elasticity of the blood vessels, thereby lessening the danger of their rupture and materially adding to the comfort of the patient.

Administration.—Radium may be administered by means of emanation inhalation, radioactive waters for drinking, solutions of radium salts for drinking, by means of emanation baths, or by intravenous or subcutaneous administration of radium bromide or radium chloride. Wherever dosage in micrograms of radium salts is quoted, it refers to *radium element.* Radium has absolutely no toxic effects, it being accepted as harmoniously by the human system as is sunlight by the plant.

The classification of clinical and dosage data reported by Rowntree and Baetjer is of considerable worth. Dosage in radioactive or emanation water is being used in variation of from 1,000 to 1,000,000 Mache units, and the pure radium element in the form of radium chloride has been administered intravenously in dosage as high as 1,000 micrograms or the equivalent of 2,700,000 Mache units in one dose without any untoward effects. With radioactive waters, van Noorden found but little result until his dosage of water approximated 20,000 Mache units daily. The usual dose of radioactive or emanation water used by the London Radium Institute gives a minimum of 250,000 Mache units daily and a maximum of 1,000,000 Mache units. Proescher and Cameron have made over 2,000 intravenous injections of radium chloride in doses averaging 50 micrograms, and my personal observations cover the administration of over 2,800 similar treatments, and I find no report of any unpleasant effects. The radium is not permanently deposited, and that it is finally eliminated from the system is well covered in a research by Seil, Viol, and Gordon, who showed the character of complete elimination and its duration in the human.

Most interesting research is now being made in measuring the radioactive content of the blood for weeks following treatment. The activity of radioactive waters is of short duration and consequently they are limited in their application. It is probable that no emanation can be traced two hours after taking, whereas radium solution by mouth can be traced and measured up to the sixth day. Following an intravenous injection of radium chloride, it can be traced in the blood at least twelve weeks thereafter. Subcutaneous application of the radium by injection reduces its dosage effect about one-half. Some of the earliest of injections of radium element were made by Brill, Falta, Freund, Zehner, and von Noorden.

So far as dosage is concerned in high blood

pressure, we are largely governed by the chronicity of the case and the involvement. Personally, I feel my best results have been shown in what we would term low dosage. Delano of Boston has checked up some exceedingly important findings derived with low dosage. He has found his average dose to be 4 micrograms daily.

It is my usual plan to give an injection of one 25 micrograms (radium chloride) ampulle (2 c.c. normal saline solution), and following with a solution of distilled water, 2 oz., containing 2 micrograms of radium chloride given by mouth as one dose three times a week. After four weeks this drinking solution is cut to two doses per week. While the results are prompt, I never accept a case for less than twelve to sixteen weeks treatment and observation. Careful record of the laboratory findings are always to be made.

The patient may or may not be placed on diet and other rules of hygiene as may seem indicated. In private cases I would of course observe the above, in others I have preferred to watch the results without special or rigid diet. Under such a treatment we have a right to expect by far the large majority of cases of systolic pressures (running from 160 to 200mm) to be influenced to drop from 15 to 40mm. As a rule, active symptoms such as precordial distress, vertigo, and headache disappear in many cases within a few days.

Where radium solutions by mouth alone are given, my dosage starts at 6 micrograms per day in three doses; this to continue for four weeks as a rule, then to follow at 6 micrograms per week for the balance of the course. This plan of treatment does not give as uniformly good results as a course inaugurated with an intravenous injection. The plan of insisting on the long time treatment was arrived at, owing to the fact that after the initial drop in pressure, or within five days, the patients generally felt so much improved that there was a tendency to discontinue treatment. It was necessary to make it clear that the early relief had nothing to do with the permanency of the effect most to be desired. Patience and real radium with or without a portion of psychology are necessary factors to the successful administration of those cases. In your mind will naturally arise the question, what of the permanency of such treatment?

To this I can reply that fully three-fourths of the cases have held without further treatment for from six to twelve months. There are many of the early cases treated nearly four years ago that have suffered no material rise. Others where pressure has gone up sufficiently to produce symptoms have been quickly touched up with a two or three weeks treatment. Some of these returned with their trouble on account of growing bold with their diet. An interesting feature in a large number of my cases has been an activation of sexual powers. Insomnia and nervous symptoms are improved and the patients invariably take on a feeling of well being.

Compensatory functions can be sustained and greatly improved at times with extremely low dosage of radium. In such cases we may observe both systolic and diastolic pressures slowly coming down in a fairly even proportion. Although I can find no record of any unfavorable action following the administration of the soluble salts of radium, I would naturally urge caution in attempting sudden reductions in compensatory high pressures. Here must come a full understanding as to the type of compensation. For the purpose of this paper I have intentionally refrained from dealing with compensatory cases and my selection has been in a measure confined to those types showing relatively a high systolic and a lower diastolic pressure.

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HYPOTHYROIDISM — TWENTY-SIX YEARS' SUPPLEMENTAL THYROID FEEDING.*

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IN 1873 Sir William Gull called the attention of the medical profession to a diseased condition that he termed "cretinism" in a paper entitled "A Cretinoid State Supervening in Adult Life in Women." This was the first recognition, apparently, given to a constitutional disease that has obtained considerable attention of late. The next contribution was from Ord, who, in 1877, grouped these cases under the term "myxedema" and discussed the relation of this condition to atrophy of the thyroid gland and to a similar condition occurring in children, then termed "cretinism." This condition in children had been noted as occurring both in groups and in isolated cases, and had been further designated as "epidemic" and "sporadic cretinism." In Germany Kocher had already noted that in certain instances of total extirpation of the thyroid gland a remarkable cachexia developed termed "cachexia strumipriva." In England Horsley demonstrated experimentally that removal of the thyroid gland from the lower animals produced symptoms identical with those of myxedema and the cachexia strumipriva.

Further elucidation of the subject was made by the Clinical Society of London in 1888, whose report of the type-signs as described by Ord remains classical and deserves full enumeration.

The marked increase in the general bulk of the body, the firm swelling of the skin, not pitting on pressure, inelastic, adherent to the parts beneath and not affected by gravitation; the dryness and roughness of the skin, tending with the swelling to obliterate all lines of expression; the imperfect nutrition of the hairs, leading to their loss; the local tumefaction of the skin and subcutaneous tissue noticed in various parts of the body but most frequently in the sub-clavicular regions; the turgesence and infiltration of the mucous membranes, leading in the mouth to an affection of the teeth homologous with that of the hairs just mentioned; the remarkable physiognomy; the slow, painful utterance, monotonous voice and leathery quality of tone thereof with curious nasal explosions at short intervals during speaking; the slowness of thought and movement; the slowness of perception and response; the defect of memory; the frequent occurrence of mental disorders of an irritable and suspicious character or of hebetude and somnolence, alternating with excitability; the tendency to fall owing to disorder of coordination; the existence of subnormal temperature of the body; the aggravation of all symptoms during low climatic temperatures, and the diminution or apparent absence of the thyroid gland. Among the minor or accessory signs may be noted abnormal subjective sensations belonging particularly to taste and smell, oc-

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cipital headaches, marked alterations of temper and a curious persistence of thought and action, overriding all attempts at interruptions by friends or observers.

The above is the description of a condition resembling in single symptoms a number of other diseases but in its entirety clean-cut and striking.

In regard to frequency in its fully developed state it is no doubt and very fortunately rare but not so rare I believe as has been considered. At a medical congress in Scotland where the subject was discussed Prof. Hoffmann remarked that in Heidelberg he hed seen only one case and from the United States Mackenzie stated that he did not believe that any case had ever been met with in Cincinnati.

We must remember however that until recently little encouragement had been extended for the recognition of this condition as the treatment was practically hopeless. While from a scientific standpoint it is difficult to justify the fact it no doubt is a fact that men will concern themselves much more to recognize a diseased condition when that condition is amenable to treatment than when it is not.

As usually happens, the credit of discovery in the treatment of myxedema can not be attributed to a single source. Lundie (*Edinburgh Journal*, 1893, XXXVIII, 996) recounts that Kocher, in 1883, and Bircher, in 1889, had transplanted the thyroid of lower animals to the site of the extirpated thyroid in cases where the removal of the gland had been followed by symptoms of myxedema. Horsley (*British Medical Journal*, 1890, I, 287) suggested that transplantation be employed in cases of myxedema non-operative in origin. He was led to this suggestion by the observation that in his own cases of transplantation in operative cases there had uniformly been a temporary improvement following the attempted grafting of the thyroid, even when the grafting did not prove successful. In passing it may be stated that in several instances the grafting proved a success and improvement over periods of many months followed.

G. R. Murray of Newcastle, reasoning on the observation of Victor Horsley, from the thyroid glands of sheep prepared and administered extracts hypodermatically, and made the first report of this treatment in the *British Medical Journal* in 1891. The honor of establishing treatment is, however, to be shared with Prof. Howitz of Copenhagen who, in July, 1892, before the Congress of Naturalists, held in that city, demonstrated its efficacy. For a number of months the hypodermatic administration alone was employed, then the feeding of the raw gland or of the gland rarely cooked in the form of sandwiches was attempted. Reports at first failed to recommend the method of feeding on the grounds of serious digestive disturbances being provoked, but with the improvements of administration in which glycerin extracts and the desiccated glands in tablets or capsules have supplanted the crude method, the administration by mouth, except in rare cases of marked gastric intolerance, quite supplanted hypodermatic methods.

The manner in which the absence of the thyroid gland may be compensated for by the administration of extracts from other thyroid glands leads us to infer that in the thyroid are regularly produced certain organic compounds or principles that are essential in the most far-reaching way to the human economy—the secretion and nutrition of the skin and its appendages, the waste, excretion and repair of tissue, and, probably in a secondary way, the reaction and coordination of the nervous system and the mental processes themselves.

The success of the present treatment is now quite established. In England Murray, Horsley, Bramwell, Thomson and W. Pasteur were early contributors to the subject, and in our own country we were indebted to the early reports of Kinnicutt, Starr, Putnam and Crary. It will therefore suffice to proceed to the history of the case that has furnished the subject of the present paper—a case that fortunately is such in its characteristics and response to treatment as to be taken as a type.

A. C., female, thirty-seven years of age, single. Parentage, American of English-Scotch origin. Childhood history presents nothing remarkable other than an attack of scarlet fever and enlarged tonsils up to the age of fourteen when a fullness in the neck was noticed, which made relatives apprehensive of goiter. This appearance had also been presented in patient's two sisters at the same age, but in them had passed away without further disturbance. A cousin of the patient's mother on her mother's side was known at the age of sixty to have goiter, but of this grandmother's other relatives there is no knowledge. This condition of hypertrophy of the thyroid gland lasted for one or two years and received but little attention. In the cases of the two older sisters the condition was more persistent and one of them suffered many of the other symptoms of exophthalmic goiter and was for several years under treatment. Menstruation began at this time—fourteen years of age—and has always been regular, but of one day's duration, accompanied by some pain since. From the subsidence of the swelling of the thyroid gland at the age of sixteen years up to the age of twenty-five years good health was enjoyed and after finishing her own education the patient became a teacher. In the patient's twenty-sixth year—in the spring of 1882—she noticed after rising mornings that there was pain in the limbs and at the same time began to gain weight rapidly so that in less than eight weeks she had gained ten pounds. These pains were in both joints and muscles, and the movements became slow. At times the hand, then the hand and arm, then the whole side would seem paralyzed and remain so perhaps for half an hour. The speech became slow and monotonous. It was suggested that she had dropsy and again inflammatory rheumatism, but the observation was made that the flesh did not "pit" on pressure. Three months after the attack began she was obliged to give up her occupation as a school-teacher and slowly the trouble progressed so that in the fall she was kept at home and was unable to go up or down stairs. During the whole summer she did not perspire at all but felt cold. Her hair began to fall out, and two years later was very thin so that the fleshy scalp was visible. It remained in this condition for two years and then grew in sparse, coarse and dry.

From the fall of 1882, when the patient was first seen, until May, 1894—a period of twelve years—there had been no material change in her condition, though from a determination to be more self-reliant she forced herself to walk and was able to go upstairs very slowly, taking each advance step with the left leg. Under various forms of treatment there seemed at times a slight amelioration in her condition that proved very transitory. Examination of the urine never revealed albumin. She was treated during the greater part of the twelve years under as great a variety of methods as of diagnoses. The diagnoses made are of interest as suggesting the resemblance myxedema has to other pathological conditions, and included Bright's disease, inflammatory rheumatism, Addison's disease, neurasthenia, anemia, pernicious anemia, etc. In the beginning of the trouble the patient was subject to a cough, and apprehended phthisis pulmonalis. She was told there were changes at either apex. As the supra and sub-clavicular regions are the favorite seats for the

deposit of infiltration in myxedema, the attendant physical signs may have proceeded from such a condition.

To recapitulate: *Chief Symptoms*—Pain in joints and muscles, dull headache, weakness, slowness and difficulty in movements, slowness and monotony of speech, inability to carry on mental processes, total or partial, amnesic aphasia, anorexia, marked constipation.

Physical Examination: Patient very anemic. Pulmonary signs entirely normal except dulness at either apex due to myxedematous condition of cellular tissues. Heart action slow and muffled, but accompanied with no murmurs—apex beat could not be determined by palpation but from auscultation apparently not displaced. Liver and spleen normal. General appearance as shown in photograph:—skin thick, coarse and dry—in places resembling the blotches of psoriasis—fine scales becoming detached. Perspiration entirely lacking. Hair upon scalp thin, coarse and dry. Eyebrows very thin. Infiltration of skin and subcutaneous tissue particularly marked under eyes and across bridge of nose. Drooping of the pendulous features, that is, of the lower lip and upper eyelids. In the attempt to keep the thickened eyelids from closing, the forehead became permanently wrinkled and the eyebrows arched. Mucous membranes thick and friable. Nose-bleed frequently occurred. The infiltration of tissues general throughout the body. There never was pain upon swallowing, but at times inability to swallow solid food, and ordinarily the act of deglutition was accompanied by a peculiar sound.

Infiltration of the hands varied; at times patient was unable to approximate the thumb to either the tips or bases of fingers. Expression and manner that of deep hebetude. A record of the temperature and pulse at this time was made.

		Temperature	Pulse
May 19	4 P. M.	96 degrees	69
May 20	7 P. M.	98.6 "	52
May 21	9 A. M.	96 "	56
May 21	1 P. M.	95 "	60
May 21	4 P. M.	96.4 "	58
May 21	7 P. M.	95.5 "	57

The average temperature during these three days was found to be 96.25°—more than 2 degrees below normal, and the average pulse—58 2/3 beats to the minute.

On May 22 the thyroid treatment was begun, starting with one of Burroughs and Welcome's tablets, each tablet consisting of dried and compressed thyroid and representing five grains in weight of the fresh gland. It will be noted at once that this was a very small dosage. The thyroid gland in sheep varies in weight from ten grains to one ounce, and the two lobes average rather under one ounce. On May 22 the temperature ranged from 95° to 97°, and the pulse from 53 to 60. On May 23 it ranged from 95.6° to 98.6°, and pulse from 56 to 68, and the patient began to feel feverish. On the 24th, the third day of treatment, the temperature reached 99.75° and the pulse 70. on the 25th the temperature kept between 98.5° and 99.75°—the pulse between 62 and 70. Buzzing noises began to be experienced by the patient and a feeling of soreness all over the body. On the 26th the soreness had so much increased that the patient remained all day in bed and avoided moving so far as possible. Curiously enough these same sensations had been experienced twelve years before at the onset of the trouble and had never recurred with the same severity up to this time. A difference was already noticed in the patient's manner. Her responses were much quicker and speech less slow and monotonous in tone. Her bowels acted without cathartics which had come to be an unusual occurrence, and the excretion of urine was much increased. For the next week the patient remained in bed; itching of the skin became very troublesome and desquamation in places occurred. On the fifth day of treatment dosage was increased from one to two tablets per day and kept at that amount for one month. Within a few days the pains became less severe—the temperature kept between 99.5° and 100.5°, and the pulse between 66 and 82.

On June 6, two weeks after beginning of treatment, the patient was up and about the house and there was a marked change in her appearance and manner. Her eyelids and hands were thinner—her waist measured two inches less, and her speech was much more normal in rapidity and intonation. At this time the hair began to fall out. Normal perspiration began and for the first time in twelve years the patient experienced the discomforts of hot weather. At about this time occurred periods of weakness, dizziness, feeble heart action and prostration, which, in the light of a more careful study of the dangers of this treatment, I can but look back to with alarm.

It is commonly enough understood that the treatment should be administered with caution, but the extent of the dangers, in the enthusiasm which the wonderfully specific effects of the treatment arouses, is likely to be misapprehended. Dr. G. R. Murray, the initiator of the treatment, had, in his first four cases, two terminate fatally, but both were over sixty years of age and rather feeble. John Thurson at the Medical-Chirurgical Society of Edinburgh reported a fatal case—a patient who died at the end of the third week of treatment and to whom not more than three and one-half sheep's thyroids in all had been administered. In the London *Medical Press* Foule reports a death following a violent diarrhea caused by administration of a single one-eighth of a gland dose. In a collection of forty-seven cases which I have been able to study there have been four deaths. To my mind this has been no more significant than the frequency of severe toxic symptoms in the balance of the cases. In four cases that Starr reported there were alarming manifestations in two instances—his first and third cases—the third requiring most energetic stimulation and apparently very near a fatal terminus. It is undoubtedly true that in the treatment as at first conducted there have been toxic symptoms manifested in feeble pulse, prostration and syncope, such as would not be countenanced in the exhibition of any other of our more powerful drugs.

Later in the treatment, through a failure of supply of the English tabloids, I resorted to a granular extract of our own market that was sold with dosage indicated as from five to ten grains, t. i. d.—fifteen grains of this preparation representing an average thyroid lobe. Following my first intention of employing very small dosage I used but five grains *once a day* and with this, though the treatment was in the third month, I occasioned symptoms of dizziness and weakness that made it prudent for the patient to remain in bed. This was one-third of the minimum dosage recommended! A five grain capsule every other day was found entirely ample to continue treatment.

Three months after the beginning of the treatment the patient was taking one five grain capsule once a week, and this small dosage proved entirely adequate for a period. The patent from that time began to enjoy good health, so that in the following year she was accustomed to take four mile morning walks, enjoyed society, laughed, sang and was her old self again. Her skin was soft and pliable, the wrinkles faded out, and an abundant growth of fine hair appeared on the scalp, eyebrows and extensor surfaces of the limbs. Her manner was even more changed than her appearance, and the membere of the immediate family declared that they should never have recognized her as the same per-

son had they not watched the gradual transition.

A normal amount of subcutaneous fat was gradually established, and the changes in skin and hair were complete in two years. In the years that followed the patient soon learned to adjust the dosage to her own needs. Several preparations were used with satisfactory results. In general in more recent years the frequency of doses has increased. In place of one or two tablets weekly, from three to six are now required. The patient now enjoys good health, in fact has experienced no serious illnesses. The length of the period over which this recovery has continued—twenty-six years—is the most remarkable feature of the case. It is possible that in length of period of supplemental thyroid feeding and of observation the case is unique.

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THE SURGICAL ASPECTS OF PLEURISY.

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It is not the intention of the writer to go deeply into the etiological or pathological aspects of pleurisy in this paper, but an attempt will be made so to classify the different types from an etiological and surgical point of view as to present to those interested a working basis whereby we may meet on common ground and discuss the relative merits of the classification and therapeutic procedures I will here in outline.

There are three types of pleurisy of interest to the surgeon, and they are as follows:

1. *Acute Pleurisy with Effusion*: (*a*) Primary acute effusion, partially absorbed. (*b*) Subacute effusions continuing for a period of weeks or months, primary in onset, with no tendency to absorb. (*c*) Subacute simple effusions, secondary to inflammations or infections of the lung proper, which, if left to themselves, gradually undergo partial or complete absorption with or without organization, as in the serofibrinous plastic type. (*d*) Empyema: Acute, infective effusions, primary or secondary to infective pneumonia, pericarditis, influenza are, as shown by the late war, epidemic in nature.

2. *Chronic Pleurisy*: (*a*) Chronic pleurisy with effusion, with or without an etiological basis of infection, and which usually tends to interfere with respiration. (*b*) Chronic fibroadhesive pleurisy, consisting of organized products of effusion with the formation of connective tissue, embarrassment of respiration, retraction of the chest wall, and complications such as secondary anemia, progressive weakness, dyspnea, cough, and undermining of the general health.

3. *Miscellaneous Type*: (*a*) Hemorrhagic: (1) Secondary to nephritis, heart disease, or general anasarca. (2) The breaking down of organized granulation tissue. (3) Secondary to cancer, sarcoma, etc., of the lung or mediastinum. (4) Hydatid or other cyst formation in the lungs, pleura, or diaphragm. (*b*) Localized or encysted types simple in nature and tending to undergo absorption.

Bacteriologically there are four groups due to primary or secondary infection: (1) (*a*) *Streptococcus hemolyticus*, (*b*) *Streptococcus pyogenes*, (*c*) *Pneumococcus*. (2) Staphylococcus. (3) Tubercle bacillus. (4) Friedländer's bacillus.

Acute Types.—The *streptococcic* type is, of course, the most rapid and fatal and usually follows an infection of lung tissue or a general infective bronchopneumonia. The temperature rises very rapidly, the pulse is very rapid and weak, and shock and collapse are early symptoms. The mortality in this type is extremely high and treatment in some instances seems to be of no avail. Personally, I am of opinion that this high mortality has been largely due to the fact that the patients have been treated as test-tubes and not as human beings. I further believe that exposure has taken its toll, and by this I do not mean that a patient should not have fresh air, but conservatism should be used in the "fresh air cure," especially in those debilitated individuals who fail so rapidly and who seem to have no chance from the onset.

2. Infections Due to the *Pneumococcus*. This type of infection is usually comparatively mild in nature and tends to recover, if the effusion is relieved. It follows pneumococcus infection of the lung and bronchi, or may be primary in onset. The presence of the pneumococcus is of great significance in the prognosis, as the mortality is quite low, the patient is usually not extremely ill, and recovery is fairly rapid.

The *staphylococcus* produces symptoms and a clinical course not unlike the pneumococcic infections. Convalescence is usually more prolonged and complications and sequelæ more frequent than in the pneumococcus variety, but with adequate drainage the prognosis is good.

The tuberculous type. This is, of course, secondary to tuberculous inflammations of the lung or pleura and may be acute or chronic in nature. The pleura may be studded with tubercles and bathed in a clear, straw-colored fluid of low specific gravity, and of large quantity; it is apparently sterile by slide examination, but the mononuclear leucocytes are present in fairly large numbers and inoscopy usually shows the tubercle bacillus. Inoculation with a considerable quantity of the fluid will give a positive reaction in guinea pigs and the tuberculin test is present in at least 65 per cent. of the cases. The cytodiagnosis is, of course, important in this as in all other types of pleuritic effusions. In a small percentage of cases of tuberculous pleurisy, exudation is absent, the inflammatory reaction being simply the production of a roughened fibrous connective tissue.

Chronic Types.—These are of interest because of their extreme chronicity and disturbance of general health when not given the benefit of treatment. The fibroadhesive types present strong bands of connective tissue or synechiæ extending from the parietal to the visceral pleura; or chronic effusion, which, when left alone, remains for months without undergoing absorption or material change. Lung collapse or compression is favored when these bands or accumulations are not relieved, and this with permanent damage. The collapsed or compressed lung, if permitted to remain in this condition for a considerable length of time, may resist all efforts at reexpansion and remain collapsed with a retraction of the chest wall, atrophy of the intercostal muscles, and deformity of the spine.

Symptoms.—1. Pain: In the acute types without effusion pain is intense from the onset, knife-like, stabbing in character, and depends upon respiration. If effusion takes place the pain descreases rapidly in proportion to the amount of exudate present.

2. Temperature: The onset of acute pleurisy with or without infection is always accompanied by elevation of temperature at some time. Even the apparently sterile effusions are associated with temperatures of 101-102° and the infected ones much higher, reaching in some cases 104-104.5°, though this is unusual.

3. Respiration: The respirations are markedly affected from the onset. They are rapid, shallow, and show restricted movement on the affected side. There may be dyspnea from the onset, produced by the pain primarily, and later from lung compression.

4. Cough: Incessant, dry, hacking cough usually begins with the initial pain and may be relieved only by an opiate. It is commonly referred to as a reflex cough, the irritation or compression being the primary cause.

5. Pulse: The pulse is rapid and weak, sometimes assuming a thready character.

Physical Signs.—1. Inspection reveals an anxious expression of the face, great restlessness, and rapid, shallow respirations with restricted movement of the affected side. In large effusions there may be bulging of the intercostal spaces.

2. Flatness may be elicited by percussion, and when effusion is present the location may be changed by change of position of the patient.

3. Auscultation may reveal diminished breath sounds and a friction rub with a disappearance of the latter when effusion occurs. Bronchial breathing may be present (transference from the compressed lung).

4. The tactile fremitus may be decreased or abolished entirely, depending upon the amount of effusion present.

Leucocytosis may or may not be present in the types with effusion. When present it is usually between 10,000 and 15,000. In about 10 per cent. of cases a leucopenia may be present, the severity of the disease or amount of effusion not affecting the leucocytic count to any great extent.

Aspiration.—This diagnostic procedure is, in my opinion, most important, as it will reveal: (1) If exudate is present; (2) Character of exudate (specific gravity, color, consistency); (3) What organisms, if any, are present as determined by microscopic examination and animal inoculation; (4) Amount of pressure present.

X-ray.—The value of the *x*-ray is obvious, in that it shows organic displacements, compression, quantity of effusion, etc.

Treatment.—Effusions: When one is convinced by the history, physical signs, aspiration, and the *x*-ray that pleuritic effusion is present in quantity, embarrassing respiration, with continued fever and the signs of lung compression, and the expectant treatment combined with potassium iodide and restriction of fluids has failed, thoracotomy or aspiration by trocar and cannula may be all that is required. The reinjection of 30 c.c. of the aspirated fluid after cooling has caused improvement in a number of cases, especially of the tuberculous variety, no doubt acting in these cases as an antitoxin.

If aspiration has to be repeated often it would be well to inject 30 c.c. of 5 per cent. formalin in oil or glycerin. This method produces irritation and some pain, but invariably causes a more rapid absorption of the fluid.

Fibroadhesive: When a pleurisy with effusion is slowly absorbed, the restricted breathing and lung compression tend to permit organization of the remaining fluid and bands of fibrous tissue, or synechiæ form between the pleural walls, which become very firm in nature and on ordinary or deep respiration cause pain and restricted breathing. Breathing exercises may or may not cause these organized deposits to disappear. If forced breathing is not sufficient to remove them or to so stretch them that the pain is relieved, then we may resort to rib resection or spreading and removal by the cautery.

Technique.—After incision of the parietal pleura, a careful examination by the gloved hand is made in an attempt to determine the location and density of the adhesions present. They should be grasped by forceps, delivered into the wound, and divided between forceps. After division is accomplished another forceps should be placed on the divided band as near the pleural walls as possible. The knife cautery is used to excise them at this point and a close examination is made for bleeding. If any is present, the cautery must be reapplied until all oozing had ceased. I shall not soon forget this lesson of complete hemostasis before the wound is closed, one case of postoperative hemothorax necessitating reopening of the chest being sufficient to make me realize the importance of this point in technique.

The simple thoracotomy for removal of synechiæ should not be drained ordinarily, as it does not materially affect the end results so far as postoperative complications are concerned and may be the cause of reformation of adhesions. The operation completed, the parietal pleura is closed with continuous fine catgut and retractors removed. If the muscle layer has been separated it should be closed by interrupted catgut. The skin is closed with dermal suture or continuous silk and a dressing applied over a broad strip of adhesive to limit respirations during the first 48 hours.

In opposition to popular opinion, I am firmly convinced that the application of a wool pneumonia jacket prevents in a large measure postoperative bronchitis and pneumonia, and I would urge its constant use in each and every operation upon the thorax, be it performed under local or general anesthesia.

Breathing exercises in the open after convalescence has proceeded to a point of safety are, in my opinion, good treatment.

Nutritious diet, some form of iron and arsenic, and light exercises are, I believe, very important adjuncts in the postoperative treatment of these conditions.

Empyema.—I do not think that it is within the scope of this paper, nor this the time or place for a lengthy discussion of empyema, as the literature is already overburdened with the subject. In almost every issue of our better journals there ap-

pears at least one article on some phase of treatment of this disease, all of which have an element of merit and none of which is ideal or guarantees a reasonable percentage of recoveries by any of the methods now in vogue. The much used and (in some circles) highly praised Dakin's solution is, of course, an absurdity and should be placed in the same category as acriflavine, the drug of 100 per cent negative results in the treatment of any infection. I do not wish to be misquoted or misunderstood in regard to Dakin's solution. I believe it has a definite place in the treatment of the bacillary gas infections and, to a limited extent, in some types of bone infections; but it never was, nor will it ever be, scientific treatment in thoracic surgery any more than it could be in abdominal surgery, and I am sure that anyone who is familiar with the experiments of Mann on the peritoneum will not attempt its use in the abdomen.

Serous and mucous membrane infection is not the place for Dakin's solution in the light of past experience. The use of mercurochrome is attended by a miraculous reduction of discharge and temperature, but I have used it in only two cases and am not yet prepared to give a résumé of results.

Vaccines are efficacious and should be given a thorough trial in empyema, and I am sure their use is attended by fewer complications, reduction in mortality and postoperative morbidity, any or all of which are so earnestly being sought for.

The intelligent use of vaccines in infection of the chest or in any other infection represents a distinct advance in therapy and will, I believe, undoubtedly assume a place of importance second only to surgery, which place it so justly deserves.

The types of pleurisy associated with tuberculosis should be given the benefit of operation in the removal of fluid or the division of adhesions, and if this is done early the patient has a much better chance of ultimate cure than if they are left to nature. Formalin and glycerin, 5 per cent, in this type of pleurisy is especially valuable. Then, too, the general health is much improved, the pain is relieved, and the psychic element is removed, which is so very important in the cure of tuberculosis.

Tuberculin correctly administered is an important adjunct here, and its use is invariably attended by marked improvement.

Summary.—In recapitulation I would emphasize:

1. Correct diagnosis by history, physical signs, and the *x*-ray.
2. Early operation with removal of fluid accumulation and appropriate treatment of adhesions and removal of synechiæ.
3. The knife cautery, to the exclusion of all other methods of operative technique.
4. Advantage of postoperative breathing exercises and nutritious food.
5. Use of pneumonia jacket in preventing postoperative sequelæ.
6. The continuous, intelligent use of vaccines.
7. Continued experimentation with mercurochrome.
8. All chronic fibroadhesive types of pleurisy, as well as those with accumulation causing disturbance of general health, should be given the benefit of early operation.

25 East Washington Street.

PURE APHASIAS À PROPOS OF A CASE OF PURE ALEXIA.*

By ALFRED GORDON, M.D.,

PHILADELPHIA.

Aphasia may be produced by a lesion situated in any portion of the speech-zone. The latter may be involved in two different ways: either a lesion destroys a part of this zone and its intrinsic fibers, or else when the lesion is sub-cortical, it isolates an area of this zone from the remaining cortex. We will be concerned exclusively with the latter localization of lesions. This is the so-called pure aphasia. The general essential characteristic of pure aphasias consists of preservation of the inner language, while in aphasias of cortical origin the inner language is always altered. The latter variety is incomparably more frequent than the former. In pure aphasia, whether we are dealing with motor, auditory or visual images of language, the centres of these images are isolated in their physiological connections. In the motor variety the disorder is only in the spoken language, while all other varieties of language are intact; the cortical center of Broca can no more control the movements of the tongue and lips; the association fibres subjacent to the cortical area are destroyed.

In the sensory varieties of aphasia the cortical centers of word-hearing or of word-seeing may be equally separated from the common centers of hearing and seeing, respectively.

There are very few cases of pure word-deafness in the literature. Lichtheim and Sérieux reported similar cases in which the patients preserved the power of volitional speaking, of writing, of reading aloud. They had neither paraphasia nor paragraphia. In cases of word-deafness of cortical origin, paraphasia and paralexia are present because the patients are unable to verify through the affected cortical center what they say or mean, whereas in cases of pure word-deafness they can do this: they understand questions in writing and reply correctly; spontaneous writing and copying are normal. What is wanting is writing from dictation, the patient hears words and sounds but cannot understand what is said to them.

Cases of pure word-blindness similar to those with word-deafness are likewise rare. Very few instances are recorded in the literature since Dejerine first called attention to it.

The following case, although not as yet verified by autopsy, is a clear example of the condition and deserves to be put on record:

Man, aged, 72, right-handed, presents an emphysematous state of his lungs and endomyocarditis with arrhythmia. Besides, arteriosclerosis is very much pronounced. Blood pressure: systolic, 190, diastolic, 120; urine contains a small amount of albumin, Wassermann is negative, eye grounds are normal. Several years ago he had a mild attack of right hemiplegia, from which he made a complete recovery. About one year ago he had an attack of vertigo with severe headache, following which he developed a condition which has remained unaltered up to the present time. The patient is unable to read printed and written words. Spontaneous speech, repeated speech, singing, understanding spoken words, are all carried out correctly. Reading aloud and mental reading are impossible. The

*Presented at a meeting of Philadelphia Neurological Society, April, 1920.

patient sees the written words, is able at times to name correctly some letters, but is utterly unable to make out the sense of the word. Copying is very difficult, but writing under dictation and spontaneous writing are almost entirely correct. However, the letters written appear much larger than those of the patient's former writing. The inability to read is observed also when the patient endeavors to go over his own writing, in which he has difficulty in recognizing his own name and the most familiar words. If at times he recognizes an occasional word he succeeds in it only when he follows each letter with his finger.

It is evident that in this case all images of the language are preserved; patient understands spoken words, writes spontaneously and under dictation, is able to pronounce.

Two other interesting phenomena are present here: First, the verbal blindness was only with regards to words; but not to figures; the patient was able to add, subtract and carry out other arithmetical operations. Second, there is a right homonymous hemianopsia.

The clinical picture of the present case corresponds precisely to the description given by Dejerine in 1892 in which he isolated from Wernicke's sensory aphasia a form of aphasia to which he gave the name of "pure word-blindness."

In alexia of cortical origin, which is due to a lesion of the angular gyrus, we usually observe an impairment of the inner language; there is ordinarily a certain degree of word-deafness, of paraphasia and of agraphia for spontaneous writing and for writing on dictation. Moreover not only written words, but also figures are not recognizable by the patient. Finally a homonymous hemianopsia is very rarely, if at all, observed in cortical lesion of the angular gyrus.

In the present case the lesion which is a softening due originally to an embolic occlusion is probably situated in the inferior longitudinal bundle, viz: fibres connecting the center of general vision with the center of visual images of speech (angular gyrus). Such a conception explains readily the absence of all other aphasic disorders and the presence of the hemianopsia. We are dealing, therefore, with a case of "pure alexia."

It may be of interest to note that there has been no improvement of the patient's condition.

1812 Spruce Street.

THE BACTERIAL FLORA OF TUBERCULOUS SPUTUM.

By JOSEPH E. STROBEL, M.D.,

HARTFORD, CONN.

In reporting this work, I wish to state that it was done while on temporary relief duty at the Meriden Tuberculosis Sanatorium, Meriden, Conn. While there the following problem presented itself: Is there any morphological change in the tubercle bacillus before, during or after hemoptysis, and is there a constant presence of gram-positive cocci? The problem was followed out using guinea-pigs and rabbits for the test.

While there but five hemorrhages occurred. In all, acid-fast bacilli were found, presenting a marked granular or broken down rod which held the stain well against an acid. Gram-positive cocci were observed in all specimens. These were arranged singly, in pairs, in chains and in tetrads. The chains did not appear to be any longer than the usual length of a human tubercle bacillus. Nothing different was noted in the other cocci.

From these specimens guinea-pigs were inoculated, using a sterile syringe and needle and without any previous chemical treatment of the sputum. One pig died twenty-two days after inoculation. No macroscopic tubercles or cheesy masses were found. The liver and spleen were greatly enlarged and adherent to the stomach. Large tubercle bacilli were found in abundance in smears from all organs. Blood smears were negative. The gram-positive organisms that were injected with the sputum were not recovered. The second pig died thirty-five days after inoculation. At autopsy this presented an entirely different picture. Lymphatic glands, liver and spleen were greatly enlarged, and the intestines were matted together by numerous adhesions. On the right they were strongly adherent to the parietes; on the left a large abscess presented which was about the size of a walnut. This abscess was well encapsulated, with a thick wall and adherent to the intestines and parietes. The liver and spleen were greatly mottled, as also were the lungs. The kidneys were enlarged and congested. Smears from all these organs contained tubercle bacilli in abundance. All tubercle bacilli found in pigs were well separated and appeared to have no tendency to clump or even arrange themselves in pairs. No gram-positive organisms were found in smears from these two autopsies. No report can be made on the other three pigs, as I had to leave Meriden at that time.

After returning to Hartford four more hemorrhage cases were encountered. The sputum of all contained tubercle bacilli and gram-positive cocci as in the other cases. In one of these cases the diagnosis had been in doubt as tubercle bacilli had been absent on repeated previous examinations. The hemorrhagic sputum, however, revealed them in abundance. A rabbit was inoculated with sputum from each of these cases. One rabbit died in twenty-four hours showing marked congestion of the lungs and liver. Blood smears contained large encapsulated diplococci in great numbers. The second rabbit died on the ninth day. In this animal there was a severe peritonitis with adhesions and pus in the peritoneal cavity. Encapsulated dyplococci but no tubercle bacilli were found in this pus. Blood smears were negative. The other two rabbits died of lobar pneumonia and pneumococcic septicemia. In all patients after hemorrhage had ceased the microscopical picture of the sputum had not changed.

To sum up, we have two widely different infections in these animals. The guinea-pigs died from an extremely virulent tubercle infection, while the rabbits undoubtedly died from the effects of the pneumococcus. One must conclude from the above that no relation existed between the gram positives and acid fasts in these instances. The marked beading of the tubercle bacilli originally was in all probability due to the poor culture medium in which it was growing. As soon as the culture medium was improved (guinea-pig) they immediately began to grow luxuriantly.

19 Wethersfield Avenue.

PHIMOSIS AND THE GUILLOTINE, A NEW INSTRUMENT FOR CIRCUMCISION.

By CHESTER TILTON STONE, M.D.,

BROOKLYN, N. Y.

TRUE phimosis, as its Greek meaning, *to bind*, expresses, is a narrowing of the opening in the prepuce. It is probably the commonest of all congenital malformations of the urinary tract. We have come to apply the term to long foreskins in general, whether or not retractable. There are also included under this classification, long loose foreskins, short loose, long tight, or short tight ones with various intermediary stages. Frequently, especially in children, the prepuce may be found adherent.

Phimosis may be acquired as well as congenital. Chronic or recurrent balanitis and chancroids, in their process of healing, are common causes. In these cases the prepuce is greatly inflamed, swollen and edematous. Cases of this nature are often seen in consultation.

At first glance the patient seems to be suffering from an acute urethritis. There is a profuse discharge and, in many cases, almost a constant drip. So rich is the pus in color that one may readily make a false snap diagnosis of gonorrhea. A properly taken history, together with a painstaking microscopic examination of smears and examination of the urine, rule out this possibility. Palpation clinches the diagnosis, for invariably in these cases the lesion or lesions may be felt beneath the prepuce. Of course the patient may have a gonorrhea complicating this condition. The microscope will tell the story. Each condition must be treated separately.

It is important to remember that however bad the case, and however imperative may seem the operation, a few days should be devoted to quiet, tonic treatment, subpreputial injections and hot soaks, to reduce the discharge and better fortify the patient for a more rapid recovery. Then operate. If operation is not performed there will be slough, loss of gland tissue and deformity. Not infrequently we see such cases, where a chancroid has sloughed through the prepuce or where a verrucca by pressure has perforated the foreskin. In other cases ulceration has pierced through the dorsum of the prepuce with the gland protruding. In these latter cases edema soon follows. This should be treated by hot lead and opium soaks or hot solutions of magnesium sulphate. When the swelling is reduced, circumcise.

Many conditions may be laid to phimosis. In children frequency and enuresis are probably the most common. In these cases the skin is long, tight, and as a rule adherent. Due to difficulty in passing urine the foreskin becomes ballooned, and there is back pressure through the urethra causing irritation of the urethra and sphincter. If neglected the condition progresses to the bladder, causing irritation and hypertrophy. The ureters and kidneys are next affected, producing dilated pelves. Masturbation is frequently caused by irritation either in or underneath the foreskin. Circumcision does not always entirely cure this practice. Frequently it is necessary to treat the ensuing neuroses over long periods.

The fact that urethritis is contracted oftener and more readily by those having phimosis is indisputable. This is due not only to the impossibility of properly cleansing the organ, but to the fact that the long foreskin acts as a dam which entraps and retains the germs, holding them in sites favorable for further spread and incubation. Other venereal infections, as chancres and chancroids, are likewise aided.

Among the remote results in adults are retention and incontinence, due to spasmodic contractions or relaxations of the cut-off muscle, or to irritable bladder induced by prolonged irritation of the glans penis.

When the patient is suffering from a long standing phimosis, prolonged or violent straining efforts upon urinating in time will produce hemorrhoids, prolapsus ani or herniæ. Numerous nervous affections, chief among these are spastic palsies, simulated hip-joint disease, muscular incoordination, convulsions, neurasthenia, chorea, hysteria, and hypochrondria, may be directly traced to phimosis. In children, especially, these are prominent. In adults irritation often causes a reflex nervous condition. This is called herpes preputuialis. Treat first palliatively by injecting astringent disinfectant soothing or cleansing solutions beneath the prepuce. Circumcise as soon as the irritation subsides.

In cases of phimosis when the epithelium of the balano-preputial sac becomes macerated, urine is impeded in its flow and drops are retained. These become mixed with smegma. Lack of cleanliness leads to recurrent attacks of inflammation. As a result there is a proliferation of epithelial cells called venereal warts. Epithelioma may develop if the case is neglected. It may go on to a gangrene. Preputial calculii are similarly formed, save that there is a calcification of smegma and decomposed urinary salts.

How often we find a general practitioner, who for weeks, months, or in some cases years, has struggled with a stubborn case of urethritis. Symptoms apparently clear, the patient feels fine; the physician beams with pride at his prompt results, when lo! a few days pass and the "cured case" either returns or goes elsewhere with the same old story. A great majority of these cases have phimosis. Circumcision in all of these, whether the skin be loose or tight, will not only win half the victory but start the patient far on the road to recovery. The reasons are obvious. It helps discourage the morning "milking," a habit so common among chronics; it helps remove irritation from without; it enhances cleanliness, promotes better drainage, lessens chances of complications and boosts the patient both physically and mentally.

Another class of visitors to many offices is made up of those who come complaining of impeded coitus and premature ejaculation. A large percentage of these will be found to be suffering from an enlarged verum montanum, irritable prostate, or over-distended vesicles. In going over a large number of these cases one is surprised at the great many suffering from phimosis. The surprise is still greater, however, at the rapidity with which symptoms subside following circumcision.

These cases may be divided into two groups: those suffering from reflex irritation induced by the tight foreskin, and those who have an acute or

chronic infection added to this reflex irritation. It is needless to add that circumcision *per se* will not entirely cure the condition. Other treatment will be necessary. Circumcision does pave the way, however, to a recovery which would otherwise be impossible or at least difficult.

A type closely allied to the above, and treated in a similar manner, is that suffering from an arrested development of the penis and testicles. Here are found as a rule the masturbators, with their premature erections, sexual perversions and excitements. Few of us indeed realize how often a phimosis may be a great incumbrance or how it may govern a really serious condition.

Recently there came to my attention an old man, seventy-six past, who had suffered from phimosis all his life. No great trouble had resulted until after he had developed incontinence. The constantly dribbling urine macerated the epithelium of the glands, producing erosion, and later beginning gangrene. After doing circumcision, which seemed to be the only solution, not only did this condition clear up, but his frequency also diminished.

The history of the operation of circumcision is as interesting as the modes and customs are varied. We find it dating back long before the Christian era, even before the time of Moses and Abraham. It is a religious rite, among not only the Hebrews, but various races on different continents. It has always been a custom among the Egyptians, Arabs, Persians, East Indians, North and South American Indians, certain African tribes, Australians and some South Sea Islanders. As a religious rite it dates back more than 2000 years B. C. With the Hebrews it is performed on the eighth day while the Egyptians leave it till the sixth to eighth year. While the history is interesting, space here forbids its recital. So with the history of the method of removing the redundant skin. Probably there is no operation in history with so many techniques. A paper could be written on this subject alone. Though the transition from the old crude methods of chopping the skin off with a ragged shell, or biting it off with a mouth filled with wine, to removal by knife and scissors, was marked, many consider the transition still greater from the former modern methods to that of the guillotine.

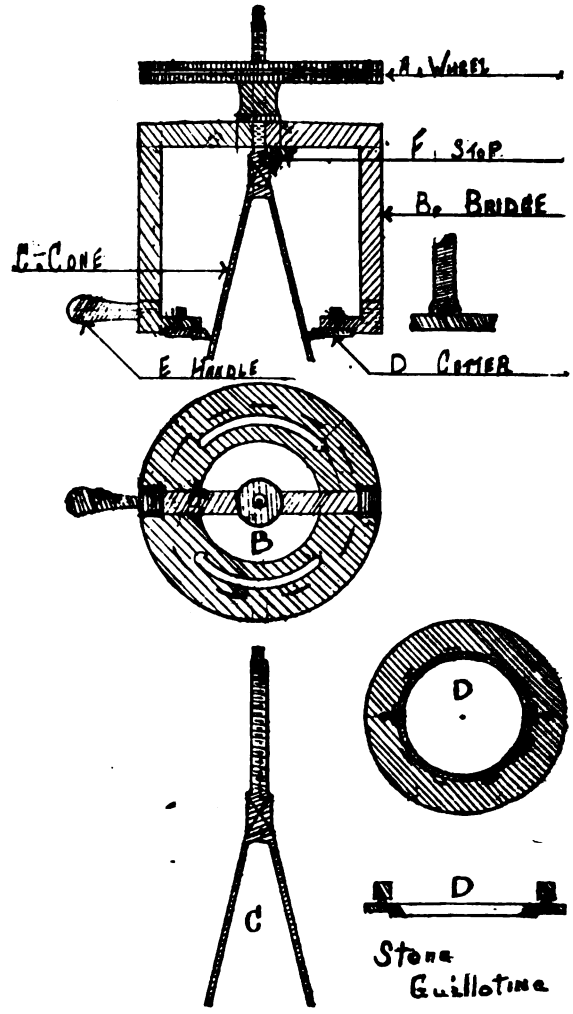
Since writing my article which appeared in the MEDICAL RECORD of September 18, 20, I have greatly improved the instrument. By referring to the accompanying illustration one may readily see the additional advantages. An illustration of the new improved instrument with the method of using it follows:

After first scrubbing up the patient, mark the foreskin with a pen at the place where the cut is to be made; select the size cone (C) suited to the patient, sterilize this with its cutter (D); when properly sterilized insert cutter in bridge (B) and set aside. Now taking the cone, draw back the foreskin behind the glans; place the cone on penis and slide the skin over it. Attach bridge to cone so that edge of cutter is in apposition with inked line; turn down wheel (A) until cutter gently compresses the skin. Inject local anesthetic just posterially to the cutter, around the whole penis. When sufficient time has elapsed for the anesthesia to be effective, turn down wheel firmly until a sharp "click" is heard. The skin is now off. Having removed the instrument, a clean smooth cut will be found. No bleeding will be in evidence and the edges will be found to be perfectly opposed. It is well to gently massage the cut surfaces in order to locate the bleeding points which should be tied off.

As mentioned in my former article our method of suturing is to place four anchor sutures, left long for fastening the bandage, with the intervening spaces closed by continuous suture.

With the instrument are eight cones and eight cutting plates that vary in size from a large adult to a small infant.

An operation performed by this method should give union in two days. There will be found no



ragged edges, bulgings, or unforgivable buttonholes. In my series of over 500 cases performed with this instrument there have been no infections and no postoperative bleeding. Five circumcisions may be performed in one hour. The patients are invariably pleased with the results. The instrument itself is easily taken care of, and is practically fool proof. It does away with the need of an assistant.

A word of caution might well be given here to aid in performing a pleasing circumcision. Where feasible it is always best to make the removal midway between the glans and the tip of the prepuce. For, in case of insufficient removal there is danger of contraction along the line of incision and the operation

is of no avail. In case of removing too much the patient will curse you to his dying day. You have only to recall the moving picture of the bent gun barrel to imagine the result.

Care should also be taken while placing the cone in position to avoid injuring the glans. It is wise after operation to be sure that all bleeding is checked especially in hemophiliacs, as hemorrhage following circumcision is not only a source of discomfort, but in some patients fear or even danger.

Bearing in mind that the prepuce is in two layers, one continuous with the skin of the organ, the other a reflection of the mucous membrane from the sulcus behind the glans, which unite, forming the margin of the prepuce, this relation should be imitated in doing a circumcision.

The guillotine uniformly gives better results than any method as yet tried.

62 PIERREPONT STREET.

Medicolegal Notes.

Admission of Expert Evidence as to Lost X-Ray Picture.—In an action for personal injuries, resulting in a dislocated hip, it appeared that an examination was made of the injured hip at the hospital by the attending physician, Dr. Guthrie, who took the patient to an *x*-ray expert, Dr. Pepper, where a plate was made of the hip, after which the patient was sent home. Drs. Guthrie and Pepper examined the plate and determined from the information received therefrom and from their examination of the injured leg that there was a fracture of the hip bone. On this the subsequent treatment of the patient was based. The *x*-ray picture was subsequently lost, and the question arose as to whether the trial court erred in permitting Drs. Guthrie and Pepper to testify as to what the picture disclosed to them. It is quite true that before a radiograph can be used as evidence it must appear that it was so taken as to represent correctly the object reproduced. Of course, it is not meant by this that some one must testify that it is in fact a correct representation. Manifestly this would be impossible, for the reason that the object thus photographed is not visible except with the aid of the *x*-ray machine. What is meant is that it must appear that the machine was so placed and operated as to reproduce correctly the object brought within the radius of its activity. Nor need this necessarily appear by a direct statement of the operator to this effect, although it may be, and ordinarily is, shown in that way. It may, however, as well be shown from a detail of the circumstances. In this case Dr. Pepper, who took the radiograph, was shown to be an expert, with large experience in the work. The picture was taken with a view of determining the nature and extent of the injury with a view of treating the same, and the treatment was administered with favorable results. This, the court held, might not prove absolutely that the plaintiff was injured as disclosed by the radiograph, but the fact that the injury sustained by her responded to the treatment ordinarily administered for the relief of an injury such as that shown by the *x*-ray was, to say the least, very strong evidence that her injury was actually of that character, and sufficiently authenticated the picture to justify its admission in evidence.

Could the doctors who examined the radiograph testify as to what it indicated? It was contended that the bones themselves were the primary evidence, that the picture, if in existence, was secondary evidence, and that the statements of the doctors in regard to it were tertiary evidence or knowledge derived only from a view of secondary evidence. It was held that the original injured condition of the bone having been changed by lapse of time and the treatment administered, and the only reproduction of that condition being lost, the best evidence obtainable as to what condition actually existed at that time was the impression made upon the minds of the two doctors from their examination of the plaintiff's hip and the radiograph thereof; and it was not error to admit this evidence.

After the trial had been entered upon the defendant requested that a radiograph be made of the injured member, and the plaintiff was willing that this be done. It was held not error for the trial court to refuse the request, no reason being given for not having made it before the trial, and it did not appear how long the trial would be delayed by granting the request.—Quinn v. Flesher, West Virginia Supreme Court of Appeals, 102 S. E. 300.

Massachusetts Statute Requiring License to Practice Optometry Held Valid.—The Massachusetts Supreme Judicial Court holds that Massachusetts St. 1912, c. 700, for the regulation of the practice of optometry, is violative neither of the State nor the Federal Constitution. Such work or practice has such an intimate relation to the health of mankind as to bring it within the power of legislative supervision through the exercise of the police power. Vision is essential to the highest usefulness of the individual. The eye is proverbially a delicate organ. It is closely connected with intellectual, nervous, and physical functions. Advice as to its care and prescribing for the correction of its defects by tests and examinations without the use of drugs is closely connected with health. The reasons which have led courts generally to uphold statutes regulating the examination, qualifications, and registration of physicians and surgeons against attacks based on alleged inequality of the laws, class legislation, interference with natural rights, and the constitutional liberty of the citizen to earn his living in any lawful calling or to pursue his chosen avocation, were held equally applicable to this statute and equally decisive in sustaining its validity. In McNaughton v. Johnson, 242 U. S. 344, 37 Sup. Ct. 178, a similar statute of California forbidding the practice of optometry without first having obtained a certificate from a public board was upheld as within the police power of the State and as not violating any constitutional right of the individual theretofore practising optometry without a certificate.—Commonwealth v. Hontenbrink (Mass.), 126 N. E. 669.

Injury to Eye by Being Struck by Insect Accidental.—A motorcyclist ran through a swarm of flies or insects, one of which struck his right eye with such force as to give him immediate and continued annoyance and distress, and ultimately impaired his capacity to work at his usual occupation of bookkeeper, so that he had to give it up, the injury finally resulting in blindness. It was held that the injury was accidental within the meaning of an accident policy.—Tracey v. Standard Acc. Ins. Co., Maine Supreme Judicial Court, 109 Atl. 490.

Physician Can Sue Insurance Company Direct for Bill Under Texas Workmen's Compensation Act.—The Texas Workmen's Compensation Act provides that if the association fails to furnish medical aid after notice of injury to the association or subscriber, the injured employee may provide medical aid at the cost and expense of the association. In a case where a claim was made by a doctor to recover on an alleged agreement, either implied or specific, to pay for services rendered by him to an employee, it was held that under the statute an insurer is liable for medical aid rendered by a physician procured by the injured employee either where the physician was procured by the direction of the employer or where the employer had notified the insurer and it had failed to furnish medical aid. A physician, furnishing medical aid to an injured employee, may, under the act, recover direct from the insurer. Although the act allows a physician to recover for only two weeks' services, yet where the services rendered an injured employee were surgical in their nature, and treatment given after the expiration of the two week period was only incidental, for the purpose of seeing that the limb was in place and that no complications had arisen, the actual services having been rendered, the physician may recover, although the services covered a period in excess of two weeks. Under the act an injured employee may at the time of the injury or immediately thereafter call in any available physician to render such first aid treatment as may be reasonably necessary at the expense of the association.—Home Life & Accident Co. v. Cobb (Tex.), 220 S. W. 131.

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BEZREDKA'S DISCOVERY.

IT is a truism of medical science that the correctness of an hypothesis is no criterion of its intrinsic value, and it is not difficult to bring forward examples of advances and measures of practical application secured by deduction from suppositions which, in the light of fuller knowledge, are found to be untenable. The most recent and at the same time perhaps the most notable instance of this kind is the socalled side-chain theory of Ehrlich which resulted in the Bordet-Wassermann test. This test has come forth triumphant from most searching and rigorous examination, while the side-chain theory has been practically discarded.

These facts must be recalled when a new scientific doctrine, evidently subversive of generally accepted views, is offered to the medical profession. The mere fact that the latest observations would seem to disprove an established conception of disease in no way weakens the value of any results which may have accrued as a consequence of its practical application. When, for example, we are informed, as the Pasteur Institute, of Paris, has recently proclaimed, that a distinguished worker in that famous home of bacteriology has conceived new theories on subjects so important as the protection of the human organism against typhoid fever and dysentery, and that these theories will result in a revolution in bacteriology, we need not—even supposing complete proof is about to be produced—rush to the conclusion that earlier opinions were devoid of value or were in vain.

Bezredka advances arguments which tend to show that the future defense against diseases of the typhoid group will be much simpler than the present antityphoid or antiparatyphoid vaccination. This by no means detracts from the magnificent achievements accomplished during the war of ridding armies of one of their most deadly foes. On the other hand, it does promise to be an easier method of obtaining the same result.

If it can be shown that the mere act of swallowing some dead bacilli can secure the human race against such redoubtable foes as typhoid, the paratyphoids, and dysentery—and that without the very slightest personal inconvenience or the most trifling malaise—then unquestionably a new chapter in prophylaxis has been begun. Bezredka adduces evidence in favor of the view that certain bacteria have special specific areas in the body within which they are active. No matter how introduced into the organism, whether intravenously, subcutaneously, or by ingestion, they seek out these special tissue areas and would seem to be quite harmless until they become localized in them. Consequently the question of protection is local rather than general. If the tissue area which the particular bacterium requires for its development is rendered unfit, disease will not develop. Our efforts have, up to the present, been directed by the idea that protection or immunity should be general in the human organism, and it may very well be that our past failures have resulted from this conception. Our undoubted successes do not lose in merit or in value from the recognition of a past oversight. Indeed, we may perhaps go farther and suggest that the truth of every hypothesis is to be measured, not in terms of acceptance, but in respect to the solid advantages derived from it.

THYROID OPOTHERAPY.

THIS trite subject is still of the utmost interest because of the illimitable possibilities present when there is really a shortage of thyreoidin in the body. The same may, of course, be said of the other major endocrines, but thyroid is the premier and not only has by far the widest range of usefulness but must enter fully into all pluriglandular therapy. In the Opotherapy number of the *Journal de médecine et de chirurgie pratiques* for November 10, 1920, xci, 21, Harvier, evidently jealous of the reputation of French-speaking pioneers, gives precedence to Reverdin and Bourneville in association with the Englishman Gull. Reverdin discovered cachexia strumipriva while Bourneville first described myxedema in the child, and Gull receives due credit for the same discovery in the adult. From these beginnings the subject developed with amazing rapidity. Lannelongue, a pioneer in child surgery, was active in attempts to graft the thyroid in young myxedematous subjects. The author discusses feeding with fresh and dried thyroid and hypodermic thyroid medication, the last named being largely abandoned to-day. The question of thyroid tolerance comes strongly to the front and the author, to be safe, would intermit the treatment when the pulse rate reaches 90. The tolerance must invariably be determined if the practitioner does not wish to face a possible charge of malpractice, for several deaths are recorded in which the thyroid medication was accused. The signs of intolerance comprise the following: cardiac palpitation, hot flushing, sweating, diarrhea, tremor, loss of flesh, and quick pulse. These are easily avoided by graduated dosage and other devices to obtain the maximum effect with the minimum of waste and risk.

From the empirical viewpoint thyroid medication appears to be of value in a host of maladies.

Amenorrhea and menstrual inefficiency in general may benefit from it, but at the same time there is a state of menorrhagia which may likewise improve. Aside from remarkable results in arrested growth—in which there was no suggestion of cretinism—and in dermatoses, obesity, and arthropathies, such as have been reported for years, there is not much to state which is in the least novel. Harvier says that of all the multifold indications for thyroid medication one stands out in relief—the indication of chronic rheumatism. However, he bases his opinion on the more or less dubious reports of Levi and Rothschild.

ADVERTISING.

"MAKING one's self known" is a professionally ethical process. "Advertising" is not. How to do the former without seeming to do the latter, is a question which has doubtless suggested itself to all doctors, particularly to all young doctors. In our professional seclusion we look with great disgust upon the successful efforts of "cure"-vendors and quacks of every sort to push their way to the attention of the ailing public. This very proper and natural disgust may quite conceivably be accompanied by a secret desire to accomplish the same end without cheapening one's self or subjecting one's self to like criticism; for, it may well be said, the doctor is entitled to the privilege of having people know that he exists, in case they might elect to give him a try at their various ills.

To such medical men we wish to emphasize what we have emphasized before, namely, that people who are too intelligent to resort to advertising tinkers, require of the "reputable physician" that his repute come from reliable sources, whether the source be another physician, or a hospital in a position to judge his work; or whether it be his own patients, those potent means of advertising per os.

Let us, instead of heaping ignominy upon the heads of the charlatans, seek rather to rouse the newspapers to the evil, often disastrous effects of giving publicity to the trash advertised. In so doing we shall be fighting fire with water, for, as Dr. Servoss wrote recently (MEDICAL RECORD, xcviii, 23, December 4, 1920), "Without advertising or publicity of one sort or another, the charlatan in medicine cannot live." Stifling the quack by arousing the intelligent cooperation of the press would be far more effective than the method proposed by this author, who suggests that "the legitimate physicians do not give themselves sufficient publicity. They do not fight fire with fire."

In "fighting fire with fire"—*i.e.* in opposing publicity with publicity, the profession would be making its appeal only to the unintelligent. The intelligent are less gullible. At first sight, the profession is entitled to make such an appeal, with resulting benefit to the unintelligent. But it must be remembered that scientific medicine makes no sensational appeal. If it tried to "come from beneath the bushel," its modest statements would make a sorry figure in the limelight beside the lurid, death-defying claims of the master-quacks. In other words, a campaign of publicity on the part of the "legitimate physicians," though it might seem to be indicated, would only alienate and antagonize the intelligent and fail to appeal to the unintelligent. Let us fight fire with water.

AN EXAMPLE IN COURTESY.

MANY veterans of the World War who returned to civil life minus a limb or an eye, or perhaps with even more disfiguring physical disabilities, do not direct attention to these marks of distinction by wearing the Victory Medal or other symbol of service. The public, therefore, must surmise, without being certain of the correctness of the conjecture, that such men met accident in the course of war and not in civil life. Nevertheless, one has heard all too often, since our boys have been demobilized, "Ah! yes, the world so soon forgets!" The world has not forgotten and can never forget the sacrifices made during the terrible conflict. It is well, however, that we have such an excellent example of courtesy to our sick and wounded soldiers as that recently set by Major-General Leonard Wood, U. S. Army, commanding the Sixth Corps Area at Fort Sheridan, Ill. In a recent order dealing with military courtesy, reprinted in part in the *Army and Navy Journal* for November 20, General Wood said: "Fort Sheridan is still honored by the presence of many sick and wounded soldiers from the battlefields of the World War. The commanding general will set the example in showing special consideration of these disabled soldiers and will salute those who are unable to salute first as they would wish. It is desired that this policy characterize the officers of this command as a mark of respect to those men who have served so well." This example of soldierly courtesy to those sick and wounded in war may well be followed, in spirit, by all who minister in any capacity to the sick anywhere.

DIGITALIS IN POST-DIPHTHERITIC CARDIAC DISTURBANCES.

IT is all too clear that the profession as a whole—that is to say, mediocre and otherwise—has not abandoned the notion that "when there is something the matter with the heart give digitalis." In the light of recent investigation, it would seem that this notion alone must be the basis for persistence in giving the drug in cases of cardiac disturbance following diphtheria. It is distressingly common to see cases of post-diphtheritic myocarditis admitted to hospitals with all the signs of cardiac failure, having been subjected to assiduous digitalis therapy by the "outside doctor." One must also admit the frequency with which such therapy is resorted to in some of our better hospitals. The most recent and valuable study of the heart in diphtheria is that by McCulloch of St. Louis.[1] His careful electrocardiographic work showed that "The most frequent disturbance . . . is in intraven-

1. McCulloch, Hugh, Studies on the Effect of Diphtheria on the Heart, *Am. Jour. Dis. Child.*, xx, 2, August, 1920.

tricular conduction. The Q R S time is prolonged, the amplitude of the R-wave is much diminished, and the T-wave is inverted, often in all three leads." Thus, the effect of the diphtheria toxin would seem to be closely identical with that of digitalis itself. Moreover, bundle branch block, and complete heart block were shown by McCulloch to be by no means rare. If these observations are correct, the lesson is clear. When we give digitalis to patients suffering from post-diphtheritic cardiac lesions, we are guilty of that all-too-prevalent sin, "therapeutic injury." And the sooner we realize it the better.

Cranial Stigmata of Heredosyphilis.

Oltramara (*Schweizerische medizinische Wochenschrift*, Sept. 23, 1920, i, 39) first distinguishes between actual syphilitic lesions and dystrophies in the victim of hereditary syphilis. The latter may or may not be due to the participation of the endocrine glands. In the dystrophies antisyphilitic measures are valueless but endocrine remedies are sometimes useful. The Wassermann is negative in the uncomplicated case. The dystrophies may be handed down to posterity and thus become familial. Naturally they are not always specific for syphilis, for they may be the result of other race poisons. The author limits himself to craniofacial malformations such as facial asymmetry, oxycephaly, natiform cranium, "olympian brow," and especially flattened nose. Thickening of the root of the nose he thinks may be pathognomonic and due to hyperestosis of the sphenomaxillary bones, a ridge often being discernible. Other malfornations are prognathism, ogival palate, multiple malformations of the external ear, separation of the incisor teeth, etc. The general effect is at times simian, mongolian, or negroid. The absence of such types in Greek and Roman sculptures, the author thinks, is favorable to the belief that there was no syphilis in those centuries, but this remark seems trivial, for monstrosities and degenerative stigmata can be recognized in classical representations and a monograph, the name of which escapes us, is devoted to that subject. Modern sculptors on the contrary have made both real and ideal representations of malformations of the head, nose, and ears. The author mentions as examples the Paul Verlaine of Niderhausen and Rodin and Vibert's poet.

News of the Week.

Senate Passes Maternity Bill.—The bill "for the public protection of maternity and infancy," through cooperation between the Federal and State Governments, was passed by the Senate on December 18. The bill carries an annual appropriation of $1,480,000. Of this, $480,000 is to be apportioned equally to the States, and the remaining $1,000,000 will be apportioned in the proportion which the population of each State bears to the population of the United States. In order to obtain its share of the money appropriation a State may create or designate an agency which shall have power to cooperate with the National Children's Bureau in the administration of the act. The Children's Bureau has the authority to recommend the appointment of Advisory Committees, State and local. Provision is made for extension courses in the hygiene of infancy and maternity in connection with State universities. Not more than 25 per cent. of the amount granted to a State may be used for this purpose. It is further provided that no payment out of the appropriation of $1,000,000 shall be made to any State until the Legislature of that State has provided an equal amount from the State Treasury. The bill which now goes to the House contains much of the material offered by the League of Women voters as a suggested plank in the platform of both political parties last summer. An effort has been made to get the measure through the short session of Congress so that the matter can go to State legislatures, meeting this winter. The measure requires cooperation on the part of the several States through legislation. The Massachusetts Civil Alliance has issued a strong protest against this bill, calling attention to the fact that, as there are 2½ million births annually in the United States, the cost to tax-payers will be enormous. Whatever may be brought under government ownership and control, it says, the American home should never become socialized.

Cholera in Refugee Camps.—A delayed cablegram from Constantinople reports that cholera has broken out in the refugee camps for Russians at San Stephano on the western outskirts of the city, despite sanitary measures instituted by the American Red Cross.

Encephalitis Lethargica in Europe.—According to a special cablegram to the *New York Herald*, encephalitis lethargica, which has appeared all over Europe since last February, was the subject of discussion before a recent meeting of the French Academy of Medicine. The majority of cases are said to be mild, and fatal complications rare. It is reported that such scientists as Dr. Georges Guillain and Dr. Le Chelle assert that the disease can be transmitted by the breath, clothing, or bedding. Hiccoughs are said to be one of the initial symptoms, and it is added that the French press is full of suggestions for their control.

War on Drug Venders.—Dr. Carleton Simon, Special Deputy Commissioner appointed to the task of reducing the number of drug addicts in New York City, believes that his work in driving out or imprisoning venders of habit forming drugs is beginning to show results. He states that he and his detectives have learned that New York drug addicts are getting their supply from three rings, the European, the Canadian, and the Transcontinental. The places of entry, he says, are being closed up. He blames the abundance of criminals on existing drug conditions, which were brought about in some measure by prohibition. He does not believe that prohibition has increased the number of criminals, but that it has closed up their resorts and driven them to the streets and to drugs.

Budapest Doctors in Desperate Straits.—A recent cablegram from the American Relief Administration in London to the *New York Times* reports that Budapest physicians are in such desperate circumstances that many are forced to sell their instruments as people are so poor that they are unable to pay for medical attendance. The situation is complicated by the presence of many refugee doctors from the lost territories.

Hospital Lease Bill Submitted to Senate.—Senator Wadsworth of New York introduced a resolution into the Senate on December 14, authorizing the Secretary of the Treasury to lease from New York State a $3,000,000 hospital for the care of soldiers suffering from mental and nervous diseases which would be built in New York City. The resolution would also give the Treasury Department authority to lease any other hospitals for like purposes by other states.

Increase in Auto Accidents.—The Census Bureau at Washington reports that automobile accidents continue to show an increase during 1919 with a total of 7,969 for the registration area, comprising about 80 per cent. of the country's population. This total includes 3,808 deaths in sixty-six of the large cities of the country which statistics were announced several weeks ago. The deaths from automoble accidents showed an increase of 444 for 1919 over the total of 1918 in the registration area.

Fire in Walter Reed Hospital.—The four psychopathic wards of Walter Reed Military Hospital were swept by fire on December 12, resulting in a loss of about $25,000. In checking up the list of patients in the wards, one patient, Sergeant Alzin Messenger, formerly of the Seventh Coast Artillery, was found missing, and is believed to have been burned to death. The hospital authorities believe the fire started by his having smoked in violation of the rules and set fire to the bed clothing.

Proposed War on Rats.—An amendment to the Building Code of New York City is pending before the Board of Standards and Appeals, which would make imperative the ratproofing of all buildings within 600 feet of the water front. This measure has been drawn up at the suggestion of Health Commissioner Copeland who regards its adoption as an important step in the fight he is waging against the introduction of the plague which is raging in Southern Europe. Dr. Victor G. Heiser of the Rockefeller Institute has estimated that there are about 6,000,000 rats in this city, and that they cost a property loss of $35,000,000 annually. The proposed measure provides that no certificate of occupancy shall be issued for any structure erected within 600 feet of the water front unless its foundation walls are constructed of concrete or similar hard material, and covered with wire screening. All windows and other openings must be protected with wire screens, and must be arranged to permit fumigation with hydrocyanic gas. It is estimated that if this measure is adopted it will cost property owners from $50,000,000 to $100,000,000.

To Assist Medical Schools of Central Europe.—The Rockefeller Foundation announces a cooperative plan whereby it expects to aid in the rehabilitation of scientific equipment for medical teaching and research in the medical schools of Central Europe; to aid in furnishing medical journals to universities throughout Europe, and to extend an invitation to the authorities of Belgrade University Medical School to study medical education in America and England, as guests of the Foundation. The details of the Foundation's cooperation with the medical schools will be arranged by Colonel F. F. Russell. These activities are the result of special investigations made by the Foundation in Central Europe with respect to medical education. It has been found that a comparatively small number of medical schools serves a total population of seventy-five million people. With the single exception of Austria, all of the countries of the region under consideration suffer from a great shortage of physicians. There are reported to be less than 300 doctors in all Serbia. Outside of the Army medical officers, less than 2,000 physicians are available to care for the 25,000,000 inhabitants of Poland. Additional medical schools are needed adequately to serve these countries. In all of the universities of Central Europe the equipment (glassware, chemicals, apparatus, etc.) has been very largely used up during the four years of war and the two years of disorganized conditions and low exchange. The greatest desire for American and British medical journals was expressed at every university visited. Journals are furnished under an arrangement whereby the university pays in its national currency at the present rates of exchange, and the Foundaton makes up the difference due to loss in exchange. Belgrade has been selected as one of the strategic points in a world program in which a medical school must be established in the near future. The Foundation has decided to assist that project by lending a technical adviser in the organization of medical education, and Belgrade officials will be authorized to recommend to the Foundation from time to time as candidates for fellowships in specialized postgraduate medical study, persons who may be under appointment or consideration for appointment in the faculty of the proposed medical school in Belgrade.

Dr. John J. Kindred of Astoria, N. Y., was elected to Congress in November, one of the few democrats to escape from under the Republican landslide. In his previous term Dr. Kindred had an opportunity a number of times to speak and vote in support of public health and other measures relating to medicine, and he will, we doubt not, be equally active during the coming session in safeguarding medical interests.

Dr. Edward A. Park, associate professor of pediatrics at Johns Hopkins University, has accepted the invitation of Yale University, recently extended, to become professor of pediatrics in the Yale Medical School.

Aid for Paris Hospital.—A committee has been organized to raise funds for a new building for the American Hospital in Paris. This institution, now with a capacity of 32 beds, needs 100 beds, and a building fund of $400,000. Mrs. Robert Bacon, who made possible the American Ambulance Hospital in Paris during the war, is chairman of the committee. Among those serving on the committee are the following: Henry P. Davison, Dr. Joseph A. Blake, Dr. Alexander Lambert, Dr. C. C. Burlinghame, and Dr. J. P. Hutchinson.

Gift to Ogdensburg Hospital.—A. Barton Hepburn has made a gift of approximately $330,000 to the hospital in Ogdensburg bearing his name. The gift was made in connection with an appeal for funds to equip the nurses' home, recently provided by Mr. Hepburn.

Permanent Organization of Health Officers.—

On November 30 and December 1, last, a convention was held at Detroit which was attended by a number of health officers from the cities of the United States having a population of over 200,000. The principal object of this convention was to discuss the housing situation in the big cities and its effect on health. At this time resolutions were adopted and forwarded to the United States Senate Reconstruction Committee calling attention to the facts as found and petitioning the Committee for relief. A permanent organization of health officers, to meet in conjunction with the American Public Health Association was then established, with Dr. Royal S. Copeland, Health Commissioner of New York City, as chairman and Dr. H. Vaughan as secretary.

Positions for Roentgenologists.—The United States Civil Service Commission announces open competitive examinations for the positions of Roentgenologist, Associate Roentgenologist, Assistant Roentgenologist, and Junior Roentgenologist, and vacancies in positions requiring similar qualifications. The salaries of these positions range from $200 to $250 a month for roentgenologist to $70 to $90 a month or junior roentgenologist. In addition to salaries appointees will be allowed quarters and subsistence where possible. When these are not allowed salaries will be increased accordingly. Both men and women may enter the examination. The duties of a roentgenologist will be those of general roentgenological practice, including *x*-ray physics, technology, photography interpretation, and localization. The associate roentgenologists must be proficient in *x*-ray photography and posturing and trained in the ability to install, maintain, and repair *x*-ray apparatus; they must also be qualified for supervisory duty in a large laboratory, or as the head of a smaller laboratory. The qualifications for the assistant and junior roentgenologists are similar to those of the associate though to a lesser degree. The minimum requirements for eligibility for appointment to the position of roentgenologist are that the applicant shall have been graduated from a recognized medical college with the degree of M.D., and shall have had at least three years' experience in the subjects mentioned above. For the other positions applicants must have completed at least eight grades of common school or equivalent education and have received a certificate of proficiency from a recognized hospital, medical college, or technical institution in *x*-ray, physics, and technology. Applicants should apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C. Applications for permission to take any of these examinations will be received until April 5, 1921.

Obituary Notes.—DR. HYMAN CLIMENKO of New York, a specialist in neurological diseases, died at Mt. Sinai Hospital following an abdominal operation, on December 16, at the age of forty-six years. Dr. Climenko was graduated from the Long Island College Hospital in 1904, was a member of the American Medical Association and the New York Academy of Medicine. He was chief of the neurological clinic of Mt. Sinai Hospital, and attending neurologist at the Neurological Institute, the Beth Moses, Central Neurological, Beth David, Brownsville, and East New York Hospitals.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, Nov. 27, 1920.

Clinical Characters of Influenza.—The annual report of the chief medical officer of the Ministry of Health is a perfect mine of information with regard to all matters related to preventive medicine. Influenza is notoriously a disease, the clinical character of which vary very considerably from time to time. Not only do different epidemics present certain clinical features at variance but the same epidemic appears to fluctuate in type. For instance, as the report points out, the figures of the American Metropolitan Life Insurance Company show that a distinct change in the character of the disease occurred in the beginning of February, 1920. During January of that year influenza in the United States differed essentially from that which prevailed in 1918. The total influenza and pneumonia rate was well within the normal. Another and more important point is the fact that the age distribution of the deaths from these diseases in January, 1920, did not all conform to the very peculiar age distribution in 1915. In that year the age distribution of deaths showed a high peak in early adult life. Of the deaths during January, 1920, the distribution conformed to that of pre-epidemic years, namely, a high peak in childhood and old age, and low points in early adult life. In February, however, a change occurred and the age incidence began to show a gradual approximation to the former type. A similar change was observed in Great Britain about the same time, although it may be noted that in some of the local epidemics the incidence in the early years of life was exceptionally high. But taking the figures for the country as a whole the age distribution approximated more nearly to that of the 1918 epidemic than to that which obtained in pre-epidemic years.

Cholera and the Risk of Its World Diffusion by Way of the Mecca Pilgrimage.—The pestilences that follow in the wake of war threaten to carry with them more fatal consequences than the war itself. The conditions in Russia and to a lesser extent in large parts of Central Europe, constitute a menace to the health of Western Europe. Typhus fever is being spread from Russia and unless its progress can be effectually checked may devastate the whole of Europe. But typhus is by no means the only ravaging disease, which from its home in Russia and in other parts of the Far East may sweep through Europe. Cholera is quite as greatly to be dreaded as typhus and the opportunities for its transmission from disease stricken Russia are not remote. As is pointed out in the report of the British Ministry of Health, the existing state of affairs in Russia are also of special importance so far as cholera is concerned. It has happened repeatedly that cholera having been introduced into Russia, has spread from there to other parts of Europe. It is needless to refer to several instances, but attention may be drawn to the fact that perhaps the most important starting point of the European epidemics, whether

arriving via Russia or otherwise, is the dispersal of pilgrims from the holy places of Arabia. At this annual pilgrimage there are gathered, or rather massed together in conditions highly favorable to the dissemination of water-borne infection, pilgrims from all parts of the Moslem world, a goodly proportion of whom come from eastern countries in which cholera is endemic. In fact, the adoption of the strictest precautions have long been an international affair. Before the war there had been for many years an increase in the number of pilgrims to Mecca. During the war the pilgrimage was almost entirely in abeyance, but on the conclusion of hostilities it increased and bids fair, if circumstances permit, to again attain enormous proportions. Moreover, railway facilities previously absent will provide opportunities for reaching Mecca. In short, it has become of the first importance after the war: (1) to secure that sufficient temporary provision has been made against the spread of cholera by the pilgrimage, and (2) to consider what more permanent and efficient arrangements will be required in future in consequence of altered political conditions. The British Foreign Office has taken action, but notwithstanding this the situation is beset with peril. Indeed, it is obvious that a Hedjaz infected by cholera during the pilgrim season demands concerted action arranged in advance at widely separated points in different territories. But it is equally obvious that any such action is difficult, almost impossible to secure so long as political conditions in Eastern Europe remain unsettled. It is hoped, however, that it will be facilitated by the proposals for coordinated action under the League of Nations, which has been embodied in the Turkish Peace Treaty. From every conceivable standpoint it is urgent that peace in Russia be brought about as soon as possible. The conditions in that vast country, which embraces within its confines many nationalities, and of which a large number of its inhabitants are of Oriental origin, and in parts of which cholera is endemic are a source of peril to the whole world. As a matter of fact so long as Russia is in a state of chaos, infectious diseases are liable at any time to spread like wild fire and perhaps destroy civilization. To prevent diseases spreading from Russia is eminently of international concern.

Should Doctors Dispense?—In Great Britain generally, and almost invariably in the country districts, the medical practitioner dispenses his prescriptions at his own office. It is the exception rather than the rule for a prescription to be dispensed by a druggist. Of course, this is against the interests of the pharmacists and they have been agitating recently for a repeal of this procedure. The Council of the Pharmaceutical Society is now endeavoring to obtain legislation to ensure the separation of the acts of prescribing and dispensing, leaving the ordering of medicine in the hands of the doctor, who should be precluded from making it up and giving the preparation of the medicine to the pharmaceutical chemist, who should not be allowed to prescribe or encroach upon the medical man's province in any way. The argument in favor of such a course is strong. Medical men know the therapeutical treatment required, while to the druggists trained in the chemical action and inter-action of drugs and in the technical methods of manipulating the same, is left the task of making up the medicine. Moreover, it is thought that legislation of this character would strike forcibly at two abuses. Dispensing in the hands of medical men is frequently not done in a consistent and thoroughly efficient manner. On the other hand, prescribing by druggists is not without its dangers. They cannot be expected to make a correct diagnosis, and it is certainly opposed to the welfare of the individual and the community that they should be allowed to do so. The rôle of the druggist should be sternly restricted to following out the doctor's instructions as to the manner of medicine to be given. And yet the legislation called for by the Council of the Pharmaceutical Society is open to a good deal of criticism, particularly from the medical standpoint, and it must not be forgotten that it would put the public to not a little inconvenience. Pharmaceutical chemists are not present in all districts, and thus it might and indeed would happen, that a medical man precluded from dispensing his prescriptions would be compelled to give a prescription to a patient who might have to go a considerable distance to obtain the medicine. The druggist, as a rule, does not live by pharmacy alone; in these days it often only forms a small part of his means of subsistence; he relies more for his profits upon a large assortment of wares and the position of his business abode is naturally dictated largely by this reason. Consequently, it cannot be expected that a pharmaceutical chemist should be always found within easy reach of a doctor. And lastly, there are some members of the public who would strongly prefer that the diagnosis of their condition should remain a secret between themselves and the doctor, as many prescriptions convey clearly to the druggist the nature of the disease from which they are suffering. There are many "pros" for the suggested legislation, but just as obviously there is a large number of "cons."

The Meeting of the General Medical Council.—The annual session of the General Medical Council opened on November 22 last. The address of the president, Sir Donald Macalister, was perhaps chiefly interesting because he dealt with a question that is exercising the minds both of members of the medical profession and of the general public. He referred to the Interim Reports of the Medical Consultative Councils for England and for Scotland, these reports have been discussed in previous letters. Sir Donald Macalister, who is shrewd and far seeing, expressed himself cautiously but favorably with regard to the suggestions contained in these documents. He thought that the proposals made therein were for the better organization of medical practice, the underlying object being to render more effective the manifold services which the profession of medicine in all its branches is capable of rendering to the nation. The reports have been sharply criticized from many quarters as being wholly idealistic and

utopian and it is therefore instructive to know what the president of the British General Medical Council thinks of the suggested scheme. While he did not bless it, neither did he condemn it. The scheme in its entirety cannot be carried out for years, if ever, but even its partial fruition signifies a considerable revolution of existing methods of medical practice, sympathy on the part of the public, and much financial aid from the treasury. Ideals come to pass sometimes, and if the health of the nation is to be bettered by the means suggested in the reports or by some of these means, they should be closely considered and discussed by the medical profession and the public.

Typhus Fever in Poland.—The Typhus Commission appointed by the Council of the League of Nations to study the sanitary conditions of Poland with special reference to the prevalence of typhus and cholera, made a report of its investigations to Committee No. 2 on November 24. The commission is of the opinion that the eradication of typhus in the areas of Poland, which are described in the report, is a question of international importance and recommend the League to render necessary assistance.

OUR LETTER FROM GENEVA.

(From Our Own Correspondent.)

GENEVA, Nov. 15, 1920.

Public Hygiene in Switzerland.—In the present circumstances of unrest and otherwise, delays in the appearance of important documents are unavoidable. Such is the case of the Reports of the Federal Service of Public Hygiene of Switzerland for the year 1919, but, although tardy in its appearance, its contents possess considerable interest. Influenza, which developed in the spring of 1918, with still 104,612 cases in December of that year, fell to 32,023 in January, 22,730 in February, 16,126 in March, 7,825 in April, and 1,061 in May, 1919. From this time on only a few isolated cases have been reported. The total number of cases of influenza reported in 1919 was 86,056 as against 666,000 in 1918. But it is to be remembered that these figures do not exactly represent the reality, because many cases were not reported to the Federal Service. What is known of the clinical aspects and epidemiology of influenza might lead one to suspect periodical returns of the infection, as was the case in the pandemic of 1889-1890, which only became extinct in 1894, and the reappearance of an epidemic wave of the disease at the beginning of 1920 proved that this expectation was not unfulfilled, but it did not continue for any length of time. The Swiss Federal Council, in 1919, made medical declaration of influenza obligatory and this law is still in force, while on November 19, 1918, this body decided to subsidize the cantons and townships for expenses resulting from the extraordinary measures taken for controlling the epidemic. The total amount expended was 1,058,856 francs, and this total includes the sum of 46,270 francs for subsidies paid by the Swiss Confederation to cantons and townships for sums given to private individuals who had been deprived of their livelihood on account of closing certain establishments in which they were employed.

During 1919, hardly any smallpox was reported. There were two cases during July, one at St. Moritz, the other at Campocologno, both imported from Italy, where the disease was flourishing at the time. The expense of the town of Campocologno for carrying out the necessary measure for controlling the disease, in conformity with the Federal law of epidemics, amounted to 270 francs. Two cases of varicella reported from the canton of Zurich, and at first diagnosed as smallpox, led to the institution of prophylactic measures resulting in an expense of 586 francs. The diagnosis of another case reported from Neuchâtel remained doubtful. Since smallpox has offered a certain recrudescence in countries surrounding Switzerland for several years past, the Service of Public Hygiene has insisted upon vaccination, the only really efficacious means of prevention. The reason why there was no spread of the disease is, evidently, that in the canton of Grisons, where the two cases occurred, vaccination is obligatory, so that all the inhabitants had been rendered immune by this means.

Epidemic dysentery (bacillary dysentery) was and is still present in some of the countries surrounding Switzerland, and sporadic cases have been reported from the canton of Zurich (3), canton of Berne (4), the city of Basle (2), Schaffhouse (1), and St. Gall (1). There was also a slight epidemic in October, 1919, in the canton of Tessin in the region of Malcantone, with a total of twenty-eight cases with five deaths. In this epidemic it appears to be certain that the disease was imported from Italy and here, as in the epidemic at Ascona in 1918, the rapid and energetic intervention of the health authorities resulted in a speedy control of the epidemic focus.

Diphtheria showed a marked retrogression in 1919, so that it may, perhaps, be concluded that the end of a progressive increase of the disease for the past few years has been reached. The total number of cases in 1919 was 7,690 as against 8,566 in 1918.

The retrogression of epidemic cerebrospinal meningitis, already quite evident during the preceding years, was very manifest in 1919. Only thirty cases were reported—the same number as in 1913—while in 1918 there were eighty-one cases.

Typhoid fever is also on the wane—289 cases in 1919 as against 322 in 1918. This retrogression is the consequence of the measures taken in many townships for a better water supply. The Health Service was authorized to engage provisionally the services of two geologists attached to the Army Medical Service during the war, to study the question of potable water, especially in the regions where the troops were stationed. These two geologists are still at the disposal of cantonal and township authorities for any researches they may desire to have carried out in connection with the health authorities, chemists, and bacteriologists, and especially in the case of water supply. These together form the "Sanitary Survey Corps." By the results so far obtained this corps has fully justified its creation.

The other current transmissible diseases—scarlatina, whooping-cough, varicella, etc., have also shown a tendency to retrogress, measles alone showing a marked increase.

For many years malaria in an endemic form has disappeared from Switzerland, and in those countries bordering on it the hygienic measures adopted for its control had distinctly limited the propagation of the disease and had reduced in number the foci of paludism. But the war distinctly modified this condition and in many countries malaria has manifested a very marked recrudescence. It is particularly in armies in the field, especially those who fought in the Orient, that malaria is rampant, and these troops in their turn have contaminated the civil populations. It is certain that among the demobilized soldiers who have returned to Switzerland, there are many suffering from malaria. Given the difficulty of the diagnosis of chronic cases, it is undoubtedly a fact that those with paludal infection have been able to return to Switzerland without their condition having been suspected. A recent investigation made by the Service of Public Hygiene has shown that in many parts of Switzerland the type of mosquito, which is the vector of the infection, is to be found. The coexistence of these two factors, namely, the presence in the country of an increased number of malarial subjects and the relative frequency of the anopheles mosquito, has played the essential part in the diffusion of the disease and may, to a certain extent, result in the development of new foci of malaria. In reality, however, the danger is not great but, nevertheless, the Federal Council has made notification of malarial cases obligatory, in order that the health authorities may be immediately informed of their appearance and so be enabled to act at once.

The great exotic epidemics—cholera, plague, typhus fever—have so far spared Switzerland, but their presence in certain countries of Eastern Europe have caused the health authorities to be continually on the lookout in order that the Swiss frontiers may be properly provided with all necessary quarantine measures for suspected travelers.

Progress of Medical Science.

Boston Medical and Surgical Journal.

December 9, 1920, clxxxiii, 24.

1. The Syphilis Clinic. Herman Goodman.
2. Tinea Capitis—Roentgen Ray Treatment. C. Guy Lane.
3. Observations on the Significance of Functional Albuminuria in Young Men at Harvard University. D. C. Parmenter.
4. A General Practitioner's Practice. Paul Richmond Withington.
5. An Unusual Nephritis. F. Van Nüys.
6. Non-Tuberculous Complications of Pulmonary Tuberculosis. Herbert F. Gammons.

3. Observations on the Significance of Functional Albuminuria in Young Men at Harvard University.—D. C. Parmenter found, from the examination of Harvard freshmen during four previous years, that 5 to 7 per cent. had albumin in the urine on a single examination. During the college year of 1919-20, 513 freshmen in Harvard University of an average age og 18 were examined. Forty, or approximately 8 per cent., showed albumin. Of these forty men six were excluded as having organic heart lesions which might account for their albuminuria. In the second examination, some weeks following, sixteen of these thirty-four still persisted in showing albumin. In the third examination two weeks later six of the thirty-four still showed albumin. This would seem to show that approximately 5 per cent. had a transitory albuminuria which may be designated as functional. This functional group comprises over 80 per cent. of the cases of albuminuria without organic disease. The writer considers it fair to say that a certain amount of evidence points toward postural causes for albuminuria. A small amount of evidence would seem to indicate that a certain amount of metabolic or nervous instability is also a predisposing cause. On the other hand, assuming that faulty posture or poor bodily mechanics is simply contemporary with albuminuria in the indication of subnormal physical efficiency and a nervous instability, and is not simply a cause of the albuminuria, if the appearance of albumin is merely one of a number of indications, no one of these indications would signify that a man should be barred from ordinary athletics. So far, his observations have shown that the athlete with albumin in his urine has only the transitory type. Perhaps, on the basis of the threshold hypothesis, he is not as efficient physically as the man without albumin. The man with the orthostatic type does not seem to feature as an athlete. Yet there seems to be no very good reason why he should not participate in athletics. Such a man, of course, should be watched closely. From the evidence so gathered the orthostatic albuminuria would not signify that he will be more subject to nephritis in late years since there seems to be some slight evidence of its tendency to decrease or disappear during the four years of the ordinary college curriculum. Hence it would seem justifiable to disregard the transitory type of albuminuria except as an index of physical ability during a definite time of life. The orthostatic type, on the other hand, while indicative of no physical deficiency serious enough to bar the individual from athletics, seems worthy of close observation.

New York Medical Journal.

December 11, 1920, cxii, 24.

1. The Faculty and the Student. Address Delivered at the Opening Session of the College of Physicians and Surgeons of Columbia University. John A. Fordyce.
2. Tinea Capitis—Roentgen Ray Treatment. C. Guy Lane.
3. Clinical and Pathological Types of Differential Diagnosis. Alfred Gordon.
4. *X*-Ray Treatment of Epithelioma with Thin Filter. John Remer and W. D. Witherbee.
5. Cutaneous Anthrax. John Randolph Graham.
6. Superficial and Deep Roentgen Dose Estimation. William H. Meyer.
7. The Stereoscopic Campimeter Slate. Ralph I. Lloyd.
8. A Plea for Physicotherapy. Joseph Riviere.

4. Cutaneous Anthrax.—John Randolph Graham confines his discussion to the type of the disease known as cutaneous anthrax, or malignant pustule, having never seen a case of the internal variety, variously known as intestinal mycosis, woolsorters' disease, and splenic fever. He has had the privilege of inspecting, at some time during the duration of the attack, almost all the cases reported to the Health Department from the Borough of Manhattan since January, 1915; also occasional cases prior to that date. Under the head of treatment the writer advocates the method evolved about two years ago by Dr. Joseph C. Regan of the Kingston Avenue Hospital, Brooklyn. This scheme of treatment meets effectively the difficulties in cases where the inflammatory infiltration of the tissues is so widespread as to make operation out of the question, and is also applicable to any surface anthrax lesion. The cutting and destructive operations are discarded entirely, antianthrax serum being introduced directly into the body of the lesion itself by means of several small injections around the periphery of the eschar. Seven to ten cubic centimeters of the serum are used locally once daily, at the same time twenty to forty cubic centimeters are introduced intramuscularly, or intravenously, if the bacillus is found in the blood. At Bellevue Hospital, where this idea has been put into effect in a routine way, they have not been so conservative, for there they have used the serum intravenously in all cases, and have repeated the doses locally and in the vein every four hours for several days at a stretch, without, so far as the writer's knowledge goes, any serious or even especially unpleasant consequences. The results, though, have been no better

than at the Kingston Avenue Hospital. Practically all the cases this year have been treated by this method; furthermore, they have been as serious as any he has ever seen. Comparing the figures for the years covered by his experience, Graham believes that progress is being made toward a favorable solution of this problem.

5. Superficial and Deep Roentgen Dose Estimation.—William H. Meyer, being well cognizant of the fact that certain structures, both normal and pathological, show a pronounced radiosensibility, yet in connection with the absorption in one centimeter of flesh as measured in one millimeter of aluminum with present-day apparatus, considers the following conclusions justifiable: That a total cumulative absorption percentage of thirty-five or less is stimulative in action (increased metabolism). That a total cumulative absorption of plus fifty is mildly inhibitive in action to radiosensitive structures. That a total cumulative absorption of one hundred produces strong inhibition with retrogression. That a total cumulative absorption of plus two hundred is catabolic in action with retrogression and necrosis. That any of these effects may be produced at will within the first half centimeter depth of tissue. That as a rule only the first three reactions can be brought to bear below the first centimeter depth, without producing, at the same time, total skin destruction. Therefore, with widespread, deep-seated lesions, besides stimulation, an inhibitive dose is frequently all that can be hoped for. From these conclusions the writer wishes to go on record as stating, without reservation, that any superficial malignancy can be destroyed; and that with the early cases a far better cosmetic result can be obtained with radiant energy than with any other procedure, and this without pain or inconvenience, and frequently within one month following a single treatment; and that, when properly applied, recurrence within three years is rare. Therefore, any case of threatened superficial malignancy should receive the benefit of such procedure, and this in preference to the knife, caustics, freezing, or any other method, since his most difficult cases have been those subjected to previous interference. On the other hand, in few *bona fide* cases of deep-seated malignancy have the patients been reported as having been cured and remaining alive and well for a minimum period of three years.

Journal of the American Medical Association.

December 11, 1920. lxxv, 24.

1. The Relation of Medical Zoology to Public Health Problems. Robert W. Hegner.
2. Suggestions Regarding Postmortem Technic. E. R. LeCount.
3. The Roentgenology of Appendical Obliteration: A Pathologic or a Physiologic Process? E. H. Skinner.
4. What Are the Contraindications to Prostatectomy? Based on a Series of One Hundred and Ninety Cases of Adenomatous Prostate with Operation by the Two-Step Method. James A. Gardner.
5. Vincent's Angina Infection: Its Prevalence, Manifestations, Bacteriology and Treatment: Report of Fifty-six Cases. Frank F. D. Reckford, Assisted by M. C. Baker.
6. The Alkali Reserve in Epidemic Influenza and Bronchopneumonia. David S. Hachen and Raphael Isaacs.
7. Definitive Percussion and Inspection in Estimating Size and Contour of Heart. C. F. Hoover.
8. The Relative Usage of Narcotic Drugs in Hospital and Private Practice. Thomas S. Blair.
9. Aplastic Anemia and Related Conditions. Ralph C. Larrabee.
10. Acute Appendicitis: A Review of Five Hundred and Eighty-four Consecutive Cases. Frederic W. Bancroft.
11. Hydrogen-Ion Concentration of the Contents of the Small Intestine. J. F. McClendon, F. S. Bissell, E. R. Lowe, and P. F. Meyer.
12. Chronic Pelvic Peritonitis of Unknown Etiology Occurring in Women. Samuel H. Geist.
13. A Diabetic Dietary. Edward E. Cornwall.
14. Malignant Endocarditis and Metastatic Abscess in Gonococcemia: Report of a Case in a Child with Culture of the Gonococcus from the Blood During Life. Hugh L. Dwyer.
15. The Diagnostic Value of Cardiac Murmurs. Glentworth R. Butler.

3. The Roentgenology of Appendical Obliteration.—E. H. Skinner postulates that the filling of an appendix lumen in an adult at least thirty years of age with an opaque meal is sufficient to nominate such an appendix as the seat of chronic disease. The degree of such chronicity and the question as to whether such an appendix demands immediate or remote attention, and as to whether such an opaquely filled appendix is a cause of symptoms, are matters of shadow analysis, case history analysis, and the elimination of other lesions by differential roentgen and clinical analysis. From his study of the subject the writer is led to believe that the appendix is a functioning organ of lymphoid structure. It receives and expels colonic contents normally during childhood and adolescence. It proceeds to physiologic obliteration in adult life, this obliteration being normally accomplished at about the age of thirty. Opaque filling of the appendix is easily secured in childhood and adolescence by meal and enema. Appendical filling is a matter of sedimentation, widely patent os and antiperistalsis. The three operate in childhood and adolescence. Antiperistalsis filling is more apparent with increasing years, and is the essential element in the filling of appendices that are not obliterated after the age of thirty.

5. Vincent's Angina Infection.—Frank F. D. Reckford, from his study of the fifty-six cases which form the basis of this contribution formulates the following conclusions: (1) It seems to be definitely proved that the fusiform bacillus and the accompanying spirochete are one and the same, the latter being an evolutionary form of the former, but always present with the bacillus. (2) Vincent's angina is much more common than is at present realized, and that it is not recognized because of the failure to take a smear, and that furthermore it is frequently mistaken for diphtheria and syphilitic ulcers. (3) It is also probable that the considerable use of candy or proteins with the subsequent lack of oral cleanliness predisposes markedly to this infection; likewise, that poor teeth harbor the organism, and that it will manifest itself in its characteristic lesions whenever a suitable opportunity is given. It seems to be more frequent during the winter months. (4) The use of arsphenamin dissolved in glycerin is strongly advised in the treatment of Vincent's angina and infections in which the fusiform bacilli and spirochetes resembling Vincent's organism are found.

8. The Relative Usage of Narcotic Drugs in Hospital Service and Private Practice.—Thomas S. Blair bases this contribution on an elaborate statistical report rendered by the Bureau of Drug Control of Pennsylvania to the Commissioner of Health, and deals with the findings collected from the public hospitals of the State by experts in the field service of this bureau. This survey leads to the following recommendations: (1) There should be more and better rural hospitals. (2) Physicians whose training is defective should be aided to a higher standard of efficiency. (3) The importation and distribution of narcotic drugs for legitimate purposes should be under the care of a government bureau; but no government should, through subsidies, etc., participate in the profits of the opium business. (4) Proper limits should be placed on the amounts imported and distributed to physicians, pharmacists, and the like, reducing the amounts through a series of years, finally reaching the actual basis of need. (5) Smuggling of narcotics should be made an offense punishable by imprisonment for not less than five years, never by a mere fine. (6) The internal revenue taxation of narcotics and dealing therein, as established in the United States, should be kept up as a necessity in tracing importations, distribution, and usage. (7) Cannabis, hyoscyamus, hydrated chloral, and a few synthetic drugs should come under the narcotic-control laws, and no narcotic drugs whatsoever should be permitted in proprietary preparations and products sold without prescription. Exemptions lead to abuses. (8) Drug peddling in every shape and form should be sternly met with heavy jail sentences, never by the imposition of a mere fine. (9) The so-called ambulatory reduction treatment of drug addiction is rarely of any value, and should not be permitted under the laws designed to control addiction; but the drug addicts should, in some way, be hospitalized or humanely taken care of in proper institutions.

The Lancet.

November 20, 1920, cxcix, 21.

1. The Function of the Isolation Hospital in a General Scheme of Hospital Provision. A. K. Chalmers.

2. The Determination of the Basal Metabolic Rate, and Its Value in Diseases of the Thyroid Gland. C. M. Wilson, and Dorothy Wilson.
3. Some Points in the Diagnosis of Bilharzia Disease. F. G. Cawston.
4. Hidden Sepsis. A. White Robertson.
5. Operative Treatment of Umbilical and Ventral Hernia. Richard Warren.
6. Three Gastric Cases. R. P. Rowland.
7. Plague in Turkey During the War. F. G. Clemow.

1. The Function of the Isolation Hospital in a General Scheme of Hospital Provision.—A. K. Chalmers cites illustrative instances of epidemics outrunning isolation, and holds that it is not isolation that has failed, but that the knowledge of the causes of spread is as yet unable to supplement it by suitable action in other directions. Circumstances have compelled the displacement of epidemic hospitals from proximity to the teaching schools, and tended to restrict their functions to isolation and treatment. The increasing variety of diseases already being treated in them makes the development of clinical research a necessary addition to these. In the interest alike of the community, the State, and the training of future practitioners of medicine, it seems desirable to contemplate a time when the epidemic hospital will become an institute of research applied toward the elucidation of the problems with which infectious disease is surrounded.

2. The Determination of the Basal Metabolic Rate, and Its Value in Diseases of the Thyroid Gland.—C. M. and Dorothy Wilson state that basal metabolic-rate determinations have been found amply to justify the time spent upon them in cases of impairment of function of the thyroid gland. They mark off toxic from non-toxic goiter, establish or refute suspicions of hypo- or hyper-thyroidism, and furnish a graphic record of the results that follow the treatment of these conditions, so that the selection of the line of treatment becomes less capricious and comes to rest upon exact methods. Moreover, some of the writers' observations suggest that these determinations will be found to have an altogether wider and more important application in general metabolic disorders, particularly where the balance of function between the different glands of internal secretion is impaired. In this communication, however, it is their purpose to draw the attention of clinicians to the importance of these determinations, especially in cases of disease of the thyroid gland, and to set forth very briefly the methods used in the test.

4. Hidden Sepsis.—A. White Robertson emphasizes the point that since the war old-time insular immunity against amebic, protozoal, and malarial infections no longer pertains. The well-informed practitioner of to-day, therefore, must be prepared to recognize at any moment in his practice one or other of these legacies of an empire at war. So shall "pyrexias of unknown origin" disappear from statistics, and "hidden sepsis" be revealed.

British Medical Journal.

November 13, 1920, ii, 3124.

1. Remarks on the Treatment of Subacute Nephritis by Kidney Decapsulation. With an Account of Four Cases of Nephritis in Which Decapsulation Was Undertaken. Sir Thomas Horder.
2. Oxygen Inflation of the Peritoneal Cavity for Radiographic Purposes. J. E. H. Roberts.
3. Discussion on Surgical Treatment of Cancer of the Rectum: Operative Methods Compared. W. Ernest Miles.
4. Sacro-Abdominal Excision of the Rectum. G. Grey Turner.
5. Recent Advances in Surgical Treatment of Cancer of the Rectum. J. P. Lockhart-Mummery.

1. Treatment of Subacute Nephritis by Kidney Decapsulation.—Sir Thomas Horder briefly reviews the history of kidney decapsulation and reports four cases treated by this procedure. Consideration of these four cases, together with careful analysis of all the available records, led him to the conclusion that there is a clinical type of nephritis in which—when thorough general measures have proved unavailing, and a reasonable time element, during which it is known that resolution not infrequently occurs, has passed—decapsulation becomes a definite indication and promises satisfactory results. This type is termed—not inappropriately, in his opinion—*subacute nephritis*, and is characterized by extensive and considerable edema, massive albuminuria with casts in the urine, toxic symptoms of the chronic uremic kind, and an absence, or the presence in only slight degree, of cardiovascular changes (arterio-capillary fibrosis, hypertrophy of the left ventricle, arterial hypertension and retinal degeneration). This was the state of things in both his cases that resolved completely after the operation. In the two cases in which some definite improvement followed the procedure, but no cure, definite evidence of cardiovascular changes was present, and the type of disease suggested a general involvement of the arterial system rather than a local inflammatory process in the kidney. This consideration confirms the general idea that subacute nephritis is a different disease altogether from generalized arterio-capillary fibrosis, as a part of which process the kidney vessels suffer early, and the kidney substance suffers secondarily to the disease in the vessels. In subacute nephritis the causative agent may be regarded as either past and over, or, if still present, it may be regarded as producing its effects primarily upon the kidney parenchyma; in chronic interstitial nephritis, granular kidney, and (or) the arterio-sclerotic kidney, the causative agent may be regarded as operating chiefly upon the whole arterio-capillary system, including the kidney glomeruli. Concerning the mechanism by which the results of decapsulation are brought about, the writer declares he has little or nothing to say of actual fact. It is generally thought that depriving a kidney of its capsule, and thus bringing the cortex into close contact with the perinephric tissues, leads to the formation of new vessels which anastomose with those of the kidney itself, thus providing for the removal of inflammatory exudates and assisting in reestablishing renal function. He regards this process of formation of new vessels as actually taking place. But a difficulty is encountered: The good effects of decapsulation are immediate. whereas this new system of vessels must necessarily take time to form. Are these rapid effects due to the relief of tension? This can scarcely be so, since, apart from cases of acute nephritis little or no actual tension is seen to be present at the time of the operation. The question must remain for the time unanswered—unless it be an answer to say that the mechanism of production of the diuresis and disappearance of edema and of symptoms generally is of the same kind as in the process of "wet cupping." Very little is known about the exact relation which the perenephric tissue bears to the capsule of the kidney and to the kidney proper. Actual observations and experimental work are as yet very slight. The whole subject calls for systematic study. Such a study may well be found to supply the answer to the question as to the mechanism by which the good results of decapsulation are produced.

5. Recent Advances in Surgical Treatment of Cancer of the Rectum.—J. P. Lockhart-Mummery emphasizes the following points: (1) The anus is sealed up before the operation field is prepared. (2) The rectum is freed from in front and from the perineum afterwards. (3) The peritoneum is opened from the front of the rectum. (4) The bowel is divided with a cautery between clamps, and the end invaginated. (5) The wound is closed without drainage.

Encephalitis Lethargica in Holland.—According to Cramer, the grippe epidemic which still existed in Holland during the period April-August, 1919, but in a vanishing stage, was attended by cases of the new sleeping malady reported among others by Beck, van Wijhe, van Heukelum, Bosman, and van der Tak. Apparently no one thought otherwise than of a cerebral localization of influence. One spoke of encephalitis gripposa and cerebral grippe. It was thought that the influenza was returning in a new wave. The author has recently seen in Utrecht a typical case of sleeping sickness which was not associated with influenza and which, studied in great detail, shows a distinct behavior throughout. He next compares his case critically with those seen during 1918 and 1919 and concludes that the type is the same. Attention is called to grippal encephalitis seen in cases of grippe pneumonia as an entity which differs from primary encephalitis. The author does not attempt to evade the conclusion that sleeping sickness may be a parainfluenza—a special form due to a neurotropic strain of the grippe virus.—*Nederlansch Tijdschrift voor Geneeskunde.*

Society Reports.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

FIRST DISTRICT BRANCH.

Fourteenth Annual Meeting, Held in Poughkeepsie, N. Y., October 21, 1920.

THE PRESIDENT, DR. JOSEPH B. HULETT OF MIDDLETOWN, IN THE CHAIR.

Report of a Case of Myxedema.—Dr. DANIEL B. HARDENBERGH of Middletown, N. Y., read this paper. (See p. 1054)

Dr. CHARLES I. REDFIELD of Middletown stated that a member of his family had been under treatment for myxedema for sixteen years, and it had been very interesting to follow her case. Recently she had had a severe and complete breakdown, involving the heart and kidneys. Apparently she had had angina abdominalis and angina pectoris. In addition to the cardiac disturbance she had an acute parenchymatous nephritis. After a time, on small doses of thyroid, she had begun to recover her strength. It was thought fourteen years ago, from the symptoms presented, that she had Bright's disease. There was no cure for hypothyroidism; nothing could be done except to administer thyroid, which did not cure, but kept the symptoms down. When thyroid was taken it was observed that there was a leaking from the mucous membranes, and when it was stopped there was a choking up, because of the edema, and it was this edema which often led to mistaking the condition for Bright's disease. Dr. Hardenbergh had spoken of the slowness of the mental processes in his patient. In the case of the speaker's relative there had been some slowness of speech, but no loss of memory, and the mental processes were bright.

Dr. HENRY LYLE WINTER of Cornwall said he had begun to employ the thyroid treatment in the neurological clinic of the old New York University about 1894, and he had followed it along for a number of years. There was a great difference in thyroid preparations, and, in his experience, the English preparations were much better than the American. The theory advanced to account for this fact was that the English obtained the glands for the preparation from sheep and not lambs. Six or seven months ago he had seen a case in crisis. The heart condition demanded immediate relief. He tried suprarenal extract given hypodermically, on the theory that with disturbance of one endocrine gland other endocrine glands would also be disturbed. The result of the suprarenal extract on the heart action was very satisfactory. The heart recovered its tone and rhythm in about twenty-four hours after the administration of the suprarenal extract. He had used it in only this one case, and hence did not know how it would act if given regularly in such conditions, but apparently it met the requirements in this instance.

Dr. JAMES E. SADLIER of Poughkeepsie said he thought this society was to be congratulated on having a paper so germane to the present studies on the endocrine system, for most of us were becoming alive to the situation and realized that we must look to the endocrine system for a vast amount of explanation of things inexplicable in times past. It was well to emphasize the fact that the variations between hyper-, hypo-, and normally functioning ductless glands must be recognized. The surgeon would have to recognize these differences in operative procedures upon the glands. For example, if a young girl came into puberty, with enlargement of the thyroid which caused anxiety to her parents so that they brought her to the physician for advice, it was important that the physician recognize that this was a physiological process; that the thyroid was a sex gland, and that the secretion of that gland was necessary for the proper performance of physiological sex function. It was almost a weekly occurrence to see glands of that kind, which should not have been removed, subjected to surgery. The enlargement of the gland and hyperacidity were a part of normal development at that time, and if such a gland was disturbed by surgery it might lead to a condition such as Dr. Hardenbergh had described. If one observed that type of case which did not have the normal physiological enlargement of the thyroid at puberty he usually found that those cases were amenorrheic or dysmenorrheic. The dysmenorrhea would frequently be relieved. These patients were given thyroid substance together with ovarian extract. With regard to the actually pathological thyroids in hyperthyroidism or exophthalmic goiter so-called, frequently after operation there would be an enlargement of the portion of lobe left in situ, and in such instances one should be very careful how he became excited over what was a physiological enlargement of the portion of the gland remaining. This was probably Nature's effort to produce the proper amount of function. If this enlargement became excessive, leading to operation, one should be very careful how much of the gland he removed, lest he throw the patient into a condition of hypothyroidism which was worse than hyperthyroidism. The question of operation for hyperthyroidism required well balanced judgment to avoid substituting for one pathological condition another which was worse.

Dr. LOUIS V. WALDRON of Yonkers had observed a case of hypothyroidism which followed the description of Dr. Hardenbergh's case except with reference to the dryness of the skin. In his case thyroid treatment had no effect whatever. He finally took the patient to Dr. S. W. Lambert, who asked if the urine analysis had shown the presence of sugar. There was no sugar in the urine, but there was sugar in the blood. This was mentioned to point out the importance of watching for hyperthyroidism as well as for diabetes when sugar was found in the blood.

Dr. HARDENBERGH, in closing, said that the only indication of any trouble with the tonsils in the case cited was the history that in early youth the tonsils were enlarged. Following this observation there was hyperthyroidism. If one held the theory that infected tonsils infected the thyroid, he might find something in this case to support that theory. The patient, however, had not had recurrent attacks of tonsillitis. He agreed with Dr. Winter that the English preparation of thyroid extract was the best. At one time the patient had shifted to another preparation and this was followed by urticaria, which he thought might have been due to ptomaines in the extract of thyroid. The dosage advised was rather misleading. He felt sure that if he had started with three tablets daily he would have had trouble. It was probably safer to start with less than the dose advocated in the directions for the use of these tablets.

President's Address.—Dr. JOSEPH B. HULETT of Middletown delivered this informal address, in which he said the war had shown that America, or the United States, was the greatest country in the world. We had become the greatest country in the world in much less time than had some other countries. There must be some reason for this. The reason was that each man was allowed to work out his own destiny. The Constitution of the United States granted to every man the right to be the shaper of his own destiny. Of late years we seemed to be drifting toward one-man rule. That system seemed to be a failure, as was shown by the downfall of Kaiser Wilhelm, the Czar of Russia, and some others. The world had been drifting toward socialism, and one could see the way that had worked out in Russia. That, too, seemed to be a failure. It would also seem that political rule was a failure. The downfall of Rome represented that. He believed we should not follow after old world failures. The old country plan was to have someone rule someone else. Allowing each man to work out his own destiny developed the qualities of independence and of leadership. During the war the German soldier, if left without a leader, was at a loss what to do, and fell down, but our men, when deprived of their leader, went right on of their own initiative. In the medical world the same principle held good. He believed the medical profession should not be ruled by someone else. They had come very near, at times, to being ruled by politics. That had always come to him as a surprise, because when he joined the medical profession he thought he was joining an independent profession which always would be independent.

The Medical Society of the State of New York was the governing body of the medical profession in the State of New York. He saw no reason why they should turn themselves over to the State. As we had come to be the leading medical men of the world under a government which allowed each man to work out his own destiny, why turn around and adopt an old world failure? The poor in this country, through the gratuitous services of the medical profession, were looked after as well as any in the world. There was no question that owing to the willingness of the profession to give their services they had been imposed upon and were treating many who were not entitled to charity. This was more especially true of New York City, of Buffalo, and of other large cities. The profession should look into such abuses. To-day a physician had no one to interfere with his practice or to tell him whom he should treat, and we should see to it that we did not sell out to any politicians. We should look after the general practitioner and the new men coming into the profession. The doctor who said he was a specialist should prove it by his work. He did not believe in allowing any board of supervisors to say who were specialists. He would like nothing better than to go down to posterity as having helped the rank and file of the profession. We should be originators; if there were certain things to be done we should do them ourselves. He did not believe we should be told by the politicians what branch of medicine we should take up. We should say that we would handle the medical profession as we believed it was our right to do.

The Future Physician.—Dr. RICHARD R. KEVIN of Brooklyn, president of the Medical Society of the State of New York, delivered this address, in which he said, in part, that the Medical Society of the State of New York was great in proportion as its units were great, and as the individual members thrived, so would the society thrive. He congratulated them because they had been good diagnosticians in this section of the State in that they had elected as president a man who would make his influence felt in the councils of the society. He could speak for the future for he had sat on the benches beside that man when he was a student. In those early times one could have prophesied his future, and he had always made good.

In order to determine what should be the attributes and functions of the future physician, present conditions and environments which had set the present physician on his pedestal must be reviewed. Unlike the law of gravity, economic conditions changed, and all such changes came about through evolution and not revolution. The physician had gone through a process of evolution and standardization since the time when the barber was the surgeon. Just as the achievements of medicine and surgery had advanced, so the State had required higher and higher qualifications of those who practised medicine and surgery. To-day practically all medical colleges required two years of college work before matriculation, and four full years in a recognized medical college and an interneship in a recognized hospital were required before a license to practice medicine was granted. Thus one could see how the State had advanced in its requirements. The late Dr. John B. Murphy expressed the fear that excessive standardization would suppress individuality and dwarf genius, and would result in a sudden decrease of original medical talent. It had been said that superior endowment in intelligence, ingenuity, and well-balanced judgment were necessary to progress. The question of the standardization and qualifications of the present and future physician was too large to discuss at present. Assuming that the requirements and qualifications of the future physician would not have changed, what were the prospects for the future physician? Would he be permitted to pursue his profession unmolested or would he encounter public health legislation and State legislation? Physicians in the past had been leaders in matters of public health. If he read correctly the new economic conditions, they were bringing to the front social welfare. This being so, he could see a change in the curriculum of the future physician. Certainly his function would be to conserve the health of the well, to arrest incipient disease, to care for chronic cases, and to bring comfort to the old. In preventive medicine the sanitary engineer and the social worker had entered the field. When one considered that at this advanced age we had failed to suppress scarlet fever, whooping cough, poliomyelitis, and many other infectious diseases, one could predict that there would be greater advancement so far as preventive medicine was concerned. In the future he saw abundant specialization, but towering over all he predicted that the family physician would have come back to his own. Children would be better cared for. There would be frequent examinations, mental as well as physical. The general health would be cared for and special defects corrected. They would have better men and women in the future. The future physician would have acquired ample knowledge in hygiene and eugenics. The public would be educated to frequent physical examinations, and the physician would achieve better results in the treatment of the sick. These improved results would not be due to a change in the mode of treatment, but rather to the doctor obtaining the patient in the incipient stage of disease. The future physician would dominate the diagnostic clinic. The pathologist, the roentgenologist, the laboratory worker, and the specialist in every line would contribute their part, but the physician would correlate the information that they brought to him and pass final judgment. In the final analysis, the future physician was already here in his prenatal state. What were we going to do to remove the obstacles that encumbered his path? We should educate the public now to their relation to the new physician. This was a problem which they should study. They should see to it that the new physician was provided with the opportunity that would make his work a delight and a pleasure and his life a blessing to mankind.

Unappreciated Agencies in the Defective Development of Children.—Dr. CHARLES GILMORE KERLEY of New York made this presentation, in which he asserted that at the age of seven years the boy was seven-tenths a man and the girl seven-tenths a woman. If errors of development from whatever cause had preceded this period they would never be entirely eradicated. Evidences of this were apparent in the physicial condition of those who had grown up on the Continent during the late international war. Dr. Kerley said he would not make an attempt to cover all that related to right development, but would merely call attention to certain factors which had an important bearing on this subject, and which were generally unappreciated. Among these was defective breast feeding. It was a very usual error to believe that breast feeding was always efficient and the best means of nourishment. Breast feeding might supply substance entirely inadequate to the demands of the infant. Because good breast milk was superior to all other forms of food did not mean that inferior breast milk might not be much less desirable than suitable substitute foods. Breast milk was a commodity, and there were varieties of breast milk as well as of other commodities. Each year he saw a goodly number of cases of malnutrition in infants six months to one year of age fed exclusively on breast milk. These infants were underweight in some instances, but the most usual evidence of defective nutrition would show itself in flabby muscles, secondary anemia, and beginning rachitis. A considerable number of nursing women could supply the child adequately until the completion of the fifth month, fewer could supply him adequately until the completion of the seventh month. After this period practically all breast babies in New York should have the advantage of additional feeding. Breast milk should be repeatedly examined as to quantity and quality during the nursing period. Another mistake to which Dr. Kerley called attention was the excessive use of cow's milk in older children. After the eighteenth month in the average child better growth would result with a reduction of the daily milk allowance to approximately twenty ounces daily, provided adequate nourishment could otherwise be furnished. When other foods could not be given in suitable amounts, a large daily milk content in the diet might be of advantage to balance a defective dietary. He had seen a vast number of super-milk fed children with varying degrees of malnutrition who were taking from one to two quarts of milk daily. Almost invariably they had a capricious

appetite, and disliked other articles of diet, largely because they were never given an opportunity to become really hungry, and to become acquainted with a wider range of foods. Physically they showed poor muscular development, were pot-bellied, constipated, underweight, and flabby. They were subject to frequent so-called bilious attacks. Blood examination seldom failed to show secondary anemia. Mentally they were irritable and difficult of management. Nature had fashioned the child for other foods than milk, after the cessation of the nursing period. Always the quart of milk was bad teaching. Cases of persistent anemia in young children—children with a hemoglobin content under 30 per cent., and with red cells varying from 1,500,000 to 2,500,000—treated along the usual lines of diet, with arsenic and iron, made little progress. These were not simply cases of malnutrition with anemia; they were cases of anemia with secondary malnutrition, and were often seen in quite young infants. The management which he had found rapidly successful in these cases was intravenous blood transfusion, 120 to 150 c.c. of human blood from an appropriate donor. Excessive activity which meant overwork contributed its quota to the hoards of poorly developed children. The child who awakened early and was busy all day in childish activities until seven or eight o'clock at night would not thrive as well as if there was reasonable restraint and a mid-day rest after the mid-day meal. He attempted to cultivate indolence in such natures. A considerable number of children came to him because of inadequate growth, who had been subject to frequent illness. When a child was ill development was delayed. Several illnesses during the year would leave an appreciable mark upon the child. Abnormalities in the gastrointestinal tract constituted another factor in certain cases of malnutrition. He had found it necessary in about eighty cases of tardy malnutrition to make *x*-ray studies of the gastrointestinal tract. In the child with the persistently poor appetite, who had to be coaxed or forced to eat, the explanation was found in pylorospasm, in dilated stomach, and in ptotic stomach. He had frequently found food residue in the abnormal stomach from six to ten hours after a bismuth meal. A child would not be hungry with food residue in the stomach. In addition to defective food intake these children were the losers in that they were those who had frequent attacks of recurrent illness in the nature of vomiting, and fever, the entire illness covering perhaps from five to seven days. In children with persistent malnutrition the explanation would sometimes be found further on in the digestive tract, in the dilated cecum, with ptotic or dilated colon, in angulations, in the enlarged and elongated sigmoid. The last was one of the most frequent causes of obstinate constipation and a low degree of toxemia, and of recurrent vomiting. He would not undertake the care of a habitual malnutrition in a runabout child without an *x*-ray of the gastrointestinal tract. Dr. Kerley exhibited a number of lantern slides illustrating these various anatomical abnormalities of the gastrointestinal tract.

Dr. JAMES E. SADLIER of Poughkeepsie said he wished to make one remark in reference to Dr. Kerley's paper. In the slides Dr. Kerley had shown several of the pictures which showed retention were labeled pylorospasm. Pylorospasm was not a disease, but a symptom; it was no more a disease than acidosis was a disease. The question was what was the underlying factor in those cases? Was it the result of a pathological condition in some other portion of the abdomen? It had been found that pylorospasm was only the firebox on the corner, so to speak, giving the alarm for a neighborhood conflagration; in other words, it was merely a symptom. As to the enlarged sigmoid, the question here was whether there was a spasm of the rectosigmoid which held back the fecal current, which was the cause of Hirschsprung's disease, or megacolon. In other words, were one or two of the illustrations Dr. Kerley had shown illustrations of modified Hirschsprung's disease?

Dr. JOHN A. CARD of Poughkeepsie said some of these cases were cases of purely mechanical obstruction, others had been pathological obstruction. Dr. Kerley had shown the plates merely to bring out the fact that in a great many children who appeared with malnutrition it could be traced to an anatomical condition in the stomach or intestines. The slides were not so much to show the mechanical condition as to show how frequently these conditions might be the cause of malnutrition.

Syphilis of the Nervous System in Children.—Dr. EDWARD LIVINGSTON HUNT of New York presented this paper, with the object of calling attention to some of the manifestations of syphilis of the nervous system in children and of illustrating them by a few cases. It was first necessary to consider in what respects congenital and acquired syphilis differed, as most syphilis in children was congenital. In congenital syphilis more tissues were involved and the involvement was more complete than in acquired syphilis. Apparently fetal tissue displayed very feeble resistance to syphilitic invasion. This resulted in the nervous system being involved more frequently and earlier than in later life. One would expect the same train of symptoms in the two types, and in fact they were similar, but there were certain variations and differences. In the congenital type the signs of involvement of the brain were more frequent than signs of involvement of the spinal cord. As a result mental symptoms, paralyses and optic atrophy were seen, whereas in acquired syphilis one found ataxia, etc. In the congenital syphilis the nervous symptoms, while they might manifest themselves in almost any form, were more apt to be of the meningeal type. The pathological changes were practically the same in the congenital as in the acquired manifestations; the same structures were affected and in the same way. In the congenital type the clinical signs pointed to a more general involvement than in the acquired type. The more one studied the congenital type the more thoroughly was he convinced that the nervous system became involved at an early date. Dr. Hunt described the characteristics of the congenital syphilis, and stated that Hutchinson's teeth were not as common as was taught. Few teeth were apt to be involved rather than many. A case which illustrated some of the points was a boy of 12 years, with a large head, immobile pupils, saddle nose, poor control over sphincters, and mental retardation. His blood Wassermann was four plus, the spinal fluid was also positive, as was the colloidal gold test and the luetic curve. The symptoms of syphilis of the nervous system might vary from restlessness, sleeplessness, enuresis, and slight mental deficiency to amentia. The colloidal gold test was the most delicate of all the tests. Lumbar puncture became an essential part of examination in every case of suspected syphilis, in every case in which syphilis was hereditary, and in every case characterized by nervousness, backwardness, and mental deficiency. Too much emphasis should not be put on a negative Wassermann, and none at all in those cases in which the spinal fluid gave a positive colloidal gold reaction. An illustrative case of nervous syphilis in a child was that of an infant admitted to St. Luke's Hospital last March, when one year old. The child had never assimilated food well, lost weight, never sat up straight, never had full control over his sphincters, had snuffles since birth, was rachitic, had an enlarged head and wide open fontanel, and was pot-bellied. The *x*-ray showed involvement of the left lung. There was marked enlargement of the epiphyses. The red blood cells were 2,800,000, hemoglobin 36 per cent. There was a four plus Wassermann and a positive colloidal gold test. Salvarsan was given hypodermatically. The child died a few weeks after admission to the hospital. In juvenile paresis convulsions usually appeared early. The average age at which juvenile paresis was met with was twelve years. The juvenile paretic was more likely to have convulsions than the paretic adult. The presence of juvenile paresis in a family placed upon the physician the duty of examining and testing every member of the family. In paresis in the adult it was usual to find a gain in weight, but in paresis in children there was as a rule a loss of weight, and one of the most frequent symptoms was slow and incoherent speech. Juvenile tabes was more rare than juvenile paresis, which was accounted for by the complexity of juvenile syphilis, and the fact that it affected the brain rather than the spinal cord. The average age of the appearance of juvenile tabes was

fifteen years. Pure spinal syphilis was almost unknown in congenital syphilis. The fetal brain tissue was probably more susceptible than the tissue of the spinal cord. Hydrocephalus was frequent. The eighth cranial nerve was most frequently involved, which might be due to its extensive ramifications, and its susceptibility to toxemia. In children showing mental backwardness, mental deficiency, and pure nervousness, lumbar puncture should be made and the gold test carried out. The prognosis in congenital syphilis was worse than in the acquired type, which was accounted for by the very extensive involvement and the underlying developmental defects. The age at which congenital syphilis of the nervous system might develop varied greatly. It might be at any time up to the sixteenth year. The precipitating cause was sometimes found in infectious disease. Treatment was not promising. Stigmata were not necessarily present.

Dr. MORRIS STARK said Dr. Kerley had given a very good example of the old adage, "As the twig is bent so the tree is inclined." As the early development, so was the health in later life. The newer thought regarding the effect of the essential food substances on growth was that not only were carbohydrates, proteins, and fats and inorganic salts required, but that the vitamines were also essential. When he had found a child who did not come up to the standard as regards growth and development, and there was no other pathology to account for the condition, he had noted that these accessory substances, the vitamines, had been overlooked. It was due to a lack of these accessory substances that the mother's milk was not always a suitable food. Funk and others had brought up the question as to whether the mother was getting sufficient vitamines, and whether, when the child was not thriving on the mother's milk, it might not be due to a deficiency of these accessory substances.

The chemical analysis of milk might seem to show that it was perfect in composition, and yet it might not be a perfect food, so it was necessary to investigate further, not only by looking for the outspoken signs of metabolic deficiency or for hidden ones, and when irregularities were discovered not explained on physical or chemical grounds, the child should be fed these accessory substances. Then if the mother's milk was deficient in these substances and they had been supplied in other ways the child would thrive. Dr. Hess had shown that tomato, also, as well as orange and potato, would supply the additional vitamines, and if these or other fresh vegetables were added to a pure milk and cereal diet the child would thrive even if these foods represented very few extra calories. Much experimental work had been carried on showing that cow's milk did not contain the same amount of vitamines in the winter that it did in the summer when the cows were in pasture, and that children fed on cow's milk in the summer were not so liable to develop rickets as those fed on cow's milk in the winter. This showed that if one fed cow's milk under certain conditions it might be necessary to add other articles of diet to supply additional vitamines at times without increasing the caloric value of the food. The question of lunch hour for children also determined how they thrived. Dr. Stark advised just a bite at the school lunch hour, and then a hearty meal when the child came home from school in the afternoon and had more time to eat properly. The determining factor in the proper growth, development, and health of the child was entirely dependent upon early recognition not only of hygienic shortcomings in the child's environment but also lack of proper maagement of the diet in the light of modern knowledge, and that very early in the child's life.

Dr. HENRY LYLE WINTER of Cornwall said Dr. Hunt had brought out a number of conditions in connection with the manifestations of congenital syphilis which were most important and which were likely to be overlooked. In his experience, unless a child was known to have inherited syphilis, the family physician was very likely to pass over some points and not to consider the possibility of syphilis. The absence of stigmata was the rule, and their presence the exception. One of these points was that of epileptic seizures in congenital syphilis. He felt that every child who, before puberty, developed recurring convulsions, was under suspicion of having hereditary syphilis. In all such cases the Wassermann test should be made on the blood and spinal fluid. He cited two such cases, one treated intramuscularly, and the other intravenously, with salvarsan, which apparently recovered. Convulsions coming on repeatedly in young children were always suggestive of a possible specific origin.

Dr. LEWIS M. SILVER of New York said he just happened to have under observation a case that was interesting in this connection. In 1900 he had delivered a baby and at the time of birth there were absolutely no symptoms that would excite suspicion of syphilitic infection. He had been seeing the family during all these twenty years. Only recently the mother had brought her son to him because he was beginning to stammer and was mentally retarded. He sent the lad to a class for the correction of speech defects. That was last spring. Recently he had noticed the patient had fixity of the pupils and that the right pupil was more dilated than the left. He then went back over his books and found that when the boy was six weeks old the mother had brought the child to him and that a diagnosis of hereditary syphilis had been made. The Wassermann test was unknown at that time, so the child was treated with calomel tablets in the usual way. There were absolutely no stigmata of syphilis in all the twenty years, and no one would have thought of syphilis at the present time had it not been for that diagnosis in 1900. The Wassermann test was made and found to be strongly four plus. A spinal fluid examination gave a positive reaction in all four particulars. The boy was sent to a well-known syphilographer, who confirmed the diagnosis of neurosyphilis. The involvement of the deep reflexes, the pupillary reaction, and the mental retardation was the result of neurosyphilis. Before the father was married he had been treated for gonorrhea, but repeated Wassermann tests were negative. Now the mother was being tested and later found negative. The interest in this case was the long period during which there were no manifestations of hereditary syphilis—twenty years. He had understood Dr. Hunt to say that twelve to sixteen years was the average age at which children showed these late manifestations of neurosyphilis. He was not willing to entertain the thought of an acquired syphilis in this case.

Health Center Bill.—Dr. C. C. DURYEE of Schenectady discussed this subject. After commending the vision of the future concerning the physician, as given by the president of the State Society, he said all were aware that changes were going on in the profession. The day of opinion was disappearing, and no longer could a man called in to see a case say "in my opinion this is this or that kind of a case." He must present some reason for his opinion. In other words, the medical profession had been growing rapidly out of the condition of practising simply an art, into that of practising scientific medicine. This change had not been completed, but it was in the process of evolution. In order to carry out scientific medicine certain things were necessary. The bill introduced into the Senate by Senator Sage, known as the Health Center Bill, was drawn up by physicians, and aimed to provide certain of these things. No attempt had been made to have it pass the Legislature. It had been sent back to committee time and time again for amendment, and had been sent to physicians throughout the State in order that it might be made to conform to all reasonable demands of the medical profession. But to return to scientific medicine, since some of the early experiences with this bill directed attention to it; he had lived only sixteen miles from the Legislature and had sometimes visited it, and he had never yet known of a bill being presented which influenced or concerned the medical profession that any medical men had handed in. Medical men might come to a hearing on a bill affecting their interests, but at these hearings the shortage of regular medical men was notable; this shortage was made up by a lot of men they did not recognize, some of whom were licensed and permitted to practise medicine in this State. He had never known of a bill drawn by doctors in the interest of the general public and presented to doctors for their approval, with the exception of the Health Center Bill. One objection advanced

against this bill was that it was State medicine and was offering charity to the people. Was there anybody who had found any great difficulty or hesitancy in receiving State aid in education? The only complaint one heard in this connection was that some fund was too little. There was at present a tremendous pressure on hospitals and laboratories to meet the demands made upon them. Why should they not be relieved by decent State assistance? Was it not the duty of the Legislature to provide for health and for the highest standard of health and well-being of the residents of the State? Was State aid not equally as applicable to medicine as to education? There were some laboratories doing public health work but they were not doing the amount of work necessary to give physicians the aid they needed in examining cases It was quite true that in some localities physicians had to depend for urine analysis on the methods of forty years ago and had no means of getting the information that could be furnished by modern diagnostic methods. They had no means of determining the functional capacity of the kidney by the phthalein test, and no way of having a blood examination. Would it not be wise to secure this service for hospitals and for physicians? It would come to the people just as money was given to the educational department by direction and allotment of a commission. There was nothing to cause them to feel that it was a danger to the profession. It was possible that such a law would be of little use in a place like Poughkeepsie, and for that reason the bill was permissive and not mandatory. Hospitals were no longer used merely for the sick, but as places for diagnosis. He believed there were many places where this bill would fit, and there were places where it might not be needed; so in considering the bill he hoped no one would think merely of his own immediate environment, but would remember that the State of New York had many and divers localities. The general practitioner of the old school had developed his skill and self-reliance to an extent that the city physician never acquired, and it could not be said that he was not doing the best he could for the people, but that he should be supplied with tools that would enable him to do even better work. Dr. Duryee said he was a believer in clinical diagnosis, and he did not believe one should rely upon the laboratory altogether. In rural localities the physician should have the laboratory facilities that the city physician had. Dr. Kevin had drawn a picture of group medicine where each of the various experts made his special investigation, the general practitioner coordinating the results and making the résumé. That was not a vision of the future; it was here just now. Dr. Duryee said he was expressing only his own opinion and he bore no message but this: that the members of the First District Branch should select one or two men and one or two alternates so as to insure representation, send them to Albany to meet like medical men, to go over this bill, and to take out or modify things that might be objectionable, and to get the bill in the form that they liked best and then to present it to the Legislature again. Efforts had been made to meet all reasonable and just objections to the bill. Some had said that the bill was a step toward health insurance, that monstrosity and insult. This bill had no relation to health insurance. He felt as many of his hearers and as the people in the Health Department felt toward the health insurance bills. The Health Center bill was drawn by doctors and presented by doctors to doctors for revision, and it hoped to care for the interests of the profession. It provided for assistance in the maintenance of hospitals and for construction, enlargement, and administration of laboratories, and it also provided that an effort be made to see that the medical profession received its just dues. He hoped that the medical profession would always be allowed to select the objects of their own charity, and that they should not have the municipality or the State cast charity upon them. He hoped they would see their way to send representatives to Albany.

Dr. HENRY LYLE WINTER pointed out that it would be impossible for them to send representatives to Albany, inasmuch as under the constitution of the State Society and under the bylaws of the society the district branch societies had no executive functions, being organized as scientific bodies only.

Dr. CHARLES I. REDFIELD of Middletown said he had studied both the health insurance and the health center bill for several years, and he wished every man would do the same. Dr. Duryee had stated that State education and State medicine were correlative. He did not see any relation between these two things. The doctor worked as an individual with individuals, and he did not see why they should come under State medicine. The objection to the bill was that mayors, members of town councils, and county supervisors would say who should treat people. The doctor did not want to be controlled politically. The solution, it seemed to him, was that if the doctors wanted to make a membership corporation group in any locality they could do it without the aid of the politicians. Not that he did not believe in group diagnosis, for he thought it a splendid thing, and that all should have all laboratory facilities; but he objected to having them subsidized by the State. No doubt both the health insurance and health center bill could be amended so as to be perfectly satisfactory to the politicians. The State Board of Health said that the health center bill was the complete answer to the compulsory health insurance bill. Therefore, it would seem that it must include the main ideas of compulsory health insurance. Dr. Redfield then showed that the cost of operating the health center plan would lay an excessive burden on the taxpayer. It was estimated that the cost of health insurance would be about $125,000,000 annually to the State and the health center idea could not be carried out for much less than this amount. Orange county had been selected as a place in which to try out the health center idea. Following the clinic a questionnaire was sent out to the doctors who had sent patients to that clinic to find out what they thought of it. Of 110 doctors practising in Orange county 79 sent patients to the clinic. Many of the replies to the questionnaire were quoted, showing that the clinic had not furnished as much help as it had been hoped it would give. One objectionable feature was the length of time it required to get the data regarding the patient. That often came so late as to be of no practical value. The impression to be derived from the evidence presented was that the general practitioner did not want a bureaucracy of thsi kind.

Dr. HENRY LYLE WINTER took exception to the statement that no bill affecting public health and the medical profession had ever been drawn up and presented to the Legislature by the medical profession. While doctors might nto actually have written the bills, they had been back of a great deal of legislation which concerned both the medical profession and public welfare. Dr. Winter related an experience he had had in connection with certain research work that was conducted under a State appropriation which demonstrated how utterly impossible it was to conduct work of that kind under a state department without constant interference, and declared himself against any system of practising medicine backed by any department of the State of New York.

Dr. JOHN P. DAVIN of New York asserted that the medical profession had advanced to the lofty place it now held by its own unaided efforts. It was the one profession that had grown through its own efforts. He did not believe in the introduction of any modern mechanical contrivance for making diagnosis and treating the patient. State medicine was being practised with a brass band and all the paraphernalia designed to excite public interest. On the other hand, the true practice of medicine was carried on quietly; the true physician did what he could, sometimes very little, sometimes a great deal, but he did it in a quiet and dignified manner. We must keep this splendid heritage in our own hands; the time had not come to surrender our prerogatives to political masters. Dr. Davin then contended that it was the rank and file of the profession that had come forward and defended the profession against compulsory health insurance. He called attention to other organizations which tended to commercialize and socialize medicine, and particularly to the Workmen's Compensation legislation which was still a thorn in the flesh of the profession. He thought this should be taken care of before we entered into any new fields.

Dr. J. RICHARD KEVIN of Brooklyn wished to speak on this subject, not as an officer of the Medical Society of the State of New York, but merely to express his individual opinion. It seemed to him that this whole problem resolved itself into a question of principle. Others had spoken of State medicine, and possibly it was coming; indeed, it was here like an incipient disease. Already New York City spent one million dollars a year on its health department. State medicine was gradually and insidiously growing. Dr. Kevin called attention to some of the pitfalls of statistics as collected by a State Department of Health. Some counties did not have a sufficient number of physicians so the deduction was drawn that the whole State needed this help, and the Health Center bill was devised to meet this lack. The police powers of the Health Department were immense. It was their function to do the big things that the individual members of the profession could not do; but it should keep to its function, namely, the prevention of disease; it should not treat disease. In the first place, the name itself, Health Center, was not honest; they were not health centers, but disease centers. Dr. Kevin said he was in favor of health centers with certain restrictions. The Health Department already had a great deal to do and was not doing it as well as it should. Instead of a health center bill it seemed to him it would be better for them to simply provide pathological and laboratory facilities in districts where these were needed. He believed, however, in sustaining the efforts of the State Health Department and not in abusing it.

Dr. EMERY of Brooklyn believed, with Dr. Kevin, that the State Department of Health was doing a great work. He did not know all the details of the Health Center bill, but he believed it overstepped the privileges of the Health Department. In certain districts there might be a shortage of physicians. Twenty years ago 3500 men were graduated from the medical colleges each year; now there were only about 2000, and a great many of these did not go into the practice of medicine, but into some departmental work. As long as the present premedical requirements remained they would not get men to supply the rural districts. A boy from a rural district could not afford to take two, four, or six years in a classical college and then four years in a medical college. If they wished to supply physicians to rural localities a medical course would have to be arranged which would permit boys from rural districts to study medicine.

Dr. DURYEE, in closing the discussion, explained that it was not the business of the health center to practise medicine, and expressed gratification that those present had taken such an interest in matters that affected the medical profession, even though he thought they did not take quite the proper view regarding the Health Center bill.

Encephalitis Lethargica (Epidemic Encephalitis).—Dr. HENRY LYLE WINTER of Cornwall read this paper, in which he related his experience with this disease. He stated that for the present we must regard polioencephalitis and encephalitis lethargica as distinct diseases. There was no question among neurologists but that encephalitis lethargica was a clinical entity. The fact that encephalitis occurred most frequently in those who had suffered from influenza, and that the disease made its appearance about six months after the influenza epidemic of 1917, clearly pointed to an etiological relationship. Beyond this the cause of encephalitis was unknown. All that could be said was that probably it was an air-borne infectious disease, and also probably contagious. The pathological changes might occur in any part of the brain, and might involve the pia. The writer's series of 20 cases furnished two autopsies, in one of which the pia was markedly involved, while in the other it had suffered no change. The lesions in the brain itself were similar in both cases, consisting of numerous pinpoint hemorrhages in both the gray and white matter of the brain, and especially of the gray matter of the basal ganglia. There was very little actual destruction or organic impairment of the nerve cells. It was in accord with clinical experience as well as with pathological findings that some form of disturbed consciousness was present in every case of encephalitis; this seemed to be the only symptom which was always present. In all of the writer's cases the patient could be aroused to active consciousness, could fix his attention and would give rational replies to even complex questions. After reviewing Tilney's classification of the various types of encephalitis the points in diagnosis which Dr. Winter had found most helpful were suddenness of onset and double vision. The latter occurred in five of his patients while they were at work, apparently in good health. It was necessary to regard any sudden neurological disturbance with suspicion. The range of temperature was low except in severe cases. The pulse showed no characteristic changes, except that in some cases it tended to become irregular and intermittent, probably because of disturbed innervation through cranial nerve irritation. The respirations were usually altered, being retarded or accelerated in accordance with the character of the disturbance of consciousness. They might be altered by cranial nerve involvement, the excursions of the chest walls being different on the two sides. The blood pressure was taken at intervals in five cases of the lethargic type and was persistently low. The blood count was made in 15 cases and showed a white count of from eight to ten thousand. The spinal fluid was under pressure in some cases, but increased pressure was not the rule. All the cases in this series showed an increaed cell count, from 80, the lowest, to 250, the highest. In other respects the spinal fluids were negative. Three of these cases showed evidences of cerebral pressure, the symptoms being so marked in two as to suggest the possibility of brain tumor. In these cases the eye grounds showed optic neuritis and hemorrhages into the retina. Except for these three cases the ophthalmoscopic findings were negative. The prognosis was always doubtful in every case. The possibility of more or less permanent invalidism in a variety of forms must not be lost sight of. There was no specific treatment of encephalitis. The maintenance of nutrition and elimination were essential. He had obtained the most satisfactory results with meat broths and cereal gruels made with water, and had used prepared peptonoids with advantage. Milk, and foods made with milk, had proved difficult to digest, and he did not use them. Feedings should be given every three hours. Water was necessary in fairly large quantities. Plain water was borne poorly, so he gave at least a quart of albumin water in twenty-four hours, in addition to the feedings. The low blood pressure referred to indicated asthenia, and this contraindicated the use of active catharsis. Constipation, if present, should be corrected by enemata. Restlessness demanded the use of sedatives. He had been successful with two to five grain doses of chloral combined with bromide. Heart irregularities might be met with the usual drugs. In this connection he had been much impressed by the effect upon the general condition of a few doses of digitalis given to correct an irregular heart. One of the physiologically tested preparations was given hypodermatically. After the second dose the patient's lethargy became less pronounced. The drug was continued and the mental condition cleared up in a few days and continued clear. It was possible, or even probable, in this instance, that the recovery was merely coincidental. At the same time, if one considered the pathology and the effect of digitalis on the vascular system it was not unreasonable to assume that the drug *could* be of value. He did not feel that the routine employment of repeated lumbar puncture, which had been advised by several neurologists, was desirable or even indicated. In those cases which exhibited pressure symptoms it should be done with sufficient frequency to relieve the symptoms. In the majority of cases, however, no pressure symptoms were present. The pathological changes were perivascular extravasations and hemorrhages, and theoretically reduction of the pressure in tissues surrounding and supporting the vessels increased the liability to extravasation of blood and the invasion of these tissues. His own clinical experience also was against this procedure. Dr. Winter said his purpose in presenting this subject in a rather sketchy way was to direct attention to the wide variation of symptoms which might occur in this disease.

Dr. MORRIS STARK spoke of the difficulty of making

a diagnosis between poliomyelitis and lethargic encephalitis. The spinal fluid should always be examined. He cited one case in which there was very little lethargy, but in which there were some choreic movements and finally paralysis of the internal recti of the eye. In this case the spinal fluid showed nothing. Dr. Bernhard Sachs examined the patient and stated that there was cerebellar involvement. Dr. Stark asked Dr. Winter whether he had employed spinal lavage in any of his cases after having removed the spinal fluid, a procedure that had been recommended.

Direct Hernia.—Dr. J. P. HOGUET of New York City made this presentation in which he expressed the opinion that hernia was not regarded as seriously as it ought to be, and that enough study had perhaps not been given it when one considered its frequency. In New York City probably 10 per cent. of the operations performed were for hernia of some kind. Further, of all types of hernia, direct hernia formed about 10 per cent. That figure was not exactly accurate but was arrived at from the percentages of men who did the largest part of the hernia operations performed in the city. The unfortunate thing in connection with hernia from the economic standpoint was that the largest percentage of hernia cases occurred during the fairly active working years. Hernia scarcely ever occurred in those under fifteen years of age. It was rarely seen in women, but in men between the ages of 30 and 60 years in the majority of cases. It was quite possible that a massive hernia might start as an indirect hernia, that in the last stage there might be a complete giving away of the entire inguinal ring, and that the indirect and direct hernia might exist as one. Many recurrences followed operation for indirect hernia not due to a recurrence of the indirect hernia but to the fact that a direct hernial sac was overlooked at the time of the operation, and shortly after the direct hernia made its appearance and grew progressively larger. In operating for indirect hernia one should make sure that a direct hernia did not exist. It was not necessary before operation to make an exact diagnosis as to the type of hernia, since one could plan his operation at the operating table. There were cases of direct hernia in which an ordinary Bassini operation with transplantation of the cord—and he believed the cord should be transplanted in every case—did not effect a permanent cure. There were cases in which the conjoined tendon was not taut and could be brought down and sutured to Poupart's ligament, with very satisfactory result. In certain cases, on the other hand, the conjoined tendon was thinned out, and when sutured to Poupart's ligament made a very thin wall against recurrence of the hernia. In such cases it was necessary to have some kind of reinforcement, and naturally the operation which suggested itself was transplantation of the rectus muscle. After retracting the conjoined tendon forward and inward, the external portion of the rectus was split, pulled down and the fibers stitched to Poupart's ligament. That was an excellent operation where the rectus muscle was broad enough, but there were cases in which it was close to the midline. In such instances it had occurred to him that it might be possible to reinforce the conjoined tendon by suturing down the reflected portion of the aponeurosis of the external oblique. For a long time it had been his routine procedure to put the most internal stitch through the reflected portion of the external oblique, then through the conjoined tendon and then through Poupart's ligament. He had also devised a scheme for converting an indirect into a direct hernia, which avoided injury to the bladder wall. These procedures Dr. Hoguet illustrated by lantern slides. In closing he said it was surprising how badly the average hernia was operated upon. It was estimated that there were recurrences in over 15 per cent. of the cases. That should be remedied. A large number of cases having recurrences had been operated upon by the Bassini method. With the intelligent use of transplantation of the rectus or the suturing down of the reflected aponeurosis, the recurrences were a little over 7 per cent. By using both rectus transplantation and suture of the reduplicated aponeurosis, recurrences were reduced to 2½ per cent., which was better than the results obtained by the simple Bassini operation.

Books Received.

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PRACTICAL BACTERIOLOGY, BLOOD WORK, AND ANIMAL PARASITOLOGY. By E. R. STITT, M.D. 633 pages with illustrations. Published by P. Blakiston's Son & Co., Philadelphia.

THE STORY OF THE AMERICAN RED CROSS IN ITALY. By CHARLES M. BAKEWELL. 253 pages with illustrations. Published by the Macmillan Co., New York.

OCCUPATIONAL AFFECTIONS OF THE SKIN. By R. PROSSER WHITE, M.D. 360 pages with illustrations. Published by Paul B. Hoeber, New York.

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SURGERY, ITS PRINCIPLES AND PRACTICE. By ASTLEY PASTON COOPER ASHHURST, M.D. 1202 pages with 14 colored plates and 1,129 illustrations in the text, mostly original. Published by Lea & Febiger, New York.

KOMPENDIUM DER AUGENHEILKUNDE. By Prof. Dr. PAUL SILEX. 304 pages with illustrations. Published by S. Karger, Berlin.

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DIE SCHLAFSTÖRUNGEN UND IHRE BEHANDLUNG. By L. E. BREGMAN, M.D. 136 pages. Published by S. Karger, Berlin.

DIE BEHANDLUNG SCHWÄCHLICHER KINDER IN OFFENTLICHER FÜRSORGE. By Dr. JULIUS RITTER. 40 pages. Published by S. Karger, Berlin.

UBER DISPOSITION. By Dr. FELIX V. SZONTAGH. 347 pages. Published by S. Karger, Berlin.

STUDIEN UBER DARMTRÄGHEIT. By Dr. FRANZ XAVER MAYR. 266 pages. Published by S. Karger, Berlin.

BLOCK ANESTHESIA. By ARTHUR E. SMITH, M.D. 895 pages with 595 illustrations. Published by C. V. Mosby Company, St. Louis.

PSYCHOPATHOLOGY. By EDWARD J. KEMPF, M.D. 762 pages with 87 illustrations. Published by C. V. Mosby Company, St. Louis.

MEDICAL RECORD VISITING LIST, or Physicians' Diary, for 1921. Revised. Published by William Wood and Company, New York.

Miscellany.

The Nights of a Bordeaux Practitioner—Dr. de Coquet contributes a feuilleton with the above title to the *Journal de Médecine de Bordeaux* for Sept. 25, 1920 xci., 18. In this he outlines the activities of a supposititious Dr. Boniface who in the course of his active life has gathered more grey hairs than yellow backs. His means are very moderate and in lieu of an automobile he makes his rounds on a bicycle. In the evening after having patriotically read the two Bordeaux medical journals, the *Journal* and *Gazette*, he fixes his itinerary for the morrow and turns in, as he hopes, for the night. The neighborhood being a quiet one and he himself fatigued he at once falls asleep. But hardly has a half hour elapsed before the doorbell rings loudly. Probably a confinement due shortly, he thinks. But the speaking tube evokes no reply save a volley of laughs from a party of young people returning from a moving picture show, who wish to show off before one another. It reminds him of July 14, the Bastile holiday, when that sort of thing might be tolerable.

The doctor tries to go back to sleep but he is aroused and his mind begins to run on a sick patient. Besides he is disturbed by the parade of pleasure seekers home going from the theaters and restaurants. Not until after midnight does he once more sleep. Still later parties return from gatherings of social character and in vehicles. The coachmen make much noise, not for the sake of being noisy, but to fix attention of the fares on the naturalness of a good tip. The hilarious fares are shouting choruses and the doctor sooner or later wakes once more. He hears two drunks conversing under his window.

Sleep has now become impossible. He hears the mournful sirens of steamboats in the harbor and the whistles of incoming trains, and later the early market wagons, and the street sweepers with their wooden shoes. The foreman of these issues his commands in a loud voice. One Sabatier, a sweeper, is "off the job" and the foreman starts a sort of hue and cry for him. The fugitive is finally located and reports verbally to his chief from a remote locality. The foreman, now relieved, breaks out into a patriotic song. After the sweepers have finished, the "night soil" wagons pass by, the drivers inveighing loudly against their horses for some breach of conduct. The heavy vehicles shake the house as they rumble by. At 5 o'clock the first trolley cars for the laborers begin to run. The merchants are taking down their shutters. Workers hurry by on foot and one playfully rings the bell. The doctor is dozing a little but soon his servant rouses him, for his regular hour for rising has come. The first thing to be done after dressing is to make written complaints to the responsible city officials, but the sufferer chances to think of the well-known Dr. Boileau, a Parisian physician, who several years ago had indited a complaint of the same sort in verse for the sake of the greater appeal, but without result. He asks himself what would be the use and consoles himself with the likelihood that on the following eve he will be so sleep famished that nothing will keep him awake.

What Was the Sacred Plant of the Ancient Mexicans?—This subject is discussed at great length in the *Revista Ibero-Americana* for July, 1920, xliv, 7. Dr. Suarez, the author, states that the identity of the *Ololiuhqui* is still an enigma. It has been identified with the *Ipomes sidæfolia*, a plant that grows in Oaxaca, and with the *Convolvulus microcalyx*, apparently on insufficient evidence. The author uses the shortened term *ololique* to distinguish the historical plant. The first Spaniard to mention it was Hernandez, a well-known physician, in a work on the plants of New Spain, published in Latin between 1570 and 1577. This underwent a translation into Spanish and as recently as 1888 was reproduced in *fac simile*. In this reprint we find that the *ololique* (to use the more modern contracted form) was the same as the *cohuaxihuitl*. The word *ololiuhqui* is said to mean "plant with roundish leaves," from *olola*, a round object; while *cohuaxihuitl* is said to signify "green snake," or figuratively the "snake herb," of which the leaves were heart-shaped. This plant, whatever it was, seems to have been a cure-all and to have been used to expel the cold, to cure broken bones and the relaxed hips of women (from childbirth?) as an antisyphilitic, etc. Among other activities it was good against mania and hence was once associated with the poisonous *Solanaceæ*. But from the descriptions, botanical and pharmacological, little idea of its identity can be obtained. The plant was a natural product of the State of Oaxaca only, and there is no evidence that it was cultivated elsewhere.

Arsonval on the History of High Frequency Currents in Therapeutics.—The well known inventor of the Arsonval current which was termed arsonvalization by Benedikt of Vienna gives in *La Médecine*, June, 1920, a brief outline of the history of our knowledge since the year 1903. He sums up his circuit as an alternating one with millions of cycles a second in place of 80 to 100. The number should be from four to six millions. The author began to study simple alternation in 1881 and the greatest number of alternations then available was 10,000. This frequency was found to be innocuous. Improvements in technique gradually led to increase of frequency and in 1893 he was able to pass through his body a current of 900 volts times 0.8 amperes, equivalent to 720 watts, without any sensations. Naturally the same amount of electric energy in a galvanic circuit would have been fatal. He showed at the same time that often in apparent death from industrial alternating currents of low frequency reanimation is possible by means of artificial respiration. Although diathermy is claimed by Germans and Austrians as comparatively new, the author shows that he discovered the principal phenomena in the last century. In 1893 he passed 3,000 milliamperes through his arm with the genesis of heat and in 1896 he first used diathermy in the clinic and showed that it could slow metabolism. The experiments attracted no attention because at that time there was no electric installation in the hospitals. The term arsonvalization could with equal propriety be applied to the diathermic circuit.

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RADIUM

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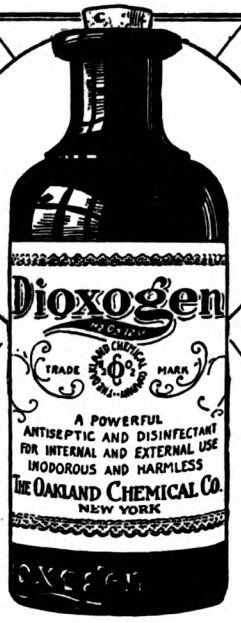

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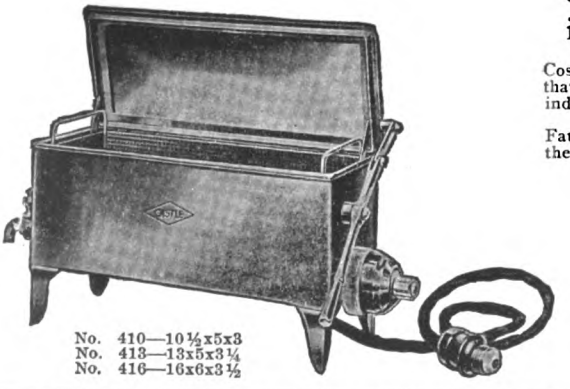

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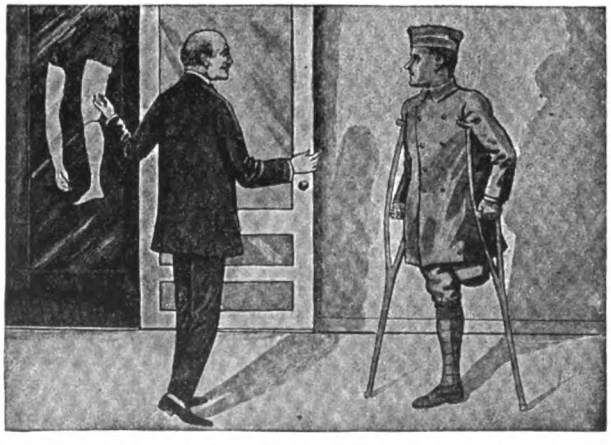

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SURG.-GEN. W. C. BRAISTED, M.D., Prest., U. S. Navy.

CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

Annual Meeting at Washington, D. C., May, 1922
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SIMON FLEXNER, M.D., Prest., New York, N. Y.

ASSOCIATION OF AMERICAN PHYSICIANS.

Annual Meeting at Alantic City, N. J., May, 1921
THOMAS MCCRAE, M.D., Sec., 1627 Spruce St., Phila., Pa.
W. S. THAYER, M.D., Prest., Baltimore, Md.

AMERICAN SURGICAL ASSOCIATION.

Annual meeting at Toronto, Canada (date not decided), 1921
JOHN H. GIBBON, M.D., Sec., 1608 Spruce St., Phila., Pa.
JOHN B. ROBERTS, M.D., Prest., 313 So. 17th St., Phila., Pa.

CLINICAL CONGRESS OF AMERICAN COLLEGE OF SURGEONS.

Annual Meeting at Montreal, P. Q., October 11-15, 1920
F. H. MARTIN, M.D.,Sec., Chicago, Ill.
G. E. ARMSTRONG, M.D., Prest., Montreal, Can.

AMERICAN CONGRESS OF INTERNAL MEDICINE.

Annual Meeting at Baltimore, Md., February, 1921
FRANK SMITHIES, M.D., Sec., 1002 N. Dearborn St., Chicago., Ill.
GLENTWORTH R. BUTLER, M.D., Prest,. Brooklyn, N. Y.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY.

Annual meeting at Kansas City, Mo., Oct. 14-16, 1920
LUTHER C. PETER, M. D., Sec., 1527 Spruce St., Phila., Pa.
LEE MASTEN, M. D., Prest., Buffalo, N. Y.

AMERICAN ASSOCIATION OF ANESTHETISTS.

Annual Meeting at Boston, Mass., June 6-7, 1921
F. H. MCMECHAN, M.D., Sec., Avon Lake, Ohio
JOS. F. LUMBARD, M.D., Prest., New York, N. Y.

AMERICAN ASSOCIATION FOR PROMOTING HYGIENE AND PUBLIC BATHS.

Annual Meeting at Philadelphia, Pa., October 8-9, 1921
WALLACE A. MANHEIMER, Ph.D., Sec., 184th St. and Creston Ave., New York
SIMON BARUCH, M.D., Prest., New York, N. Y.

AMERICAN ASSOCIATION OF GENITO-URINARY SURGEONS.

Annual Meeting at Richmond, Va., April, 1921
R. F. O'NEIL, M.D., Sec., 374 Marlborough St., Boston, Mass.
J. H. CUNNINGHAM, M.D., Prest., Boston, Mass.

AMERICAN ASSOCIATION OF IMMUNOLOGISTS.

Annual Meeting at Cleveland, Ohio, March 24-25, 1921.
ARTHUR F. COCA, M.D., Sec., Flushing, N. Y.
RUFUS I. COLE, M.D., Prest., New York, N. Y.

THE SOCIETY OF AMERICAN BACTERIOLOGISTS.

Annual Meeting at Chicago, Ill., December 28-30, 1920
A. PARKER HITCHENS, M.D., Sec.-Treas., Indianapolis, Ind.
C. KRUMWEIDE, JR., M.D. Prest., New York, N. Y.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Annual Meeting at Atlantic City, N. J., Sept. 20-22, 1920
H. GUSTAV ZINKE, M.D., Sec., Cincinnati, Ohio.
GEORGE W. CRILE, M.D., Prest., Cleveland, Ohio.

ASSOCIATION OF AMERICAN PERORAL ENDOSCOPISTS.

Annual Meeting at Atlantic City, N. J., June, 1921
SAMUEL IGLAUER, M.D., Sec., 701 Race St., Cincinnati, Ohio.
HENRY L. LYNAH, M.D., Prest., 127 W. 58th St., New York.

AMERICAN ASSOCIATION OF RAILWAY SURGEONS

Annual Meeting at Chicago, Ill., October 13-15, 1920
LOUIS J. MITCHELL, M.D., Sec., 29 East Madison St., Chicago, Ill.
ROBT. MCCONAUGHY, M.D., Prest., York, Neb.

AMERICAN ASSO. FOR THORACIC SURGERY.

Annual Meeting at (not yet decided), 1921.
NATHAN W. GREEN, M.D., Sec., 152 West 57th St., New York, N. Y.
RUDOLPH MATAS, M.D., Prest., New Orleans, La.

AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION.

Annual Meeting at
A. K. STONE, M.D., Sec., Framingham Center, Mass.
LAWRASON BROWN, M.D., Prest., Saranac Lake, N. Y.

AMERICAN DERMATOLOGICAL ASSOCIATION.

Annual Meeting at Boston, Mass. (date not decided), 1921
UDO J. WILE, M.D., Sec., Ann Arbor, Mich.
JAY FRANK SCHAMBERG, M.D., Prest., Philadelphia, Pa.

AMERICAN ELECTROTHERAPEUTIC ASSOCIATION.

Annual Meeting at Atlantic City, N. J., Sept. 14-17, 1920
BYRON S. PRICE, M.D., Sec., 17 E. 38th St., New York, N. Y.
WILLIAM MARTIN, M.D., Prest., Atlantic City, N. J.

AMERICAN GASTRO-ENTEROLOGICAL ASSOCIATION.

Annual Meeting at Boston, Mass., June, 1921.
FRANK SMITHIES, M.D., Sec., 1002 N. Dearborn St., Chicago, Ill.
JOSEPH SAILER, M.D., Prest., Philadelphia, Pa.

AMERICAN GYNECOLOGICAL SOCIETY.

Annual Meeting at (not yet decided), 1921.
GEORGE GRAY WARD, JR., M.D., Sec., 20 West 50th St., New York, N. Y.
WALTER W. CHIPMAN, M.D., Prest., Montreal, P. Q., Canada.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

Annual Meeting at (not yet decided), 1921.
GEORGE MORRISON COATES, M.D., Sec., 1736 Pine St., Philadelphia, Pa.
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AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

Annual Meeting at Atlantic City, N. J., June, 1921.
WM. H. HASKIN, M.D., Sec., 40 East 41st S., New York, N. Y.
LEE WALLACE DEAN, M.D., Prest., Iowa City, Ia.

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION

Annual Meeting at Boston, Mass. (date not decided), 1921
H. W. MITCHELL, M.D., Sec., Warren, Pa.
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AMERICAN MEDICAL EDITORS' ASSOCIATION.

Annual Meeting at Boston, Mass., June, 1921.
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AMERICAN NEUROLOGICAL ASSOCIATION.

Annual Meeting at (not yet decided), 1921.
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AMERICAN OPHTHALMOLOGICAL SOCIETY.

Annual Meeting at Magnolia, Mass. (date not decided), 1921
T. B. HOLLOWAY, M.D., Sec., 1819 Chestnut St., Philadelphia, Pa.
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AMERICAN ORTHOPEDIC ASSOCIATION.

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ROBT. B. OSGOOD, M.D., Prest., 372 Marlboro St., Boston, Mass.

AMERICAN OTOLOGICAL SOCIETY.

Annual Meeting at (not yet decided), 1921.
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WELLS P. EAGLETON, M.D., Prest., Newark, N. J.

AMERICAN PEDIATRIC SOCIETY.

Annual Meeting at (not yet decided), 1921.
HOWARD CHILDS CARPENTER, M.D., Sec., Philadelphia, Pa.
JOHN HOWLAND, M.D., Prest., Baltimore, Md.

AMERICAN PROCTOLOGIC SOCIETY.

Annual Meeting at
RALPH W. JACKSON, M.D., Sec., Fall River, Mass.
COLLIER F. MARTIN, M.D., Prest., Philadelphia, Pa.

AMERICAN PUBLIC HEALTH ASSOCIATION.

Annual Meeting at San Francisco, Calif., Aug. 30-Sept. 3, 1920
A. W. HEDRICH, Sec., 169 Massachusetts Ave., Boston, Mass.
W. S. RANKIN, M.D., Prest., Raleigh, N. C.

AMERICAN RADIUM SOCIETY.

Annual Meeting at Boston, Mass., June 6, 1921.
WM. S. NEWCOMET, M.D., Sec., Philadelphia, Pa.
HENRY SCHMITZ, M.D., Prest., Chicago, Ill.

AMERICAN ROENTGEN RAY SOCIETY.

Annual Meeting at Minneapolis, Minn., Sept. 15, 1920
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JAMES T. CASE, M.D., Prest., Battle Creek, Mich.

AMERICAN THERAPEUTIC SOCIETY.

Annual Meeting at
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C. E. DE M. SAJOUS, M.D., Prest., Philadelphia, Pa.

AMERICAN UROLOGICAL ASSOCIATION.

Annual Meeting at Montreal, P. Q., Canada, June 11, 1921.
HENRY L. SANFORD, M.D., Sec., 1110 Euclid Ave., Cleveland, O.
W. F. BRAASCH, M.D., Prest., Rochester, Minn.

ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

Annual Meeting at Chicago, Ill., March, 1921.
FRED C. ZAPFFE, M.D., Sec., 3431 Lexington St., Chicago, Ill.
WM. PEPPER, M.D., Pres., Philadelphia, Pa.

ASSOCIATION OF MILITARY SURGEONS.

Annual Meeting at Washington, D. C., October 21, 1921.
COL. JAMES ROBB CHURCH, Sec., Washington, D. C.
J. W. KERR, M.D., Prest., Ellis Island, N. Y.

FEDERATION OF STATE MEDICAL BOARDS.

Annual Meeting at Chicago, Ill., (date not decided), 1921.
WALTER L. BIERRING, M.D., Sec., Des Moines, Ia.
DAVID A. STRICKLER, M.D., Prest., Denver, Col.

MEDICAL SOCIETY OF THE MISSOURI VALLEY.

Annual Meeting at Omaha, Neb., Sept. 6-7, 1920
CHAS. WOOD FASSETT, M. D., Sec., Kansas City, Mo.
CHARLES RYAN, M. D., Prest., Des Moines, Iowa.

MEDICAL ASSOCIATION OF THE SOUTHWEST.

Annual Meeting at Wichita, Kans., September 27-29, 1920.
FRED H. CLARK, M.D., Sec., El Reno, Okla.
E. F. DAY, M.D., Prest., Arkansas City, Kans.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Annual Meeting at Chicago, Ill., Oct. 12-14, 1920
HENRY ENOS TULEY, M.D., Sec., Louisville, Ky.
FRANK B. WYNN, M.D., Prest., Indianapolis, Ind.

SOUTHERN SURGICAL ASSOCIATION.

Annual Meeting at Hot Springs, Va., Dec. 14-16, 1920.
H. A. ROYSTER, M.D., Sec., Raleigh, N. C.
WILLARD BARTLETT, M.D., Prest., St. Louis, Mo.

SOUTHERN MEDICAL ASSOCIATION.

Annual Meeting at Louisville, Ky., November 15-18, 1920.
SEALE HARRIS, M.D., Sec., Birmingham, Ala.
E. H. CARY, M.D., Pre it., Dallas, Texas.

WESTERN SURGICAL ASSOCIATION.

Annual Meeting at Los Angeles, Cal., December 3-4, 1920.
WARREN A. DENNIS, M.D., Sec., Lowry Bldg., St. Paul, Minn.
ARTHUR T. MANN, M.D., Pre t., Minneapolis, Minn

STATE.

MEDICAL ASSOCIATION OF THE STATE OF ALABAMA.

Annual Meeting at Montgomery, Ala., April 19-21, 1921.
H. G. PERRY, M.D., Sec., Montgomery, Ala.
L. W. JOHNSTON, M.D., Prest., Tuskegee, Ala.

NATIONAL AND STATE MEDICAL SOCIETIES OF AMERICA.

ARIZONA MEDICAL ASSOCIATION.

Annual Meeting at Tucson, Ariz. (date not decided), 1921.

D. F. HARBRIDGE, M.D., Sec., Goodrich Bldg., Phoenix, Ariz. — A. M. TUTHILL, M.D., Prest., Phoenix, Ariz.

ARKANSAS MEDICAL SOCIETY.

Annual Meeting at (not yet decided), 1921.

WM. R. BATHURST, M.D., Sec., 810 Boyle Bldg., Little Rock, Ark. — GUS A. WARREN, M.D., Prest., Black Rock, Ark.

CONNECTICUT STATE MEDICAL SOCIETY.

Annual Meeting at Hartford, Conn., May 18-19, 1921.

CHAS. W. COMFORT, M.D., Sec., 1193 Chapel St., New Haven, Conn. — GEORGE BLUMER, M.D., Prest., New Haven, Conn.

MEDICAL SOCIETY OF THE STATE OF CALIFORNIA

Annual Meeting at Coronado, Cal., May, 1921.

SAXTON TEMPLE POPE, M.D., Sec., 930 Butler Bldg., San Francisco, Cal. — JOHN C. YATES, M.D., Prest., Watts Bldg., San Diego, Cal.

COLORADO STATE MEDICAL SOCIETY.

Annual Meeting at Glenwood Springs, Colo., Sept., 1920

CRUM EPLER, M.D., Sec., Pueblo, Colo. — F. H. MCNAUGHT, M.D., Prest., Denver, Colo.

DELAWARE STATE MEDICAL SOCIETY.

Annual Meeting at Wilmington, Del., October 11-12, 1920

W. O. LAMOTTE, M.D., Sec., Wilmington, Del. — H. M. MANNING, M.D., Prest., Seaford, Del.

FLORIDA MEDICAL ASSOCIATION.

Annual Meeting at Pensacola, Fla., May, 1921.

GRAHAM B. HENSON, M.D., Sec., Jacksonville, Fla. — W. P. ADAMSON, M.D., Prest., Tampa, Fla.

MEDICAL ASSOCIATION OF GEORGIA.

Annual Meeting at Rome, Ga., May, 1921

A. H. BUNCE, M.D., Sec., Healey Bldg., Atlanta, Ga. — E. T. COLEMAN, M.D., Prest., Graymont, Ga.

MEDICAL SOCIETY OF HAWAII.

Annual Meeting at Honolulu, T. H., November, 1920

C. A. BATTEN, M.D., Sec., Honolulu, T. H. — A. F. JACKSON, M.D., Prest., Honolulu, T. H.

ILLINOIS STATE MEDICAL SOCIETY.

Annual Meeting at Springfield, Ill., May 17-18-19, 1921.

W. H. GILMORE, M.D., Sec., Mount Vernon, Ill. — W. E. GRINSTEAD, M.D., Prest., Cairo, Ill.

IDAHO STATE MEDICAL ASSOCIATION.

Annual Meeting at

E. E. LAUBAUGH, M.D., Sec., Boise, Idaho. — C. P. STACKHOUSE, M.D., Prest., Sandpoint, Idaho.

INDIANA STATE MEDICAL ASSOCIATION.

Annual Meeting at South Bend, Ind., Sept. 22-24, 1920

CHAS. N. COMBS, M.D., Sec., Terre Haute, Ind. — CHAS H. MCCULLY, M.D., Prest., Logansport, Ind.

IOWA STATE MEDICAL SOCIETY.

Annual Meeting at Des Moines, Ia., May 11-12-13, 1921.

T. B. THROCKMORTON, M.D., Sec., Des Moines, Ia. — DONALD MACRAE, M.D., Prest., Council Bluffs, Ia.

KANSAS MEDICAL SOCIETY.

Annual Meeting at Wichita, Kan., May, 1921.

J. F. HASSIG, M.D., Sec., Kansas City, Kan. — C. KLIPPEL, M.D., Prest., Hutchinson, Kan.

KENTUCKY STATE MEDICAL ASSOCIATION.

Annual Meeting at Ashland, Ky., Sept. 23-25, 1920.

ARTHUR T. MCCORMACK, M.D., Sec., Louisville, Ky. — J. S. LOCK, M.D., Prest., Louisville, Ky.

LOUISIANA STATE MEDICAL SOCIETY.

Annual Meeting at New Orleans, La., April 19-20-21, 1921

P. T. TALBOT, M.D., Sec., New Orleans, La. — HOMER DUPUY, M.D., Prest., New Orleans, La.

MICHIGAN STATE MEDICAL SOCIETY.

Annual Meeting at (not yet decided), 1921.

FREDERICK C. WARNSHUIS, M.D., Sec., Grand Rapids, Mich. — ANGUS MCLEAN, M.D., Prest., Detroit, Mich.

MINNESOTA STATE MEDICAL ASSOCIATION.

Annual Meeting at St. Paul, Minn., Sept. 29-Oct. 1, 1920

EARLE R. HARE, M.D., Sec. Minneapolis, Minn. — J. H. ADAIR, M.D., Prest., Owatonna, Minn.

MISSISSIPPI STATE MEDICAL ASSOCIATION.

Annual Meeting at Laurel, Miss., May 10-11, 1921.

T. M. DYE, M.D., Sec., Clarksdale, Miss. — J. W. BARKSDALE, M.D., Prest., Winona, Miss.

MISSOURI STATE MEDICAL ASSOCIATION.

Annual Meeting at St. Joseph, Mo., May 17-18-19, 1921.

E. J. GOODWIN, M.D., Sec., 3529 Pine St., St. Louis, Mo. — W. J. FERGUSON, M.D., Prest., Sedalia, Mo.

MEDICAL ASSOCIATION OF MONTANA.

Annual Meeting at Helena, Mont., July, 1920.

E. G. BALSAM, M.D., Sec., Billings, Mont. — E. M. LARSON, M.D., Prest., Great Falls, Mont.

MAINE MEDICAL ASSOCIATION.

Annual Meeting at Bangor, Me., June, 1921

B. L. BRYANT, M.D., Sec., 265 Hammond St., Bangor, Me. — THEODORE E. HARDY, M.D., Prest., Waterville, Me.

MEDICAL AND CHIRURGICAL FACULTY OF THE STATE OF MARYLAND.

Annual Meeting at Baltimore, Md., May 11-13, 1921

J. A. CHATARD, M.D., Sec., 1211 Cathedral St., Baltimore, Md. — JAMES E. DEETS, M.D., Prest., Clarksburg, Md.

MASSACHUSETTS MEDICAL SOCIETY.

Annual Meeting at Boston, Mass., June, 1921.

W. L. BURRAGE, M.D., Sec., Jamaica Plain, Boston, Mass. — ALFRED WORCESTER, M.D., Prest., Waltham, Mass.

NEW HAMPSHIRE MEDICAL SOCIETY.

Annual Meeting at Concord, N. H., May 25-26, 1921

D. E. SULLIVAN, M.D., Sec., 7 No. State St., Concord, N. H. — A. H. HARRIMAN, M.D., Prest., Laconia, N. H.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

Annual Meeting at Brooklyn, N. Y., May 3, 1921.

EDWARD L. HUNT, M.D., Sec., 17 W. 43rd St., New York, N. Y. — J. RICHARD KERIN, M.D., Prest., Brooklyn, N. Y.

MEDICAL SOCIETY OF NEW JERSEY.

Annual Meeting at Atlantic City, N. J., June, 1921

WILLIAM J. CHANDLER, M.D., Sec., South Orange, N. J. — PHILANDER A. HARRIS, M.D., Prest., Paterson, N. J.

NEBRASKA STATE MEDICAL ASSOCIATION.

Annual Meeting at Lincoln, Neb., May, 1921.

JOSEPH M. AIKIN, M.D., Sec., Omaha, Neb. — M. S. MOORE, M.D., Prest., Gothenburg, Neb.

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA.

Annual Meeting at Pinehurst, N. C., May, 1921.

BENJ. K. HAYS, M.D., Sec., Oxford, N. C. — T. B. ANDERSON, M.D., Prest., Statesville, N. C.

NEW MEXICO MEDICAL SOCIETY.

Annual Meeting at Roswell, New Mex., October, 1920

FRANK E. TULL, M.D., Sec., Albuquerque, New Mex. — G. A. FRANK, M.D., Prest., Albuquerque, New Mex.

NORTH DAKOTA STATE MEDICAL ASSOCIATION.

Annual Meeting at Fargo, N. D., June, 1921

H. J. ROWE, M.D., Sec., Lisbon, N. D. — P. W. FRENCH, M.D., Prest., Grand Forks, N. D.

OHIO STATE MEDICAL ASSOCIATION.

Annual Meeting at Columbus, Ohio, May, 1921.

DON K. MARTIN, M.D., Sec., Columbus, O. — CHARLES LUKENS, M.D., Prest., Toledo, O.

OKLAHOMA STATE MEDICAL ASSOCIATION.

Annual Meeting at Oklahoma City, Okla., May, 1921.

C. A. THOMPSON, M.D., Sec., Barnes Bldg., Muskogee, Okla. — JOHN W. DUKE, M.D., Prest., Guthrie, Okla.

OREGON STATE MEDICAL ASSOCIATION.

Annual Meeting at (not yet decided), 1921.

RAYMOND E. WATKINS, M.D., Sec., Corbett Bldg., Portland, Ore. — JOSEPH A. PETTIT, M.D., Prest., Selling Bldg., Portland, Ore.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Annual Meeting at Pittsburg, Pa., October 4-7, 1920

WALTER F. DONALDSON, M.D., Sec., Jenkins Arcade Bldg., Pittsburg, Pa. — CYRUS LEE STEVENS, M.D., Prest., Athens, Pa.

RHODE ISLAND MEDICAL SOCIETY.

Annual Meeting at (not yet decided), 1921.

J. W. LEECH, M.D., Sec., 111 Broad St., Providence, R. I. — JESSE E. MOWRY, M.D., Prest., Providence, R. I.

SOUTH CAROLINA MEDICAL ASSOCIATION.

Annual Meeting at Columbia, S. C., April 19-20, 1921.

EDGAR A. HINES, M.D., Sec., Seneca, S. C. — W. P. TIMMERMAN, M.D., Prest., Batesburg, S. C.

SOUTH DAKOTA STATE MEDICAL ASSOCIATION.

Annual Meeting at Aberdeen, S. D., May, 1921.

F. A. SPAFFORD, M.D., Sec., Flandreau, S. D. — H. T. KENNEY, M.D., Prest., Pierre, S. D.

TENNESSEE STATE MEDICAL ASSOCIATION.

Annual Meeting at Nashville, Tenn., April, 1921.

OLIN WEST, M.D., Sec., Nashville, Tenn. — L. L. SHEDDAN, M.D., Prest., Knoxville, Tenn.

STATE MEDICAL ASSOCIATION OF TEXAS.

Annual Meeting at Dallas, Texas, May, 1921.

H. TAYLOR, M.D., Sec., Fort Worth, Tex. — I. C. CHASE, M.D., Prest., Fort Worth, Tex.

UTAH STATE MEDICAL ASSOCIATION.

Annual Meeting at Ogden, Utah, Sept. 7-8, 1920

WM. L. RICH, M.D., Sec., Salt Lake City, Utah. — GEO. E. ROBISON, M.D., Prest., Provo, Utah.

VERMONT STATE MEDICAL SOCIETY.

Annual Meeting at Rutland, Vt., Oct. 14-15, 1920

WM. G. RICKER, M.D., Sec., St. Johnsbury, Vt. — M. F. MCGUIRE, M.D., Prest., Montpelier, Vt.

VIRGINIA STATE MEDICAL SOCIETY.

Annual Meeting at Petersburg, Va., October, 1920.

G. H. WINFREY, Sec., Richmond, Va. — PAULUS A. IRVING, M.D., Prest., Farmville, Va.

WASHINGTON STATE MEDICAL ASSOCIATION.

Annual Meeting at Tacoma, Wash., Sept. 16-17, 1920

C. H. THOMSON, M.D., Sec., Walker Bldg., Seattle, Wash. — S. W. MOWERS, M.D., Prest., Tacoma, Wash.

STATE MEDICAL SOCIETY OF WISCONSIN.

Annual Meeting at La Crosse, Wis., Sept. 8-10, 1920

ROCK SLEYSTER, M.D., Sec., Wauwatosa, Wis. — C. R. BARDEEN, M.D., Prest., Madison, Wis.

WEST VIRGINIA STATE MEDICAL ASSOCIATION.

Annual Meeting at Pence Springs, W. Va., May, 1921

R. A. ASHWORTH, M.D., Sec., Moundsville, W. Va. — J. HOWARD ANDERSON, M.D., Prest., Marytown, W. Va.

WYOMING STATE MEDICAL SOCIETY.

Annual Meeting at Cheyenne, Wyo., August 9-10, 1920.

EARL WHEDON, M.D., Sec., Sheridan, Wyo. — GEO. P. JOHNSTON, M.D., Prest., Cheyenne, Wyo.

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The Neutral Salicylic Ester of Santalol

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By Fumigation and Inhalation

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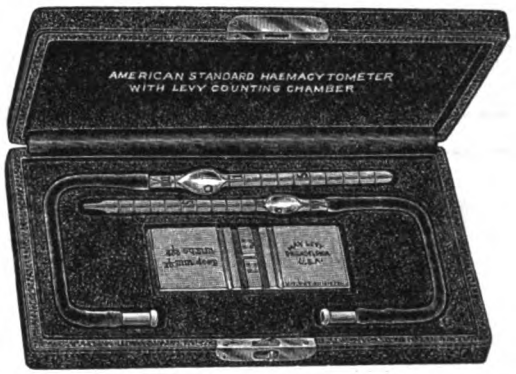

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29991. American Standard Haemacytometer, complete with Levy Counting Chamber with Neubauer ruling, with two pipettes, in leather case..... **$15.00**
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In specializing on Bacillus Bulgaricus Cultures under the scientific guidance of Professor Metchnikoff since 1906 and by constant co-operation and collaboration with eminent medical practitioners, we have arrived at the conviction that **adequate dosage** is one of the most important factors in the effective application of the Bacillus Bulgaricus to therapeutic purposes. Seven c.c. tubes have brought satisfactory results in cases where long-continued use of tablets showed no improvement whatsoever, and the administration of one ounce or two ounce doses, once or twice daily, gave surprisingly rapid results where the 7 c.c. doses had proved of little benefit, even when administered three to six times daily.

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"PINEAPPLE CULTURE, METCHNIKOFF." A two-ounce dose of Culture A in each bottle. Suitable for all cases of autointoxication, except Diabetes, or where fruit juices are counter-indicated. Price per case of one dozen bottles, delivered to patient's address, anywhere east of Mississippi River. $2.00.

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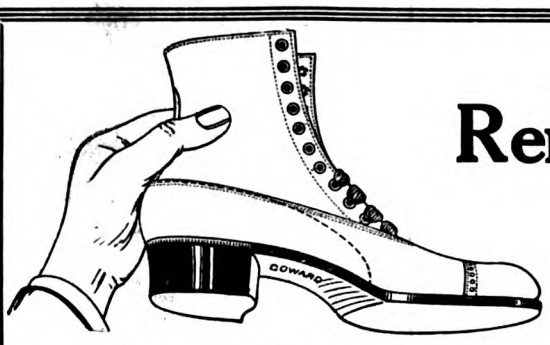

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It is so designed as to reshape the region of the instep accurately and normally. The extension heel adjusts the weight of the body. The long counter and elastic span below gradually remold the arch structure and bring it back to natural usefulness. The women's model is pictured here.

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"Recently I was called to see a pneumonia case and found the man in a very bad condition—disease allowed to run several days without medical assistance. Examination revealed complete consolidation of the lower lobe of right lung; severe dyspnea, temperature 104 F., high pulse—cyanosis.

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Antiphlogistine
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Literature on Request

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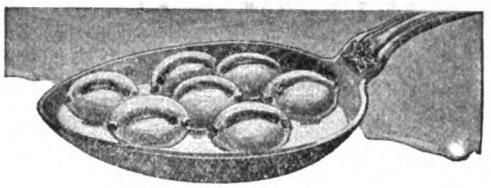

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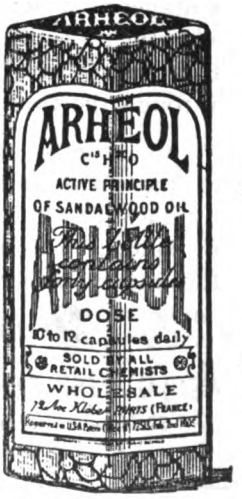

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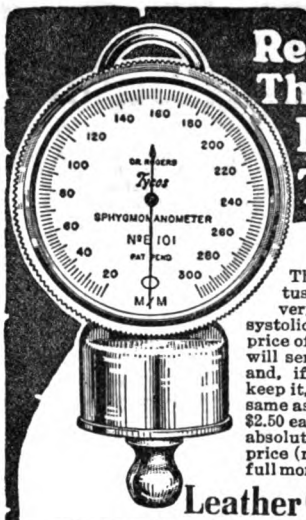

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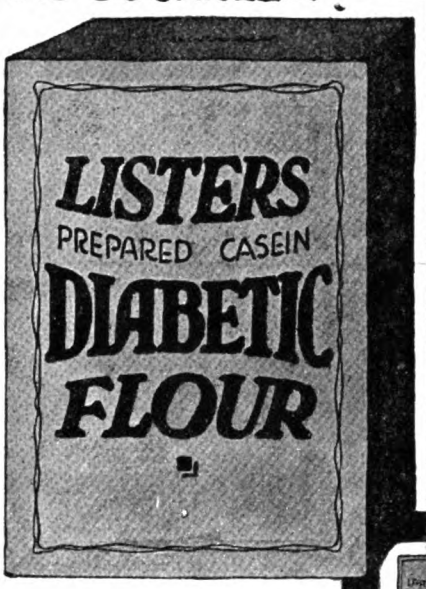

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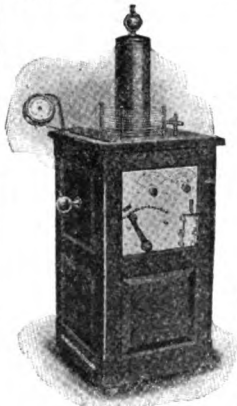

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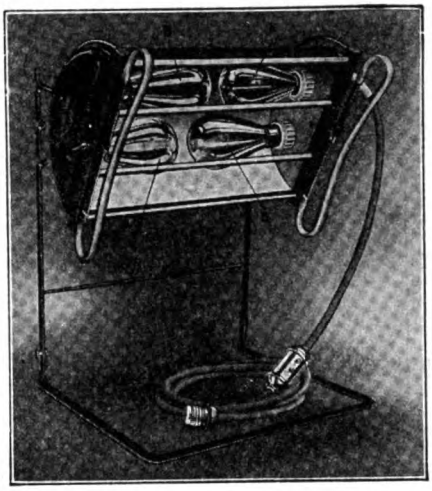

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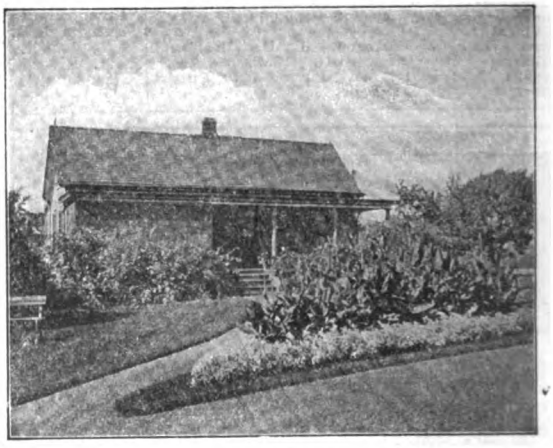

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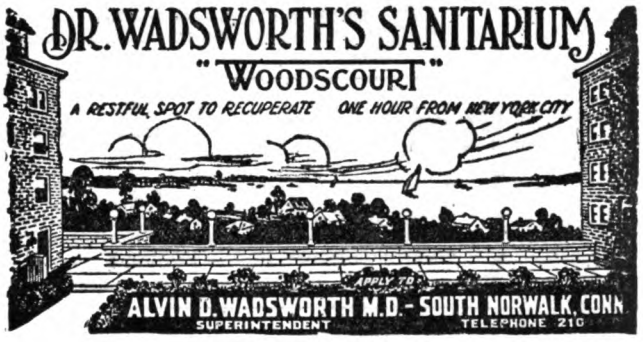

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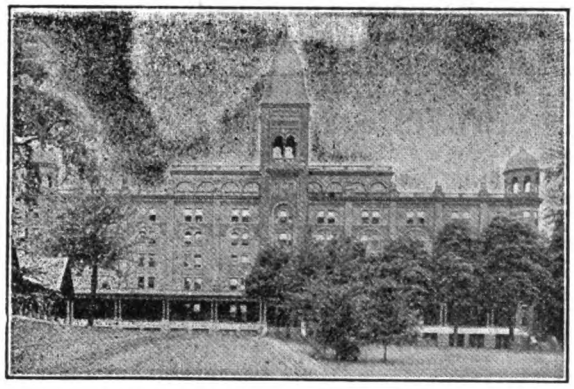

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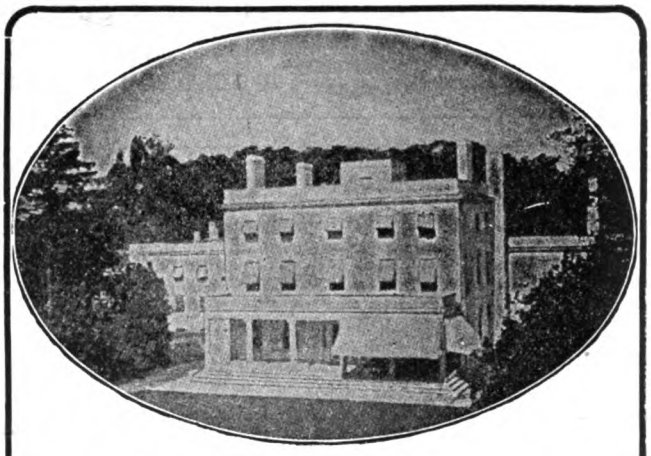

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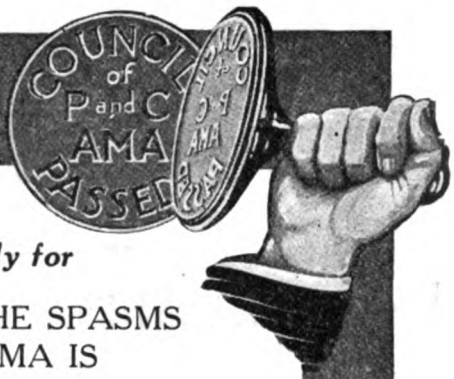

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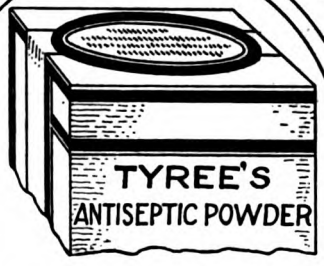

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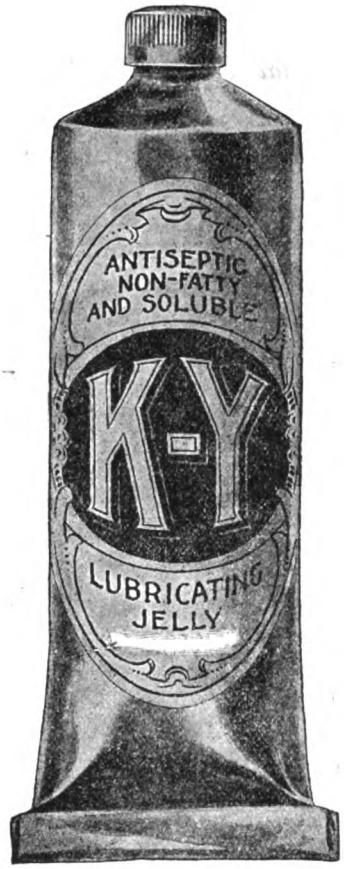

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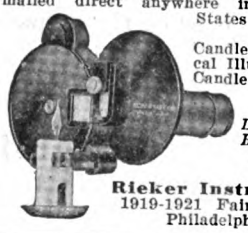

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